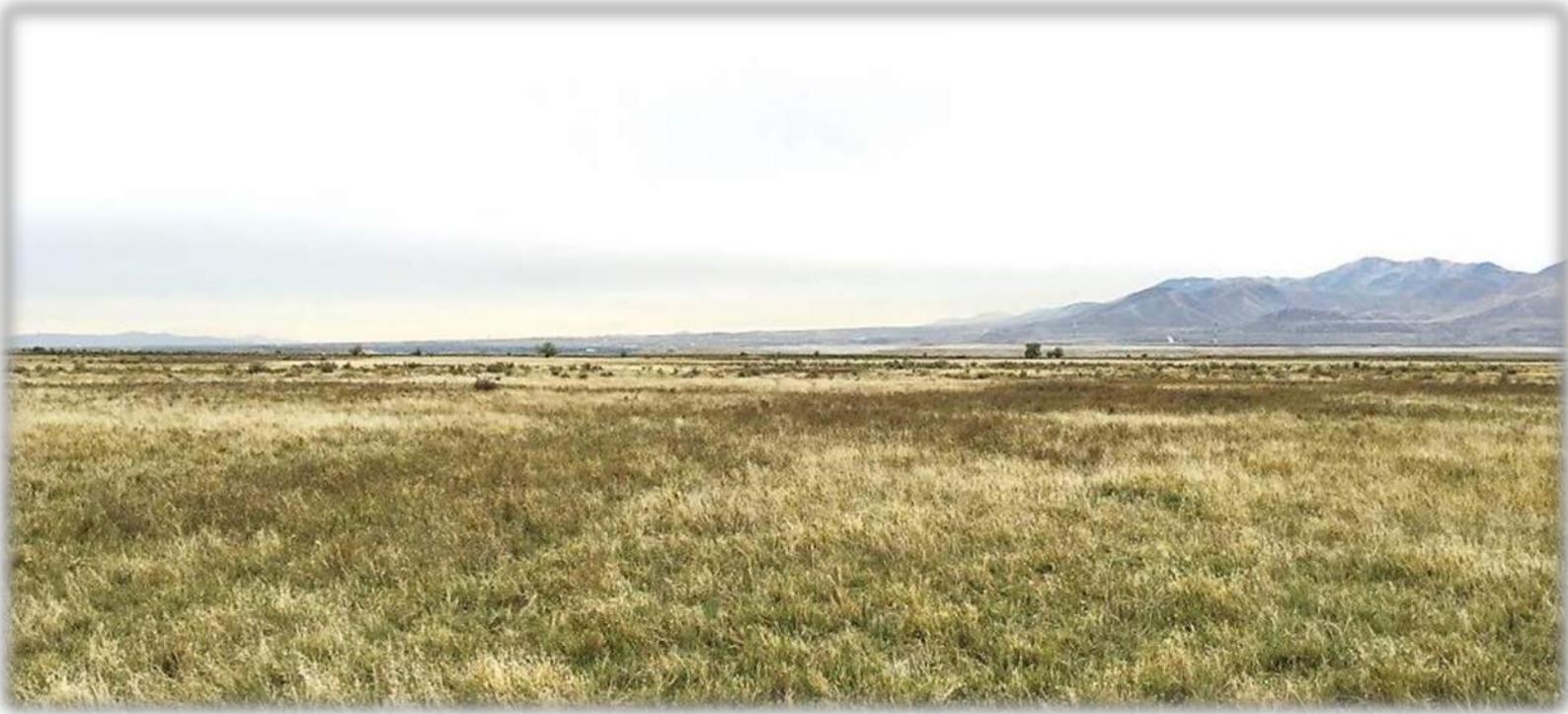


# Utah State Prison Relocation Site - West

## Phase I Environmental Site Assessment



**November 2015**

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## **Table of Contents**

Table of Contents .....	i
List of Acronyms & Abbreviations.....	1
1.0 Summary.....	2
1.1 Property Description.....	2
1.2 Current Uses of Adjoining Properties .....	2
1.3 Current Well Records .....	2
1.4 Report Database Records .....	2
1.5 Recognized Environmental Conditions (RECs).....	2
1.6 Report Recommendations and Conclusions .....	3
2.0 Introduction.....	3
2.1 Purpose .....	3
2.2 Scope of Service .....	4
2.3 Significant Assumptions .....	4
2.4 Limitations and Exceptions of this Phase I ESA .....	4
2.5 Special Terms, Limiting Conditions and Methodology Used .....	5
2.6 User Reliance .....	5
3.0 Property Description.....	5
3.1 Location and Legal Description .....	5
3.2 Property and Vicinity General Characteristics.....	6
3.3 Current Uses of Property .....	6
3.4 Description of Structures, Roads and Other Improvements on the Property.....	6
4.0 User-Provided Information.....	6
4.1 Title Records .....	6
4.2 Environmental Liens or Activity and Use Limitations (AULs) .....	7
4.3 Commonly Known Reasonable Ascertainable Information.....	7
4.4 Valuation Reduction for Environmental Issues .....	7
4.5 Owner, Property Manager and Occupant Information .....	7
4.6 Reason for Performing the Phase I ESA .....	7
5.0 Records Review.....	7
5.1 Standard Environmental Record Sources .....	7

**Utah State Prison Relocation West Site**  
*Phase 1 Environmental Site Assessment*

5.2	Federal Standard Environmental Sources .....	8
5.2.1	Salt Lake City Army Airbase Gunnery Range.....	9
5.3	Physical Setting Sources and Information .....	10
5.3.1	Topography .....	10
5.3.2	Soil Conditions.....	10
5.3.3	Regional and Local Groundwater Conditions.....	10
5.3.4	Geologic Condition .....	10
5.4	Historical Use Information on the Property .....	10
5.4.1	Aerial Photographs .....	11
5.4.2	Fire Insurance Maps.....	11
5.4.3	Floodplains.....	11
5.4.4	Zoning and Land Use Records .....	11
5.4.5	Fire Department Records.....	11
5.4.6	Select Recorded Land Titles Records.....	11
5.4.7	Historic Topographic Maps .....	11
5.4.8	Environmental Liens.....	12
5.4.9	City Building Records.....	12
5.4.10	Property Historical Use Summary .....	12
5.5	Historic Use Information on Adjoining Properties .....	12
5.5.1	Aerial Photography.....	12
5.5.2	Fire Insurance Maps.....	12
5.5.3	Floodplains.....	12
5.5.4	Zoning and Land Use Records .....	12
5.5.5	Fire Department Records.....	13
5.5.6	Recorded Land Titles Records .....	13
5.5.7	Historic Topographic Maps .....	13
5.5.8	Adjoining Properties Historical Use Summary .....	13
6.0	Property Reconnaissance.....	13
6.1	Methodology.....	13
6.2	General Property Setting.....	14
6.3	Exterior Observations .....	14

**Utah State Prison Relocation West Site**  
*Phase 1 Environmental Site Assessment*

6.3.1	Hazardous Substance and Petroleum Product Container Use.....	14
6.3.2	Storage Tanks .....	14
6.3.3	Odors.....	14
6.3.4	Pools of Liquid .....	14
6.3.5	Drums.....	14
6.3.6	Unidentified Substance Containers.....	14
6.3.7	Polychlorinated Biphenyls (PCBs) .....	14
6.3.8	Pits, Ponds, or Lagoons.....	15
6.3.9	Stained Soil or Pavement.....	15
6.3.10	Stressed Vegetation .....	15
6.3.11	Solid Waste .....	15
6.3.13	Wastewater .....	15
6.3.14	Wells.....	15
6.3.15	Septic Systems.....	15
7.0	Interview .....	15
8.0	Findings .....	15
8.1	Subject Property .....	15
8.2	Adjoining Properties.....	16
9.0	Opinion .....	16
10.0	References.....	17
11.0	Signatures of Environmental Professionals .....	18

Appendix A: Site Location and Salt Lake County Assessor Information

Appendix B: Hazardous Materials Site Information

Appendix C: Documents Obtained From DERR and USACE

Appendix D: Topographic Maps

Appendix E: Aerial Photography

Appendix F: FEMA Flood Plain Map

Appendix G: Zoning Map

Appendix H: Site Photographs

Appendix I: Questionnaire

## **List of Acronyms & Abbreviations**

ASTM	American Society of Testing and Materials
AUL	Activity and Use Limitation
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
CFR	Code of Federal Regulations
DERR	Division of Environmental Response and Remediation
DFCM	Division of Facilities Construction and Management
EDR	Environmental Data Resources, Inc.
ESA	Environmental Site Assessment
FEMA	Federal Emergency Management Agency
FUDS	Formerly Used Defense Sites
PCB	Polychlorinated Biphenyl
PVC	Polyvinyl Chloride
REC	Recognized Environmental Conditions
USACE	U.S. Army Corps of Engineers

## **1.0 Summary**

**Current Property Owners:** Epperson Associates, LLC, and Richard and Lynn Morehouse Trust

**Date Phase I Property Reconnaissance Conducted:** October 28, 2015

**Type of Report:** Phase I Environmental Site Assessment (ESA)

**Conducted in General Accordance with:** American Society of Testing and Materials (ASTM) E1527-13

**Report Prepared for:** Utah Division of Facilities Construction and Management (DFCM)

**Report Prepared by:** Lochner

## **1.1 Property Description**

- The property is comprised of rangeland used primarily for raising livestock.
- The property is comprised of three legal descriptions.
- The property is comprised of approximately 591 acres of agricultural rangeland.
- The property is generally gently sloping toward the west and northwest.
- The property elevation is approximately 4,217 feet above sea level.
- The property is partially located within a 100-year floodplain.
- The property's geology consists of clay, silt, sand, and minor pebble gravel deposited by the ancestral Jordan River where it entered the Great Salt Lake during the Holocene to upper Pleistocene epochs. The property is also underlain by silt, sand, and clay from the paleo-Jordan River Delta complex deposited during the Holocene epoch.
- Soils at the property are classified as silt loam.
- According to historic sources, the property has been agricultural rangeland and was once within the Salt Lake City Army Air Base Gunnery Range.

## **1.2 Current Uses of Adjoining Properties**

- North: Nature preserve
- East: Nature preserve
- South: Rangeland
- West: Nature preserve

## **1.3 Current Well Records**

Well records indicate that there are no water wells on the property.

## **1.4 Report Database Records**

The property was identified on the Formerly Used Defense Sites (FUDS) database.

## **1.5 Recognized Environmental Conditions (RECs)**

One historic Recognized Environmental Condition (REC)—the Salt Lake City Army Air Base Gunnery Range—was identified on the property.

## **1.6 Report Recommendations and Conclusions**

No further environmental investigation for the property is recommended at this time. It is, however, recommended that DFCM coordinate with the Utah Division of Environmental Response and Remediation (DERR) if hazardous materials related to small arms munitions or other military-related materials are encountered in large quantities during development of the site.

## **2.0 Introduction**

### **2.1 Purpose**

The purpose of this Phase I ESA was to identify Recognized Environmental Conditions (RECs) associated with the current and historic use of the property and adjoining properties, nearby off-property sources of potential impact, and the potential environmental impact on the property from surrounding conditions or activities. A Phase I ESA is a service of which basic elements are determined by the standard of care prevailing at the time the service was rendered in the area where it was rendered. Because standards of care can be identified only through retrospective inquiry, Lochner has completed this study in general accordance with ASTM Standard E1527-13. By definition, such standards set forth are minimum requirements.

Lochner also performed this Phase I ESA to satisfy requirements to qualify for the innocent landowner defense described in the Comprehensive Environmental Response Compensation and Liability Act (CERCLA liability) as codified by the U.S. Environmental Protection Agency in Title 40 of the Code of Federal Regulations (CFR) Part 312, *Standards and Practices for All Appropriate Inquiries* (November 2005). The property was assessed using reasonably ascertainable records to the property's first developed use. This Phase I ESA is not a comprehensive evaluation of business risks nor is it an environmental compliance audit.

According to the ASTM, the term "RECs" is defined as the presence or likely presence of any hazardous substances or petroleum products on a property under conditions that indicate an existing release, a past release, or a material threat of a release of any hazardous substances or petroleum products into structures on the property or into the ground, groundwater, or surface water of a property. The term is not intended to include *de minimis* conditions that generally do not present a material risk of harm to public health or the environment, and that generally would not be the subject of an enforcement action if brought to the attention of appropriate governmental agencies. Conditions determined to be *de minimis* are not RECs.

The identification of RECs in connection with the subject property may impose an environmental liability on owners or operators of the site, reduce the value of the site, or restrict the use or marketability of the site, and therefore, further investigation may be warranted to evaluate the scope and extent of potential environmental liabilities.

## **2.2 Scope of Service**

The Utah Division of Facilities Construction and Management (DFCM) has retained Lochner to perform a Phase I ESA for the property encompassing three parcels located at approximately 2698 North 8800 West. A Phase I ESA was performed to identify potential risk and/or liability associated with environmental and public health consideration concerning this property. This report documents the activities and results of the Phase I ESA.

## **2.3 Significant Assumptions**

While this report provides an overview of potential environmental concerns, both past and present, the Phase I ESA is limited by the availability of information at the time of the assessment. It is possible that unreported disposal of waste or illegal activities impairing the environmental status of the property may have occurred that could not be identified. The conclusions and recommendations regarding environmental conditions that are presented in this report are based on a scope of work authorized by the DFCM.

## **2.4 Limitations and Exceptions of this Phase I ESA**

This assessment did not include a review or audit of operational environmental compliance issues, or of any environmental management systems that may exist on the property. Where required, the documents listed in **Appendices A through I** were used as reference material for the completion of the Phase I ESA. Some of the information presented in this report was obtained through existing documents and interviews.

Should additional information become available that differs significantly from our understanding of conditions presented in this report, we request that this information be brought to our attention so that we may reassess the conclusions provided herein.

Problems have arisen in the past because individuals and organizations have assumed, improperly, that they could rely on a Phase I ESA report developed for another party. The DFCM is the only intended beneficiary of this report. The DFCM is the only party to which Lochner has explained the risks involved and has been involved in the shaping of the scope of services needed to satisfactorily manage these risks, if any, from the DFCM's point of view. Accordingly, reliance on this report by any other party may involve assumptions whose extent and nature lead to a distorted meaning and affect the findings and opinions related herein. Reliance on this report would in turn result in misinterpretation of these findings and opinions, and potentially unwise actions based on those misinterpretations.

The opinions relative to hazardous substances and petroleum products given in this report are based on information derived from property reconnaissance and from other activities described herein. The DFCM is advised that the conditions observed by Lochner are subject to change. It is possible that certain indicators of the presence of hazardous substances and petroleum products may have been latent at the time of the most recent property reconnaissance and may subsequently have become observable. Therefore, the formulation of Lochner's findings and opinions are based solely on the information currently available.

## **2.5 Special Terms, Limiting Conditions and Methodology Used**

Authorization to perform this assessment was given by the DFCM. This ESA has been performed in conformance with ASTM E1527-13, *Standard Practice Environmental Site Assessments: Phase I Environmental Site Assessment Process*. The four main components of the study performed by Lochner are as follows:

- 1) Conducted a visual reconnaissance of the property including walking the property to identify evidence of past and present potential environmental conditions.
- 2) Performed a records review, including obtaining a report from Environmental Data Resources, Inc. (EDR), for state and federal agency records of hazardous material, hazardous waste, landfill locations, and areas of environmental concern at the property or at adjacent properties. The search included records required by the ASTM E1527-13.
- 3) Interviewed current owner or manager of the property, as feasible, for information regarding uses of the property and potential environmental conditions associated with the property.
- 4) Prepared a final report to present the evaluation results of the property.

## **2.6 User Reliance**

This report represents Lochner's service to the DFCM as of the report date. In that regard, the report constitutes Lochner's final document, and the text of the report may not be altered in any manner after final issuance of the same. Opinions relative to environmental conditions given in this report are based upon information derived from the property reconnaissance date and from other activities described herein. Specifically, Lochner does not and cannot represent that the property contains no hazardous or toxic materials, products, or other latent conditions beyond that observed by Lochner during its property assessment.

The findings and opinions conveyed in this ESA report are based upon information obtained at a particular date from a variety of sources enumerated herein, which Lochner believes are reliable. Nonetheless, Lochner cannot and does not warrant the authenticity or reliability of the information sources upon which it has relied. The Phase I ESA was limited by the accuracy of the environmental databases provided by EDR.

## **3.0 Property Description**

### **3.1 Location and Legal Description**

The property consists of three parcels—two owned by Epperson Associates, LLC, and one owned by Richard and Lynn Morehouse Trust. All parcels are located in Section 20, Township 1 North, Range 2 West of the Salt Lake Meridian. The boundaries of each parcel are described as follows based on information obtained from the Salt Lake County Assessor's website reviewed on October 27, 2015:

**Epperson Associates, LLC (Parcel 07201000020000)** – NE ¼ of NW Section 20, Township 1 North, Range 2 West of the Salt Lake Meridian.

**Epperson Associates, LLC (Parcel 07203000010000)** – The S 240 RDS of the W ½ of Section 20, Township 1 North, Range 2 West of the Salt Lake Meridian.

**Richard and Lynn Morehouse Trust (Parcel 07202000030000)** – The E ½ of SW ¼ and the SE ¼ of NW ¼ of Section 20, Township 1 North, Range 2 West of the Salt Lake Meridian.

The site location can be viewed in **Appendix A**.

### **3.2 Property and Vicinity General Characteristics**

The property is currently rangeland. The North Point Consolidated Canal traverses the southeast corner of the property in a northeast/southwest direction and continues east and west along the southern property boundary. The adjacent properties and greater surrounding area to the east and south is also rangeland. Interstate 80 (I-80) is approximately 1.8 miles south of the property. The broader area north and west is primarily wetlands and lagoons along the shoreline of the Great Salt Lake.

### **3.3 Current Uses of Property**

The property is currently undeveloped agricultural rangeland.

### **3.4 Description of Structures, Roads and Other Improvements on the Property**

The North Point Consolidated Canal traverses the southeast corner of the property in a northeast/southwest direction and continues east and west along the southern property boundary. An earthen irrigation ditch runs along the eastern and western property boundaries. A two-track dirt road cuts across the northeast section of the property in a northwest/southeast direction. Barbed wire fencing surrounds the property on the west, north, and south sides.

Surrounding the property, the uses consist primarily of a nature preserve and rangeland. Table 3.1 lists a summary of current uses of the adjoining properties.

**Table 3.1: Current Uses of Adjoining Properties**

<b>Direction from the Property</b>	<b>Current Use</b>
North	Nature preserve
East	Nature preserve
South	Rangeland
West	Nature preserve

## **4.0 User-Provided Information**

### **4.1 Title Records**

Lochner reviewed public records in the Salt Lake County Assessor’s database to obtain current ownership information for the property. A copy of the assessor property displays is available in **Appendix A**.

#### **4.2 Environmental Liens or Activity and Use Limitations (AULs)**

The current property owners were not aware of any environmental cleanup liens against the property filed or recorded under federal, tribal, state, or local law. The current property owner was not aware of any AULs, such as engineering controls, land use restrictions, or institutional controls that are in place at the site and/or have been filed or recorded in a registry.

#### **4.3 Commonly Known Reasonable Ascertainable Information**

The current property owner was not aware of any previous uses on the property other than the agricultural rangeland. The property owner did not know of any illegal dumping, hazardous materials, or hazardous material cleanups on the property.

A Phase I ESA was prepared by Fosgren Associates, Inc., for Zions Securities Corporation in July 2000. After reviewing the report, which covered a much larger area than the area described in this ESA, it does not appear to contain any additional information to that Lochner obtained through its own research relating to the property. Similar to the recommendations contained in this ESA (see Section 5.2.1 and Section 9.0), the Phase I ESA prepared by Fosgren Associates, Inc., recommended further coordination with the U.S. Army Corps of Engineers (USACE) and State of Utah, specifically DERR.

#### **4.4 Valuation Reduction for Environmental Issues**

The current property owner was unaware of any environmental issues specific to the property that would be cause for value reduction.

#### **4.5 Owner, Property Manager and Occupant Information**

The property is currently owned by Epperson Associates, LLC, and Richard and Lynn Morehouse Trust.

#### **4.6 Reason for Performing the Phase I ESA**

The Phase I ESA was prepared by Lochner at the request of the DFCM to support the relocation of the Utah State Prison.

### **5.0 Records Review**

#### **5.1 Standard Environmental Record Sources**

Lochner contracted with EDR to conduct a search of federal and state databases containing known and suspected sites of environmental contamination. The number of listed sites identified within the approximate minimum search distance from the federal and state environmental records database listings specified in ASTM Standard E1527-13 is summarized in the following sections. Sites identified within the approximate minimum search distance are provided below in Tables 5.1 and 5.2, along with an opinion about the significance of the listing to the analysis of RECs in connection with the subject property. See **Appendix B** for a map of the sites listed below and a summary of each site.

## 5.2 Federal Standard Environmental Sources

Table 5.1 includes data from the ASTM Federal Standard Databases as reported by EDR. One federally listed site was identified by EDR within the approximate minimum search distance. Table 5.2 contains ASTM State Standard Databases as reported by EDR.

**Table 5.1: ASTM Federal Standard Database Search Distances**

Database Name	Distance (miles)	# of Sites Found	Site # on Map <sup>1</sup>
National Priority List (NPL)	1.00	0	-
Proposed National Priority List Sites (Proposed NPL)	1.00	0	-
Federal Superfund Liens (NPL LIENS)	TP <sup>2</sup>	0	-
National Priority List Deletions (Delisted NPL)	0.50	0	-
Comprehensive Environmental Response, Compensation, and Liability Information System (CERCLIS)	0.50	0	-
CERCLIS No Further Remedial Action Planned (CERCLIS-NFRAP)	0.50	0	-
Corrective Action Report (CORRACTS)	1.00	0	-
Resource Conservation and Recovery Act - Treatment, Storage, and Disposal Facilities Listed on the Corrective Action Tracking System (RCRA-TSDF)	0.50	0	-
Resource Conservation and Recovery Act- Large Quantity Generators (RCRA-LQG)	0.25	0	-
Resource Conservation and Recovery Act - Small Quantity Generators (RCRA-SQG)	0.25	0	-
Resource Conservation and Recovery Act - Conditionally Exempt Small Quantity Generators (RCRA-CESQG)	0.25	0	-
US Engineering Controls (US ENG CONTROLS)	0.50	0	-
US Institutional Controls (US INST CONTROL)	0.50	0	-
Emergency Response Notification System (ERNS)	TP	0	-

1. Site number may represent a cluster of sites.

2. Target property (TP)

**Table 5.2: ASTM State Standard Database Search Distances**

Database Name	Distance (miles)	# of Sites Found	Site # On Map <sup>1</sup>
State Equivalent National Priority List (NPL)	1.00	N/A	-
State Equivalent Comprehensive Environmental Response, Compensation, and Liability Information System (CERCLIS)	1.00	N/A	-
Voluntary Cleanup and Superfund Site Status Report (SHWS)	1.00	N/A	-
Permitted Solid Waste Disposal and Processing Facilities (SWF/LF)	0.50	0	-
Leaking Underground Storage Tank List (LUST)	0.50	0	-
Leaking Aboveground Storage Tank List (LAST)	0.50	0	-

**Table 5.2: ASTM State Standard Database Search Distances**

Database Name	Distance (miles)	# of Sites Found	Site # On Map <sup>1</sup>
Underground Storage Tank List (UST)	0.25	0	-
Aboveground Storage Tanks (AST)	0.25	0	-
Institutional Control Sites (INST CONTROL)	0.50	0	-
State Voluntary Cleanup Program (VCP)	0.50	0	-
Brownfields Databases	0.50	0	-

1. Site number may represent a cluster of sites.

### 5.2.1 Salt Lake City Army Airbase Gunnery Range

Although no RECs were identified in the ASTM Federal and State Standard Database searches, one additional environmental record was identified on the property (see Detail Map in **Appendix B**). Review of the Formerly Used Defense Sites (FUDS) database identified the Salt Lake City Army Air Base Gunnery Range (FUDS J08UT0951), an approximately 6,275-acre site that was used for small arms weapons training between December 1943 and April 1944 (USACE 2004). Although the property is within the gunnery range boundaries, all facilities, including one skeet range, two moving target ranges, five high tower shotgun turret ranges, two sub-machine gun ranges, one pistol range, one 200-yard known distance rifle range, and one Poorman range were constructed south of the property. Two .50-caliber shooting ranges are the only elements that extended over the property (USACE 2006).

The site is known to contain heavy metals, such as lead, antimony, arsenic, calcium, copper, silver, and sodium, from firing military and non-military weapons; there is no evidence of ordnance and explosives or chemical warfare training at the site. Based on documents received on November 9, 2015, all constructed facilities and most of the activity within the gunnery range were south of the property (DERR 1997).

On October 23, 2015, Rik Ombach, former project manager with DERR, reported approximately 10 years ago the division removed large, lead bullet fragments from the site's surface. According to Mr. Ombach, it was a minimal effort because the site was not heavily used. Documents received from the USACE on November 3, 2015, and DERR on November 9, 2015, confirmed that some lead-contaminated soil was removed from the parcel south of the property between September 2004 and May 2006 (USACE 2006). Review of the documents indicates investigations for hazardous materials were not conducted on the property and all remediation efforts were conducted on the adjacent parcel south of the property.

On February 28, 2007, DERR signed the *Finding of No Department of Defense Action Indicated* issued by the USACE stating that no further action was warranted (DERR 2007). Furthermore, DERR's response to the USACE states that if hazardous substances are encountered at the site and the substances are related to past Department of Defense activities, it is expected that USACE will reevaluate the site as part of its obligation and responsibilities under the FUDS program (DERR 2007).

Based on the information presented herein and DERR and USACE reports found in **Appendix C**, the Salt Lake City Army Air Base Gunnery Range does not appear to pose an environmental risk to the property.

However, isolated small munition fragments, such as .50 caliber lead bullets, could be encountered on the property (no bullet fragments were identified during the property reconnaissance on October 28, 2015). If hazardous materials related to small arms munitions or other military-related materials are encountered in large quantities during development of the site, it is recommended that DFCM notify and coordinate with DERR.

### **5.3 Physical Setting Sources and Information**

#### **5.3.1 Topography**

The 1999 7.5-Minute U.S. Geological Survey Topographic Quadrangle Map of the Saltair Quadrangle indicates the property slopes slightly to the west and northwest. The elevation of the property is approximately 4,217 feet above sea level. See **Appendix D** for the property topographic map.

#### **5.3.2 Soil Conditions**

According to the information supplied to EDR from the U.S. Department of Agriculture's Soil Conservation Service, the property is classified as silt loam. The soil has very slow infiltration rates, a high water table (between 99 and 153 inches below the surface), and high corrosion potential.

#### **5.3.3 Regional and Local Groundwater Conditions**

Review of the U.S. Geological Survey Utah Water Science Center data indicates there are no wells located on the property. In addition, the current property manager was not aware of any wells on the property.

#### **5.3.4 Geologic Condition**

Based on Utah Geological Survey Geologic Maps, the majority of the property is immediately underlain by clay, silt, sand, and minor pebble gravel deposited by the ancestral Jordan River where it entered the Great Salt Lake during the Holocene to upper Pleistocene epochs. The property is also underlain by silt, sand, and clay from the paleo-Jordan River Delta complex deposited during the Holocene epoch (Utah Geological Survey, no date)

### **5.4 Historical Use Information on the Property**

Lochner obtained and reviewed environmental and physical setting records and historic information in an effort to identify RECs in connection with the property. The following subsections are narrative descriptions of the records Lochner obtained and reviewed:

- Aerial Photographs
- Fire Insurance Maps
- Floodplains
- Zoning and Land Use Records
- Fire Department Records
- Select Recorded Land Title Records
- Historic Topographic Maps
- Local Street Directories
- Environmental Liens
- City Building Records

#### 5.4.1 Aerial Photographs

Lochner obtained and reviewed aerial photographs from 1937, 1946, 1959, 1965, 1971, 1977, 1985, 1993, 1997, 2006, 2009, and 2011 to gather information about the history of development on the property. The photographs are found in **Appendix E**. Observations about the property are summarized below:

- 1937 – 2011: The property is undeveloped and appears to be used for agricultural purposes. A grid network of furrows or trenches appears on the northern half of the property. These were likely dug to help drain surface water from the property. The North Point Consolidated Canal appears in all photos, suggesting that it was constructed prior to 1937.

#### 5.4.2 Fire Insurance Maps

In the late 19th century, the Sanborn Company began preparing maps for use by fire insurance companies. These maps indicate construction materials for specific structures and the presence of flammable materials. These maps were updated and expanded geographically at various periods during the 20th century. No Sanborn® maps are available for the property.

#### 5.4.3 Floodplains

Federal Emergency Management Agency (FEMA) Flood Insurance Rate Map number 49035C0125G indicates that the majority of the property is located within Zone X. The northwest corner of the property is within the Zone A of the 100-year flood zone. This area is subject to inundation by the 1 percent annual chance flood event. The FEMA Floodplain Zone Map is found in **Appendix F** (also see **Appendix B**).

#### 5.4.4 Zoning and Land Use Records

According to Salt Lake City's Northwest Quadrant zoning map, the south and east portions of the property are zoned as AG, which is an agricultural district intended to preserve and protect agricultural uses until these land can be developed for more appropriate uses. The remaining northwest section is zoned OS, which is an open space district intended to preserve and protect areas of public and private open space and enforce greater controls over any potential development or redevelopment. The zoning map is found in **Appendix G**.

#### 5.4.5 Fire Department Records

The Salt Lake City Fire Department was contacted on October 22, 2015, regarding known responses to environmental emergencies to the property. The fire department indicated the property is outside of its service area. A similar request was made to the Unified Fire Authority on October 29, 2015. No records were identified for the property.

#### 5.4.6 Select Recorded Land Titles Records

Lochner reviewed public records on the Salt Lake County Assessor's website to obtain current ownership information for the property. The property is currently owned by Epperson Associates, LLC, and Richard and Lynn Morehouse Trust. A copy of the parcel summary for each parcel is found in **Appendix A**.

#### 5.4.7 Historic Topographic Maps

Lochner reviewed historic topographic maps for the 1885, 1951, 1972, 1987, and 1997 quads. The 1885 quad was produced at a scale of 1:250,000; therefore, this map does not provide sufficient detail for

property observations. The 1951 to 1997 quads were produced at various scales ranging between 1:24,000 and 1:50,000. The Saltair quad (1951, 1972, and 1997) and Antelope Island quad (1987) show the North Point Consolidated Canal. No other structures are shown from 1885 to 1997. Historic topographic maps are provided in **Appendix D**.

#### 5.4.8 Environmental Liens

The current property owner was not aware of any environmental cleanup liens against the property that are filed or recorded under federal, tribal, state, or local law.

#### 5.4.9 City Building Records

A Government Records Access and Management Act records request was submitted to the Salt Lake City Community and Economic Development office on October 22, 2015, to obtain building permit records for each parcel with the property. There are no records for any building permit applications or approvals for any of the parcels within the property.

#### 5.4.10 Property Historical Use Summary

Historic sources indicate that the property has been undeveloped and used primarily for raising livestock. In addition, the United States Army operated a gunnery range until April 1944 (all improvements were south of the property). No records indicate any past use or improvements to the property.

### **5.5 Historic Use Information on Adjoining Properties**

#### 5.5.1 Aerial Photography

Lochner obtained and reviewed aerial photographs from 1937, 1946, 1959, 1965, 1971, 1977, 1985, 1993, 1997, 2006, 2009, and 2011 to gather information about the history of development on the property. The photographs are found in **Appendix E**. Observations noted about the property are summarized below:

- 1937 – 2011: The adjoining properties are undeveloped and appear to be used for agricultural purposes. Lagoons, mudflats, and wetlands appear north and northwest of the property.

#### 5.5.2 Fire Insurance Maps

In the late 19th century, the Sanborn Company began preparing maps for use by fire insurance companies. These maps indicate construction materials for specific structures and the presence of flammable materials. These maps were updated and expanded geographically at various periods during the 20th century. No Sanborn® maps are available for the property.

#### 5.5.3 Floodplains

FEMA Flood Insurance Rate Map number 49035C0125G indicates that the adjoining properties are within the 100-year flood zone (primarily west and north) and Zone X (primarily east and south), which is outside the 0.2 percent chance 100-year flood zone. The FEMA Floodplain Zone Map is found in **Appendix F**.

#### 5.5.4 Zoning and Land Use Records

According to Salt Lake City's Northwest Quadrant zoning map, the northern adjoining property is zoned OS, which is an open space district intended to preserve and protect areas of public and private open

space and enforce greater controls over any potential development or redevelopment. The south and east adjoining properties are zoned as AG, which is an agricultural district intended to preserve and protect agricultural uses until these land can be developed for more appropriate uses. The adjoining west property is located in unincorporated Salt Lake County. According to Salt Lake County's online interactive zoning map accessed on October 22, 2015, the western adjoining property is zoned A-20, which is an agricultural district to promote and preserve areas in the county that are favorable to agriculture. Salt Lake City's Northwest Quadrant zoning map and a screenshot of Salt Lake County's zoning designation for the western adjoining property are found in **Appendix G**.

#### 5.5.5 Fire Department Records

The Salt Lake City Fire Department and Unified Fire Authority were contacted on October 22, 2015, regarding known responses to environmental emergencies to adjoining properties. No records were identified for the property.

#### 5.5.6 Recorded Land Titles Records

Lochner reviewed public records on the Salt Lake County Assessor's website to obtain current ownership information for the adjoining properties. The east and west adjoining properties are owned by Kennecott Utah Copper, the north adjoining properties are owned by Kennecott Utah Copper and Epperson Associates, LLC, and the south adjoining property is owned by Epperson Associates, LLC. All adjoining properties appear to be undeveloped and are primarily used for raising livestock.

#### 5.5.7 Historic Topographic Maps

Available historic topographic maps from 1885 to 1997 do not show any development on the adjoining property.

#### 5.5.8 Adjoining Properties Historical Use Summary

The property is located in an area that has remained undeveloped, with the exception of triangular mounds associated with the shooting range of the former Salt Lake City Army Air Base Gunnery Range. Other infrastructure improvements include the North Point Consolidated Canal, which also bisects the property. The adjoining property is currently the Inland Sea Shorebird Preserve, an approximately 3,670-acre preserve for shorebirds and waterfowl along the south shore of the Great Salt Lake.

## **6.0 Property Reconnaissance**

### **6.1 Methodology**

The property reconnaissance was performed on October 28, 2015. A combination of vehicle and pedestrian surveys were employed to identify potential hazardous materials on the property. Only surface observations were made; no subsurface investigations, such as digging test pits, occurred during the property reconnaissance. Photographs were taken in all cardinal directions from property corners and the center of the property. A GPS unit was used to document the location of suspected hazardous materials or dumping areas. Representative photographs taken during the property reconnaissance are included in **Appendix H**.

## **6.2 General Property Setting**

The property is located approximately 1.8 miles north of I-80 at 8800 West in the Northwest Quadrant of Salt Lake City. The property is relatively flat. Vegetation is primarily grass with sagebrush and isolated tamarisk (*tamarix* spp.).

## **6.3 Exterior Observations**

There was no evidence of hazardous materials identified on the site other than two polystyrene blocks. Both polystyrene blocks were in a broad dumping area that consisted primarily of old farm equipment, including polyvinyl chloride (PVC) pipes, metal troughs and plow equipment, metal containers, and rubber tires. Polystyrene (more commonly known as Styrofoam) is a petroleum-based product that contains styrene and benzene, which are hazardous substances suspected to be carcinogens and neurotoxins. These polystyrene blocks in their current state do not pose an environmental risk to the property. Traces of windblown trash were scattered across the property. Site photos and a map showing the location of each photo can be viewed in **Appendix H**.

### 6.3.1 Hazardous Substance and Petroleum Product Container Use

No hazardous substance and petroleum product containers were found on the property.

### 6.3.2 Storage Tanks

No evidence of a current or former storage tank was noted on the property.

### 6.3.3 Odors

No odors were identified on the property at the time of the property reconnaissance.

### 6.3.4 Pools of Liquid

No pools of liquid were identified on the property at the time of the property reconnaissance.

### 6.3.5 Drums

Two empty 55-gallon drums were observed on the property. There was no evidence at the time of the property reconnaissance that the drums contained hazardous materials at any time.

### 6.3.6 Unidentified Substance Containers

Several unidentifiable substance containers were found in a dumping area near the southeast corner of the site where the dirt road crosses the North Point Consolidated Canal (see Viewpoint 15 in Figure 2 and Photo 32 in **Appendix H**). Each container was approximately 3 feet tall and 18 inches in diameter with *Oakes R-40* pressed into the side. Based on the surrounding agricultural equipment and historic use of the property, it is assumed that these are feed containers. Maureen Davison, property representative, was contacted on November 2, 2015, to ascertain the identity and use of these containers. She confirmed on November 5, 2015, that they are old feed containers. These containers do not appear to pose an environmental risk based on the information provided herein.

### 6.3.7 Polychlorinated Biphenyls (PCBs)

No evidence of PCBs was noted on the property at the time of the property reconnaissance.

#### 6.3.8 Pits, Ponds, or Lagoons

No pits, ponds, or lagoons were identified on the property.

#### 6.3.9 Stained Soil or Pavement

No stained soil or pavement was identified on the property.

#### 6.3.10 Stressed Vegetation

No evidence of stressed vegetation due to exposure to hazardous materials was observed on the property.

#### 6.3.11 Solid Waste

Solid waste presenting an environmental concern was not observed on the property.

#### 6.3.13 Wastewater

No discharge of wastewater was observed on the property.

#### 6.3.14 Wells

No existing domestic wells were identified on the property. However, one reinforced concrete hole was identified on the north end of the property (see Viewpoint 5 in Figure 1 and Photos 17 and 18 in **Appendix H**). Lochner contacted the current tenant to determine if this is a well. According to the current tenant, a series of underground clay pipes or drains were laid underneath the property to drain groundwater from the south to north end of the property. This reinforced concrete hole may have served as a pumping station to pump water to the nearby Goggin Drain north of the property (Hinckley 2015).

#### 6.3.15 Septic Systems

No septic systems or cesspools were found during the property reconnaissance.

### **7.0 Interview**

Lochner provided Maureen Davison with a questionnaire, which she completed and returned on October 27, 2015. The completed questionnaire can be found in **Appendix I**. According to Ms. Davison, her family has owned the property since 1927 and has used it to raise livestock since the family purchased it. Ms. Davison was not aware of hazardous materials of any kind being stored or present on the property, including fill dirt brought onto the property that originated from a contaminated site or from an unknown source.

### **8.0 Findings**

We have performed this Phase I ESA in conformance with the scope and limitations of ASTM Standard E1527-13.

#### **8.1 Subject Property**

The property consists of approximately 591 acres and is located in Section 20, Township 1 North, Range 2 West of the Salt Lake Meridian. Historical sources indicate the property has been agricultural rangeland and between December 1943 and April 1944 was within .50 caliber shooting ranges associated

with the Salt Lake City Army Air Base Gunnery Range, which is the only REC identified on and adjacent to the property.

## **8.2 Adjoining Properties**

The property is located in an undeveloped area. The adjoining property was historically agricultural rangeland until Rio Tinto Kennecott converted the land to the Inland Sea Shorebird Reserve in the late 1990s (Rio Tinto Kennecott 2014). The Salt Lake City Army Air Base Gunnery Range is the only historic REC identified on the adjoining properties. No current RECs were identified on the adjoining properties and within the ASTM search parameters.

## **9.0 Opinion**

No further environmental investigation is recommended at this time based on the historic and current use, lack of current RECs, and low environmental risk of historic RECs on the property and adjoining properties. Although the likelihood of encountering large quantities of hazardous materials related to past military activities is unlikely, it is recommended that DFCM coordinate with DERR if hazardous materials related to small arms munitions or other military-related materials are encountered in large quantities during development of the site.

## 10.0 References

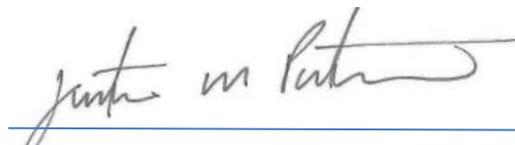
- [ASTM] American Society for Testing and Materials. 2013. *Standard Practice for Environmental Site Assessments: Phase I Environmental Site Assessment Process*. E1527-13.
- [DERR] Utah Division of Environmental Response and Remediation. 1997. Preliminary Assessment Salt Air Gunnery Range. Salt Lake County, Utah. EPA ID UT0001610880. October 1997.
- \_\_\_\_\_. 2007. Salt Lake City Army Air Base Gunnery Range, J08UT0951. February 28, 2007.
- [EDR] Environmental Data Resources, Inc. Aerial Photographs, 1937, 1946, 1959, 1965, 1971, 1977, 1985, 1993, 1997, 2006, 2009, and 2011.
- \_\_\_\_\_. Radius Map Report (Inquiry Number: 4444864.9). Environmental Data Resources, Incorporated, 440 Wheelers Farm Road, Milford, CT 06461. 1(800) 352-0050.
- Hinckley, Dalon. 2015. Email communication between Dalon Hinckley, current tenant, and Maureen Davison, property representative/owner, regarding photos sent by Justin Peterson, Lochner, of concrete reinforced holes and farm equipment identified during site reconnaissance.
- Rio Tinto Kennecott. 2014. Inland Sea Shorebird Preserve. Available at:  
<http://www.kennecott.com/inland-sea-shorebird-reserve>. Accessed November 2, 2015.
- Salt Lake County Assessor. No date. Available at:  
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- [USACE] U.S. Army Corps of Engineers. 2004. Defense Environmental Restoration Program for Formerly Used Defense Sites Ordnance and Explosives. Archives Search Report. Salt Lake City Army Air Base Gunnery Range. Salt Lake City, UT. Project Number – J08UT095101. Final Report. September 2004.
- \_\_\_\_\_. 2006. Investigation and Closure Report. Salt Lake City Army Air Base Gunnery Range. Salt Lake City, UT. FUDS Property No.: J08UT095100. September 2006.
- \_\_\_\_\_. No date. Finding of No Department of Defense Action Indicated.
- Utah Geological Survey. No date. Geologic Interactive Map. Available at:  
<http://geology.utah.gov/apps/intgeomap/index.html>. Accessed October 22, 2015.

## 11.0 Signatures of Environmental Professionals

In accordance with ASTM Standard E1527-13 and the U.S. Environmental Protection Agency Standards and Practices for All Appropriate Inquiries, Final Rule; this ESA was completed by an environmental professional with relevant experience pursuant to 40 CFR 10. An environmental professional is defined as a person who possesses sufficient specific education, training, and experience necessary to exercise professional judgment to develop opinions and conclusions regarding conditions indicative of releases or threatened releases. Relevant experience is defined as participation in the performance of all appropriate inquiries, investigations, ESAs, or other site investigations that may include environmental analyses, investigations, and remediation that involve the understanding of surface and subsurface environmental conditions and the processes used to evaluate these conditions and for which professional judgment was used to develop opinions regarding conditions indicative of releases or threatened releases to the subject property.

Any person who does not qualify as an environmental professional under the above-mentioned definition may assist in the conduct of all appropriate inquiries with this part if such person is under the supervision or responsible charge of a person meeting the definition of an environmental professional provided above when conducting such activities.

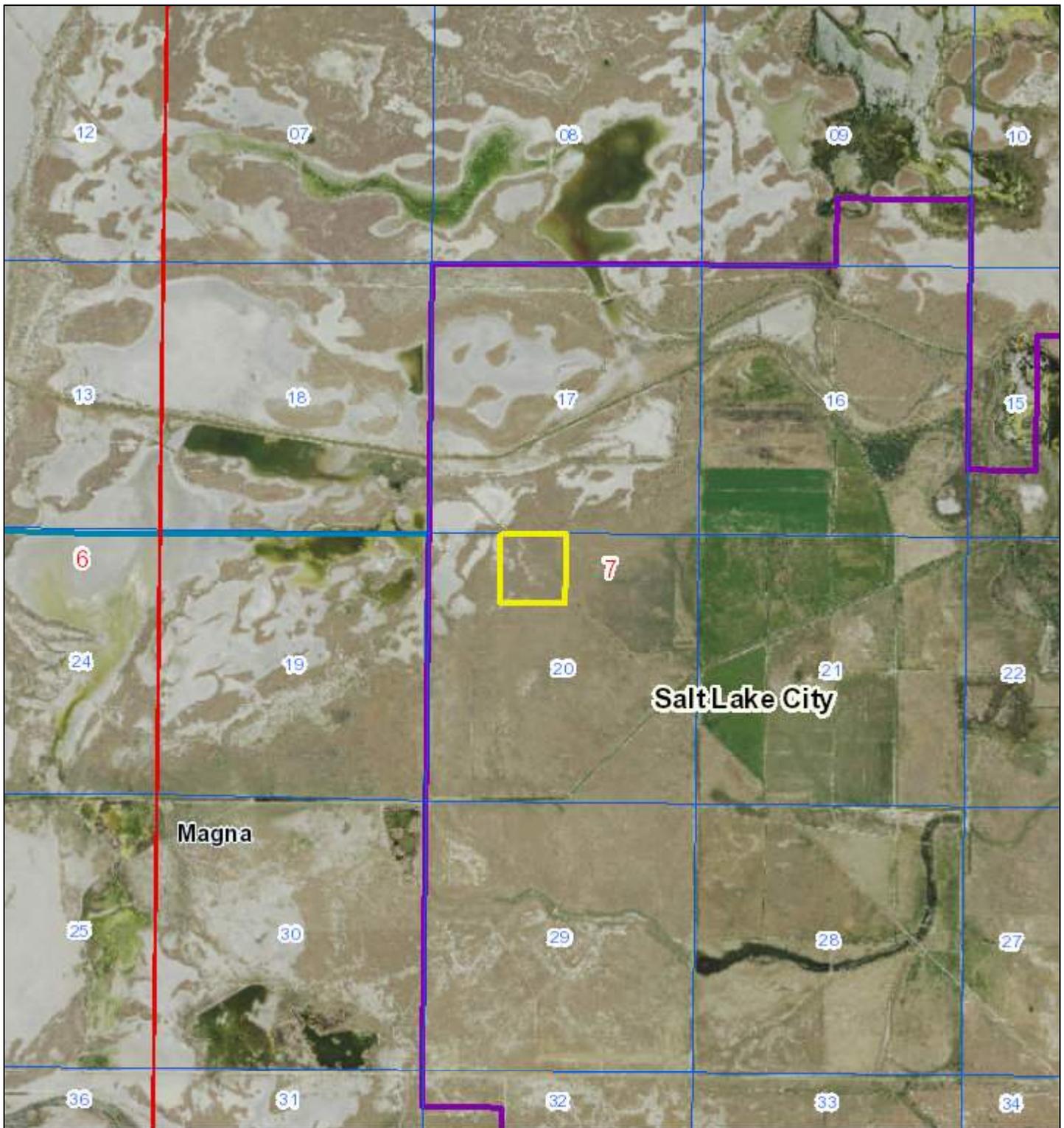
The following environmental professionals were responsible for this report:

  
11/16/2015  
Justin Peterson  
Planner  
Lochner

  
11/16/2015  
Elisa Albury  
Senior Planner  
Lochner

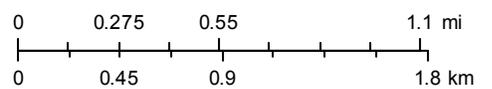
**Appendix A: Site Location and Salt Lake County Assessor Information**

# Epperson Associates, LLC (07201000020000)

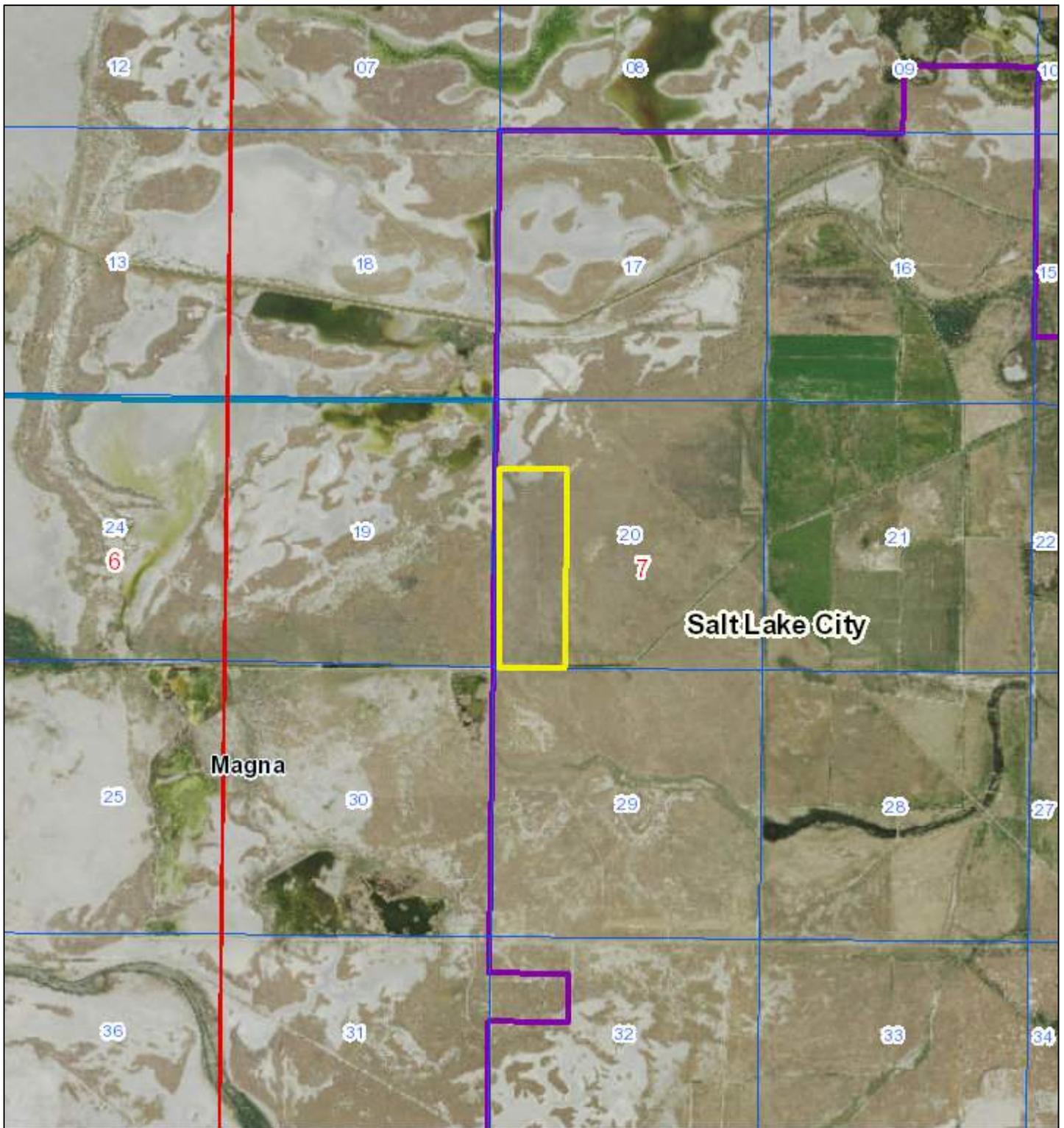


October 22, 2015

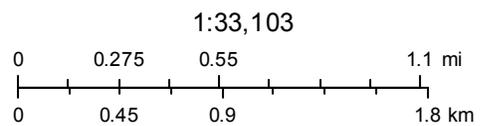
1:33,103



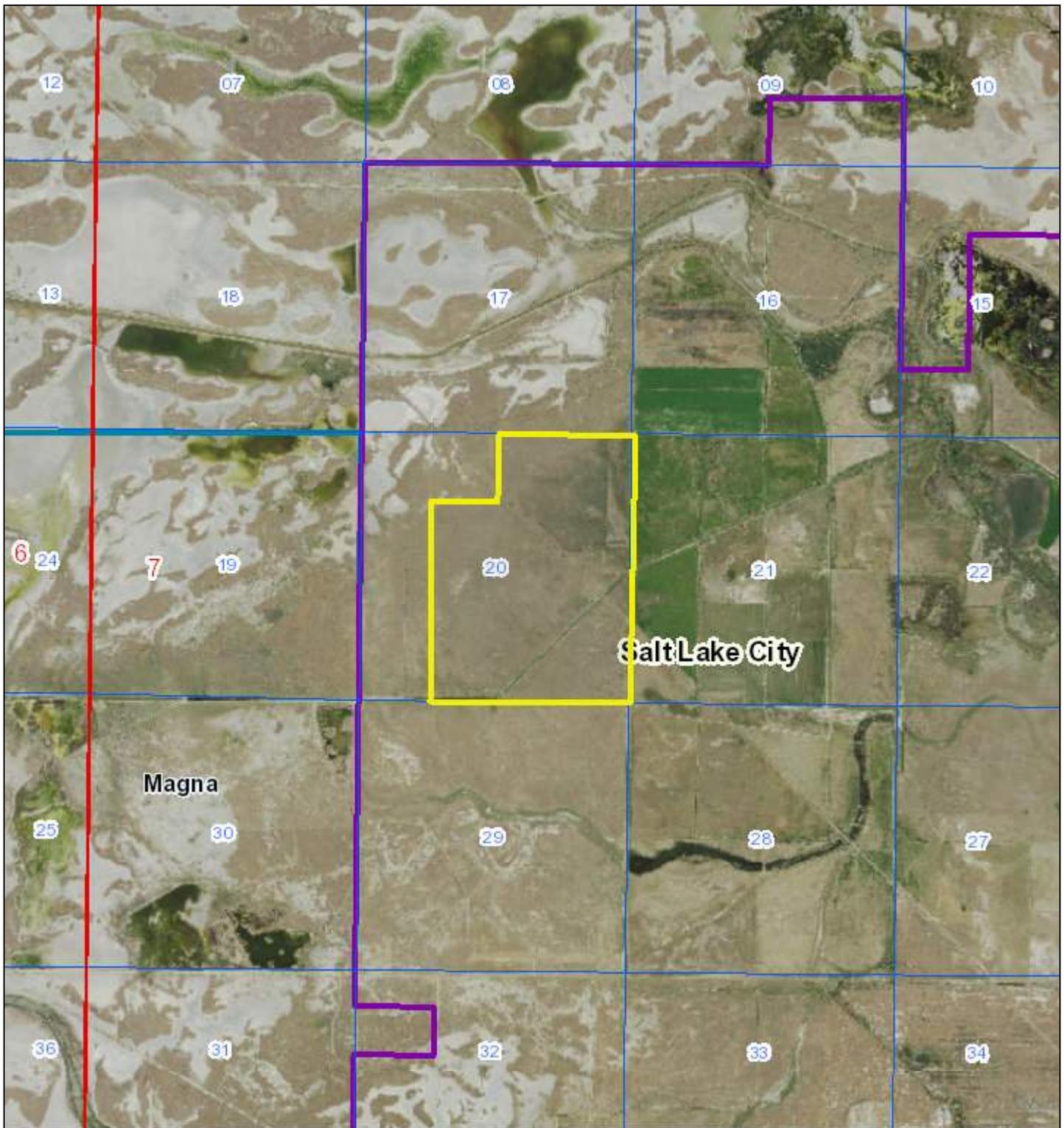
# Epperson Associates, LLC (07203000010000)



October 22, 2015

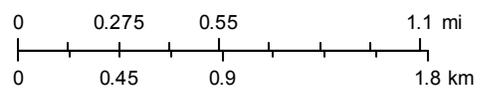


# Richard & Lynn Morehouse Trust (07202000030000)



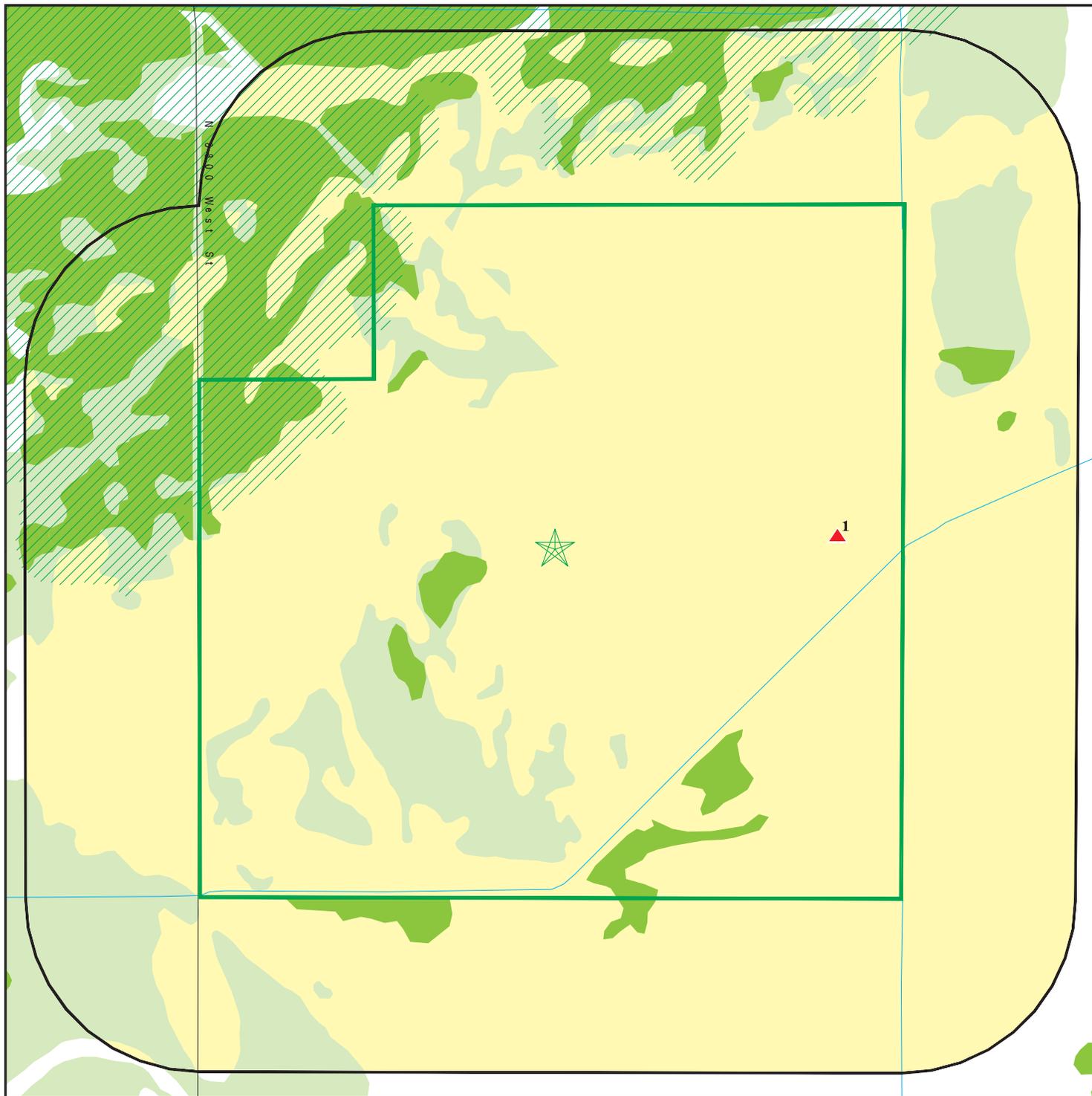
October 22, 2015

1:33,103



## **Appendix B: Hazardous Materials Site Information**

# DETAIL MAP - 4445470.2S



-  Target Property
-  Sites at elevations higher than or equal to the target property
-  Sites at elevations lower than the target property
-  Manufactured Gas Plants
-  Sensitive Receptors
-  National Priority List Sites
-  Dept. Defense Sites

-  Indian Reservations BIA
-  100-year flood zone
-  500-year flood zone
-  National Wetland Inventory
-  State Wetlands



This report includes Interactive Map Layers to display and/or hide map information. The legend includes only those icons for the default map view.

SITE NAME: Utah State Prison Relocation Site West  
 ADDRESS: 2698 North 8800 West  
 Magna UT 84044  
 LAT/LONG: 40.8056 / 112.0916

CLIENT: Lochner  
 CONTACT: Justin Peterson  
 INQUIRY #: 4445470.2s  
 DATE: October 22, 2015 1:20 pm

## MAP FINDINGS SUMMARY

Database	Search Distance (Miles)	Target Property	< 1/8	1/8 - 1/4	1/4 - 1/2	1/2 - 1	> 1	Total Plotted
<b>STANDARD ENVIRONMENTAL RECORDS</b>								
<b><i>Federal NPL site list</i></b>								
NPL	1.000		0	0	0	0	NR	0
Proposed NPL	1.000		0	0	0	0	NR	0
NPL LIENS	TP		NR	NR	NR	NR	NR	0
<b><i>Federal Delisted NPL site list</i></b>								
Delisted NPL	1.000		0	0	0	0	NR	0
<b><i>Federal CERCLIS list</i></b>								
FEDERAL FACILITY	0.500		0	0	0	NR	NR	0
CERCLIS	0.500		0	0	0	NR	NR	0
<b><i>Federal CERCLIS NFRAP site List</i></b>								
CERC-NFRAP	0.500		0	0	0	NR	NR	0
<b><i>Federal RCRA CORRACTS facilities list</i></b>								
CORRACTS	1.000		0	0	0	0	NR	0
<b><i>Federal RCRA non-CORRACTS TSD facilities list</i></b>								
RCRA-TSDF	0.500		0	0	0	NR	NR	0
<b><i>Federal RCRA generators list</i></b>								
RCRA-LQG	0.250		0	0	NR	NR	NR	0
RCRA-SQG	0.250		0	0	NR	NR	NR	0
RCRA-CESQG	0.250		0	0	NR	NR	NR	0
<b><i>Federal institutional controls / engineering controls registries</i></b>								
LUCIS	0.500		0	0	0	NR	NR	0
US ENG CONTROLS	0.500		0	0	0	NR	NR	0
US INST CONTROL	0.500		0	0	0	NR	NR	0
<b><i>Federal ERNS list</i></b>								
ERNS	TP		NR	NR	NR	NR	NR	0
<b><i>State- and tribal - equivalent CERCLIS</i></b>								
SHWS	N/A		N/A	N/A	N/A	N/A	N/A	N/A
<b><i>State and tribal landfill and/or solid waste disposal site lists</i></b>								
SWF/LF	0.500		0	0	0	NR	NR	0
<b><i>State and tribal leaking storage tank lists</i></b>								
LUST	0.500		0	0	0	NR	NR	0
LAST	0.500		0	0	0	NR	NR	0
INDIAN LUST	0.500		0	0	0	NR	NR	0
<b><i>State and tribal registered storage tank lists</i></b>								
FEMA UST	0.250		0	0	NR	NR	NR	0

## MAP FINDINGS SUMMARY

Database	Search Distance (Miles)	Target Property	< 1/8	1/8 - 1/4	1/4 - 1/2	1/2 - 1	> 1	Total Plotted
UST	0.250		0	0	NR	NR	NR	0
AST	0.250		0	0	NR	NR	NR	0
INDIAN UST	0.250		0	0	NR	NR	NR	0
<b><i>State and tribal institutional control / engineering control registries</i></b>								
INST CONTROL	0.500		0	0	0	NR	NR	0
<b><i>State and tribal voluntary cleanup sites</i></b>								
VCP	0.500		0	0	0	NR	NR	0
INDIAN VCP	0.500		0	0	0	NR	NR	0
<b><i>State and tribal Brownfields sites</i></b>								
BROWNFIELDS	0.500		0	0	0	NR	NR	0
<b><u>ADDITIONAL ENVIRONMENTAL RECORDS</u></b>								
<b><i>Local Brownfield lists</i></b>								
US BROWNFIELDS	0.500		0	0	0	NR	NR	0
<b><i>Local Lists of Landfill / Solid Waste Disposal Sites</i></b>								
INDIAN ODI	0.500		0	0	0	NR	NR	0
DEBRIS REGION 9	0.500		0	0	0	NR	NR	0
ODI	0.500		0	0	0	NR	NR	0
<b><i>Local Lists of Hazardous waste / Contaminated Sites</i></b>								
US HIST CDL	TP		NR	NR	NR	NR	NR	0
CDL	TP		NR	NR	NR	NR	NR	0
US CDL	TP		NR	NR	NR	NR	NR	0
<b><i>Local Land Records</i></b>								
LIENS 2	TP		NR	NR	NR	NR	NR	0
<b><i>Records of Emergency Release Reports</i></b>								
HMIRS	TP		NR	NR	NR	NR	NR	0
SPILLS	TP		NR	NR	NR	NR	NR	0
SPILLS 90	TP		NR	NR	NR	NR	NR	0
<b><i>Other Ascertainable Records</i></b>								
RCRA NonGen / NLR	0.250		0	0	NR	NR	NR	0
FUDS	1.000		1	0	0	0	NR	1
DOD	1.000		0	0	0	0	NR	0
SCRD DRYCLEANERS	0.500		0	0	0	NR	NR	0
US FIN ASSUR	TP		NR	NR	NR	NR	NR	0
EPA WATCH LIST	TP		NR	NR	NR	NR	NR	0
2020 COR ACTION	0.250		0	0	NR	NR	NR	0
TSCA	TP		NR	NR	NR	NR	NR	0
TRIS	TP		NR	NR	NR	NR	NR	0



Map ID  
Direction  
Distance  
Elevation

MAP FINDINGS

Site

Database(s)

EDR ID Number  
EPA ID Number

1 SALT LAKE CITY ARMY AIR BASE GUNNERY RANGE

FUDS 1007211599  
N/A

< 1/8  
1 ft. SALT LAKE CITY, UT

Relative:  
Higher

Actual:  
4220 ft.

FUDS:

Federal Facility ID: UT9799F5037  
FUDS #: J08UT0951  
INST ID: 57790  
Facility Name: SALT LAKE CITY ARMY AIR BASE GUNNERY RANGE  
City: SALT LAKE CITY  
State: UT  
EPA Region: 08  
County: SALT LAKE  
Congressional District: 02  
US Army District: Sacramento District (SPK)  
Fiscal Year: 2013  
Telephone: 916-557-7461  
NPL Status: Not Listed  
RAB: Not reported  
CTC: 510  
Current Owner: Other Federal Government; Private Sector  
Current Prog: Not reported  
Future Prog: Not reported  
Acreage: Not reported  
Description: The approximately 6,275-acre site is 10 miles west of Salt Lake City in Salt Lake County, Utah. Visual inspection revealed concrete foundations for approximately 50 to 60 machine and shot gun mounts in thirteen separate shooting ranges. Two large triangular-shaped earthen berms are in Section 29. Thirteen wells are on site, according to records obtained from the Utah Department of Water Resources on 12 June 1992. Records indicate that all wells are flowing. This property is known to contain heavy metals from military and non-military weapons firing. Current use of the site is unknown.  
History: The Salt Lake City Army Air Base Gunnery Range consisted of 40.0 acres acquired by transfer from the Department of Interior, 6212.57 acres by lease, and 24.24 acres easement by donation. The Air Force used the property as a gunnery range. 40.0 acres of public lands were relinquished to the DoI, a lease of 6,212 acres was terminated, and the 24.24 easement acres were quitclaimed to the original owners.  
Latitude: -112.085998535  
Longitude: 40.805999755899

**Appendix C: Documents Obtained From DERR and USACE**



REPLY TO  
ATTENTION OF  
Jerry Vincent  
(CESPK-PM-M)

DEPARTMENT OF THE ARMY  
U.S. ARMY ENGINEER DISTRICT, SACRAMENTO  
CORPS OF ENGINEERS  
1325 J STREET  
SACRAMENTO, CALIFORNIA 95814-2922

Rik Ombach  
Utah Department of Environmental Quality  
Division of Environmental Response and Remediation  
168 North 1950 West  
1st Floor  
Salt Lake City, UT 84114-4840

07 Sep 2006

Re: Transmittal of the *Investigation and Closure Report, Salt Lake City Army Air Base Gunnery Range, Salt Lake County, Utah, September 2006*

Dear Mr. Ombach,

The U.S. Army Corps of Engineers is pleased to provide you with the *Investigation and Closure Report, Salt Lake City Army Air Base Gunnery Range, Salt Lake County, Utah, September 2006* for your files. A finding of No Department of Defense Action Indicated (NDAI) is recommended at this site. An NDAI package will be forthcoming for your review and concurrence on site closure.

If you have any questions, feel free to contact me with any questions at 916-557-7452 or  
Gerald.E.Vincent@usace.army.mil.

Sincerely,

A handwritten signature in blue ink that reads "Jerry Vincent".

Jerry Vincent,  
BRAC/FUDS Section Chief  
U.S. Army Corps of Engineers, Sacramento District  
1325 J Street, Sacramento, CA 95814-2922

Enclosure

Copies Furnished:  
Ty Howard (UDEQ)  
Martin Banks (Stoel Rives LLP)

---

**INVESTIGATION AND CLOSURE  
REPORT  
SALT LAKE CITY ARMY AIR BASE  
GUNNERY RANGE  
SALT LAKE COUNTY, UTAH**

---



**FINAL**

FUDS Property No.: J08UT095100

**Prepared by:**



**US Army Corps  
of Engineers** ®

Sacramento District  
Environmental Design Section

**Prepared for:  
FUDS Program**

**September 2006**

---

## **EXECUTIVE SUMMARY**

The Salt Lake City Army Air Base Gunnery Range (SLCAABGR) consisted of 6,276.81 acres near Salt Lake City, Utah. SLCAABGR was a sub-post of the Salt Lake City Army Air Base and consisted of a series of small arms ground ranges. Military control of the property began on 2 October 1943 and construction was completed on December 17, 1943. By April 1944, the site was declared excess. The actual range use appears to have been four months.

Analysis of a 1946 aerial photograph identified 13 ranges present at SLCAABGR: one skeet range, two moving target (jeep type) ranges, five high tower shotgun turret ranges, two sub-machine gun ranges, one pistol range, one 200-yard known distance rifle range, and one Poorman range. An additional feature thought to be a malfunction range building was also identified. No indication of a current ordnance or explosives hazard is evident at SLCAABGR. No evidence was found indicating chemical warfare training activities associated with the site.

The two moving target (jeep type) ranges (Ranges 2 and 3) and the five high tower shotgun turret ranges (Ranges 4-8) were identified as areas of concern and investigated during this project. Grids were established at specific areas of the ranges and composite soil samples were collected and analyzed for lead in May and June 2004. The U.S. Environmental Protection Agency (EPA) Region 9 Preliminary Remediation Goal (PRG) of 400 mg/kg was selected as the comparison criteria. Grid areas exceeding the comparison criteria were found only at Range 3.

Soil and concrete removal occurred in September 2004 and in May 2006. Soil was removed from seven grid areas at Range 3 where the lead concentrations in the soil exceeded 400 mg/kg. Confirmation sampling verified that lead soil levels were below the comparison criteria in areas where soil was excavated. Backfill of specific areas also occurred. A portion of the excavated soil was mistakenly left on site during the September 2004 activities. This soil was removed from the site in May 2006.

Upon completion of these remedial activities, analytical results in all sampled areas of concern indicated lead soil levels below the comparison criterion. No Department of Defense Action is Indicated at this site and site closure is recommended.

**TABLE OF CONTENTS**

1.0	INTRODUCTION .....	1-1
1.1	Scope of Report.....	1-1
1.2	Project Overview .....	1-1
1.3	Project Objectives .....	1-2
1.4	Regulatory Authority .....	1-2
1.5	Site Background.....	1-3
1.5.1	Site History .....	1-3
1.5.2	Site Features.....	1-4
1.6	Geology.....	1-4
1.6.1	Geology and Physiology .....	1-4
1.6.2	Soils.....	1-5
1.7	Hydrogeology .....	1-6
1.7.1	Surface Water.....	1-6
1.7.2	Groundwater .....	1-6
1.8	Areas of Concern .....	1-7
1.9	Previous Investigations .....	1-8
1.9.1	Inventory Project Report.....	1-8
1.9.2	Preliminary Assessment.....	1-9
1.9.3	Site Inspection Analytical Results Report .....	1-9
1.9.4	Archives Search Report .....	1-9
1.10	Cultural and Environmental Resources .....	1-10
1.11	Project Staffing .....	1-11
2.0	FIELD ACTIVITIES AND RESULTS .....	2-1
2.1	Ambient.....	2-1
2.1.1	Investigation Activities .....	2-1
2.1.2	Evaluation of Results .....	2-1
2.1.3	Conclusion and Recommendation .....	2-2
2.2	Range 2 .....	2-2
2.2.1	Investigation Activities .....	2-2
2.2.2	Evaluation of Results .....	2-2
2.2.3	Conclusions and Recommendations .....	2-3
2.3	Range 3 .....	2-3
2.3.1	Investigation Activities .....	2-3
2.3.2	Evaluation of Results .....	2-5
2.3.3	Soil Excavation and Confirmation Sampling .....	2-6
2.3.4	Evaluation of Results .....	2-7
2.3.5	Conclusions and Recommendations .....	2-7
2.4	Ranges 4-8 .....	2-8
2.4.1	Investigation Activities .....	2-8
2.4.2	Evaluation of Results .....	2-8
2.4.3	Conclusions and Recommendations .....	2-9
2.5	Soil Disposal .....	2-9
2.5.1	Waste Characterization .....	2-9
2.5.2	Transportation .....	2-11

2.6	Concrete Work .....	2-13
2.6.1	Removal .....	2-13
2.6.2	Disposal.....	2-14
2.7	Surface Finishing .....	2-14
3.0	ANALYTICAL DATA – COMPLETENESS AND ACCURACY .....	3-1
3.1	Project Data Overall Completeness and Accuracy .....	3-1
3.2	Lab QC Data Evaluation.....	3-1
4.0	RECOMMENDATIONS AND CONCLUSIONS.....	4-1
4.1	Range 2 .....	4-1
4.2	Range 3 .....	4-1
4.3	Ranges 4-8 .....	4-1
5.0	REFERENCES .....	5-1

### LIST OF TABLES

Table 1-1	Salt Lake County, Utah-Hydrologic Unit Code 16020204.....	1-6
Table 1-2	Listed, Threatened or Endangered Species Potential Habitat .....	1-11
Table 2-1	Ambient Samples – Soil Sampling Results.....	2-1
Table 2-2	Range 2 – Soil Sampling Results .....	2-3
Table 2-3	Range 3 – Soil Sampling Results .....	2-5
Table 2-4	Range 3 – 2004 Confirmation Sample Results .....	2-7
Table 2-5	Ranges 4-8 – Soil Sampling Results .....	2-8
Table 2-6	Range 3 – Stockpiled Soil Sample Results .....	2-10
Table 2-7	Range 3 – Disposal Soil Sample Results .....	2-12
Table 2-8	Range 3 – 2006 Confirmation Sample Results .....	2-13

### FIGURES

Figure 1	Vicinity Map
Figure 2	Firing Line Locations
Figure 3	Range Fans
Figure 4	Ranges 2 & 3 Sampling Grid Locations
Figure 5	Ranges 4-8 Sampling Grid Locations
Figure 6	Sample Grids
Figure 7	Range 2 Sampling Grid IDs and Lead Results (Southern End of Embankment)
Figure 8	Range 3 Sampling Grid IDs and Lead Results (Southern End of Embankment)
Figure 9	Range 3 Sampling Grid IDs and Lead Results (Northern End of Embankment)
Figure 10	Ranges 4-8 Sampling Grid IDs and Lead Results
Figure 11	Range 3 Soil Removal Location Sampling Grids and Results

### APPENDICES

Appendix A	Photographs
Appendix B	Chain of Custody Forms and Laboratory Receiving Checklist
Appendix C	Analytical Data

Appendix D    Chemical Data Quality Assessment Report  
Appendix E    Manifests and Bills of Lading

## ACRONYMS AND ABBREVIATIONS

APCL	Applied Physics and Chemistry Laboratory
ASR	Archive Search Report
bgs	below ground surface
C & T	Curtis and Tompkins
COPCs	contaminants of potential concern
DERP	Defense Environmental Restoration Program
DoD	Department of Defense
EMAX	EMAX Laboratories, Inc.
EPA	Environmental Protection Agency
FUDS	Formerly Used Defense Site
GPS	Global Positioning System
mg/kg	milligrams per kilogram
NAD	North American Datum
OE	Ordnance and Explosives
PA	Preliminary Assessment
PRG	Preliminary Remedial Goal
QAPP	Quality Assurance Project Plan
QC	Quality Control
RPD	Relative Percent Difference
SI	Site Inspection
SLCAABGR	Salt Lake City Army Air Base Gunnery Range
UDEQ	Utah Department of Environmental Quality
UDERR	UDEQ, Division of Environmental Response and Remediation
ug/l	micrograms per liter
USACE	U.S. Army Corps of Engineers
USFWS	U.S. Fish and Wildlife Service
UTM	Universal Transverse Mercator
WP	Work Plan

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**INVESTIGATION AND CLOSURE REPORT**  
**SALT LAKE CITY ARMY AIR BASE**  
**GUNNERY RANGE**  
**SALT LAKE COUNTY, UTAH**

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## **1.0 INTRODUCTION**

### **1.1 Scope of Report**

This report summarizes the site activities conducted at the Salt Lake City Army Air Base Gunnery Range (SLCAABGR), located in Salt Lake County, Utah, about 5 miles west of the Salt Lake City International Airport (Figure 1). The purpose of the site investigation, as described in the Work Plan (WP) (*Site Inspection Work Plan, Salt Lake City Army Air Base Gunnery Range, Salt Lake County, Utah* (USACE, 2004b)) was to adequately characterize possible lead soil contamination at the site, with the goal of determining if lead contamination from Department of Defense (DoD) activities conducted at the former gunnery range existed at concentrations requiring further action. The WP was modified by an Addendum (*Addendum to Site Inspection Work Plan, Salt Lake City Army Air Base Gunnery Range, Salt Lake County, Utah* (USACE 2004d)). The Addendum incorporated into the WP the remedial activities (concrete removal and contaminated soil excavation) deemed necessary for site closure. The scope of this report includes the field activities and procedures, analytical results of the soil samples, evaluation of analytical results, and conclusions and recommendations.

SLCAABGR is a Formerly Used Defense Site (FUDS) under the Defense Environmental Restoration Program (DERP). The overriding direction for this work comes from the U.S. Army Corps of Engineers (USACE) Formerly Used Defense Sites Program Policy, Engineer Regulation 200-3-1 (USACE 2004a).

### **1.2 Project Overview**

The investigation was designed to provide USACE and the Utah Department of Environmental Quality (UDEQ) with sufficient information regarding the presence of lead contamination from DoD firing range activities to determine if additional evaluation or action was necessary at the SLCAABGR. The sampling strategy was determined through the assessment of historic site activities and a review of existing documents. Activities consisted of

collecting and analyzing soil samples at various locations around the site as well as visually inspecting other areas for evidence of military munitions.

All site investigation sampling was performed by the USACE, Sacramento District, or their contractors, in accordance with the WP and Addendum. The data collected were compared against the established comparison criteria and the project objectives. Determinations regarding adverse impacts were made using the US Environmental Protection Agency (EPA) Region 9 Residential Preliminary Remediation Goal (PRG) value for lead, 400 milligrams per kilogram (mg/kg). Initial field work was conducted from May 24 through May 28, 2004. Initial results indicated lead contamination exceeding the PRG. In order to delineate the lead contamination, step-out soil sampling occurred June 17 and June 18, 2004.

Site closure activities were conducted in accordance with the WP Addendum, and consisted of soil excavation, confirmation sampling, and removal of a number of concrete pads and pits. These remedial activities occurred September 3 through October 1, 2004.

### **1.3 Project Objectives**

The investigation was designed to provide USACE and UDEQ with sufficient information regarding the presence of lead contamination from DoD firing range activities to determine if additional evaluation or action is necessary. The original project objective was to determine if the soil had been adversely impacted by the contaminant of potential concern (COPC), lead, from historical DoD activities, and, if so, to delineate the extent of contamination. This included the assessment of historic site activities to determine range usage, review of existing documents, visual inspection of portions of the site for military munitions, analyzing soil for lead, evaluation of additional sampling actions that may need to be taken. After reviewing the analytical results from sampling and discussing the alternatives with UDEQ and the property owner, the WP Addendum was written to perform the remedial activities needed for site closure. This included assessment of areas to be excavated, the excavation of specific sections, and confirmation sampling. In addition, some concrete removal was performed.

### **1.4 Regulatory Authority**

The local regulatory agency involved in the project oversight is the UDEQ, Division of Environmental Response and Remediation (UDERR). This Investigation and Closure Report

and the final report for all activities shall be provided to their representative for review and comment. USACE will respond to those comments in writing and the Project Manager will negotiate any discrepancies with the regulatory agency. Rik Ombach is the point of contact at UDERR for this project.

## **1.5 Site Background**

### **1.5.1 Site History**

The SLCAABGR consisted of 6,276.81 acres near Salt Lake City, Utah, located in Salt Lake County (see Figure 1). SLCAABGR was a sub-post of the Salt Lake City Army Air Base and consisted of a series of small arms ground ranges. Military control of the property began on 2 October 1943 although construction at the site was not completed until December 17, 1943. By April 22, 1944, the site was declared excess. Actual range use appears to have been approximately four months. On May 31, 1944, the Army completed terminating the leases for the gunnery range accounting for all but 64 acres of the site. It would take another six years before that acreage, which included two easements and a tract acquired from the Department of the Interior by an informal permission, officially left DoD control, but this is ostensibly the result of oversight and not due to continued use (USACE, 2003).

Ordnance and explosive (OE) related features of the former sub-post included approximately 13 small arms ranges arranged in a single east-west firing line that included a skeet range, moving target (jeep type) ranges (2), high tower shotgun turret ranges (5), sub machine gun ranges (2), pistol range, 200-yard known distance rifle range and a Poorman range. An additional feature thought to be a malfunction range building was also identified. No evidence was found to indicate there were chemical warfare training activities associated with the site (USACE, 2003). Figure 2 shows the general locations of the range firing lines. During a site visit conducted by the UDERR, the following types of spent ammunition were found at the SLCAABGR: .50, .45, .38, and .30 caliber and 9 millimeter shells (UDERR, 1997).

Prior to World War II, the land on which the SLCAABGR was built was open land used for grazing. The majority of the land was owned by various families and family entities. Except for the period from October 1943 to May 1944 when the property was in use by the military, ownership of this majority of the property continued with these and other families. Part of the property was leased to E.I. DuPont de Nemours Company and the Atlas Powder Company in the

1970s and 1980s. These companies reportedly used the abandoned buildings for storing mining explosives (Dynamac, 1992). Since that time, the land has been intermittently used for cattle grazing (Banks, 2004). The western portion of the former SLCAABGR is now designated as the Inland Sea Shorebird Reserve and the eastern side is home to the Baileys Lake Duck Club. The remainder of the site is being used for cattle grazing.

### **1.5.2 Site Features**

The SLCAABGR encompassed seven complete and five partial sections of Township 1 North, Range 2 West, and a portion of one section of Township 1 North, Range 3 West, Salt Lake Meridian. The land can be described as flat and generally has low sparse grassy vegetation. The northern-most portion of the ranges extended into the mudflats at the southern edge of the Great Salt Lake. While none of the original construction drawings are available, there were apparently several buildings on the original range and several more were added after the military vacated the site. The existing buildings were reportedly burned down in the 1980s (Banks, 2004).

The most prominent features on the site are two triangular earthen embankments located in the southwest portion of the former SLCAABGR. The embankments are approximately 900 feet long on each side with an opening into the center (Dynamac, 1992). A number of building foundations, concrete and raised concrete block, can be found on site. Concrete foundations for approximately 50-60 gun mounts were identified during the 1992 site visit by Dynamac. All the ranges were designed for horizontal ground-to-ground firing with maximum projectile height of 25 feet. This negated the need for Interdepartmental Air Traffic Control Board approval (USACE, 2003).

Five of the 13 ranges on the east side of the site lie within the boundaries of either the Jolly Cattle Company or the Baileys Lake Duck Club properties.

## **1.6 Geology<sup>1</sup>**

### **1.6.1 Geology and Physiology**

The former SLCAABGR is located within the Great Basin section of the Basin and Range physiographic province. The Basin and Range province is characterized by long narrow

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<sup>1</sup> Reference: *Archives Search Report, Salt Lake City Army Air Base Gunnery Range, Interim Report*, U.S. Army Corps of Engineers, Huntsville Engineering and Support Center, September 2003.

mountain ranges, tilted fault blocks, alternating with intermountain basins partially filled with gravel and sand derived from the mountains.

The Great Salt Lake Desert is a large playa derived from the largest and best known of the Pleistocene Great Basin lakes, Lake Bonneville. Present-day lakes that are remnants of Lake Bonneville are Great Salt Lake north of the site, Sevier Lake south of the site, and Lake Utah southeast of the site. Former levels of Lake Bonneville are indicated by shorelines and associated deltas, bars, deposits of calcareous tuff, wave-cut niches in bedrock and other shoreline features, as well as sedimentary deposits consisting of gravel, sand, silt, and clay.

Previous to the development of Lake Bonneville in Pleistocene time, the western deserts of Utah were subjected to the following: mid-Tertiary to present-day crustal stretching, resulting in normal and detachment faulting and creating the linear mountain ranges and desert basins with simultaneous infilling of intermountain basins with sediment derived from the mountains, and with volcanic outpourings; a mid-Tertiary regional uplift, with doming of the area as much as 5,000 feet; igneous activity, with associated intrusions and huge volcanic outbursts, in mid-Tertiary (Eocene to early Miocene time); Cretaceous age thrust faulting, resulting in development of the Seiver Mountain belt .

The site surface is relatively flat. The highest and lowest elevations are within 10 feet of 4,220 feet above mean sea level. There are no physical surface characteristics that disturb the land surface other than the two previously mentioned embankments.

### **1.6.2 Soils**

In the simplest terms, the primary soil type at the SLCAABGR can be described as clay and/or sand with stone. The soils are very deep and well drained. They were formed from alluvium that was derived from limestone, quartzite, and lacustrine sediments. The majority of the surface layer is composed of grayish brown and brown stony, very gravelly sandy silty clay about 10 inches deep. The subsoil layer consists of pale brown, gravelly sandy silty clay to a depth of 20 inches. The lower subsoil layer is composed of very pale brown, very gravelly sandy silty clay to a depth of over 60 inches. The permeability of the soil is moderately rapid; the available water capacity is moderate; and runoff is medium. .

During the site inspections and remedial activities it was determined that the soils at Range 2 consist of gravelly silt, with some sand, and soils at Range 3 consist of sandy silt, with

some gravel. Soils at the ambient sites and Ranges 4-8 were similar, and consisted of sandy silt, with some gravel.

## 1.7 Hydrogeology<sup>2</sup>

### 1.7.1 Surface Water

The site area has a +/- 5-foot change in elevation throughout with the exception of the triangular earth embankments for the moving target (jeep type) ranges. Runoff at the site will flow north-northwest into the Great Salt Lake. Several canals also cross the site carrying water to the Great Salt Lake. A U.S. Geological Survey gage is located on the Goggin Drain near the center of the site. Estimated historic peak flow at this gage was recorded on June 13, 1983 at 1,560 CFS. Annual mean streamflow from this gage is reported below in Table 1-1.

**Table 1-1 Salt Lake County, Utah – Hydrologic Unit Code 16020204**

Latitude 40°49'00", Longitude 112°06'00" NAD27

Drainage area 0.01 square miles; Gage datum 4,204.00 feet above sea level NGVD29

Year	Annual mean streamflow in ft <sup>3</sup> /s	Year	Annual mean streamflow in ft <sup>3</sup> /s	Year	Annual mean streamflow in ft <sup>3</sup> /s
1964	53.6	1974	193	1979	142
1965	57.4	1975	233	1980	244
1966	25.3	1975	217	1981	172
1972	139	1977	28.7	1982	463
1973	155	1978	28.7	1983	463

### 1.7.2 Groundwater

The groundwater, at depth, of the former SLCAABGR is most likely recharged by mountain precipitation which enters bedrock fractures and flows downgradient and eventually enters the lake bed or by runoff into alluvial or colluvial sediments flanking the mountain ranges and interfingering with the basinal lake sediments. Ground water has been developed mostly from aquifers in unconsolidated fill deposits that underlay the basins of the Basin and Range

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<sup>2</sup> Reference: *Archives Search Report, Salt Lake City Army Air Base Gunnery Range, Interim Report*, U.S. Army Corps of Engineers, Huntsville Engineering and Support Center, September 2003.

province. However, substantial quantities of ground water also occur in and move through the consolidated carbonate rocks that comprise parts or most of the mountain ranges and underlie many of the basins. The water in these rocks is under pressure and wells drilled into these underlay rocks will actually flow at the surface.

The basin fill is the major surficial hydrogeologic unit. Groundwater occurs within the basin fill in shallow unconfined units and, at depth, in confined aquifer units. In most basins, the permeable sands and gravels that yield potable water readily to wells occur in the upper 700 to 1,500 feet of sediment. Ground water is generally unconfined in the uppermost tens of feet and confined in the lower parts of the basins, located away from the mountain fronts. Carbonate rocks consisting of massive to thinly bedded limestones and dolomites with silty and sandy interbeds represent a secondary hydrogeologic unit. The carbonate rocks range in thickness from about 500 to 25,000 feet. Regional transmittal of groundwater occurs from the carbonate rocks to the upper lake sediment aquifer.

Depth to water in the site area ranges from near ground surface to 50 feet below ground surface. The vertical hydraulic conductivity of the fine-grained beds in the basin fill that function as confining or semi-confining beds for the principal artesian aquifers has been calculated from aquifer-test data. Values of 0.0006 and 0.12 foot per day were obtained in the Sevier Desert, to the west of the site, and the Salt Lake Valley, to the east of the site, respectively. The basin-fill water is typically too saline to use for any domestic purpose without treatment.

## **1.8 Areas of Concern**

The analysis of a 1946 aerial photograph identified thirteen specific areas as probable ranges and one area as a malfunction range building as noted in the Archives Search Report, *Salt Lake City Army Air Base Gunnery Range, Interim Report*, (USACE, 2003). Figure 2 shows the range firing line areas while Figure 3 shows the approximate range fans based on the type of munition fired at the individual range. Descriptions of each range and justification for conducting or not conducting an evaluation of the area are provided in the WP. Areas evaluated in the site inspection are described below:

- **Ambient:** Since metals are both naturally occurring in the environment and have been introduced to the area by hunters, ambient concentrations were required to

assess if there is contamination from sources other than from DoD firing range practices. Naturally occurring concentrations are not considered contamination. Contamination due to hunting was assumed to be fairly evenly distributed. Ambient sampling locations were selected at areas close to the sites, but not within areas expected to have been impacted by DoD activities. The areas evaluated for ambient conditions lie south of Range 2, Range 3, and Ranges 4-8 (see Figure 4).

- **Ranges 2 and 3:** Moving Target (jeep type) Ranges – These two ranges, located in the southwest portion of the SLCAABGR site, are nearly identical and are recognizable by the two triangular earthen embankments situated side-by-side (approximately 2,000 feet north of the southern border of the site). A jeep with a target mounted above it would drive the interior of the triangular embankment while .50 caliber machine guns were fired from one of several firing lines. The Range 2 appeared to have had three firing lines while Range 3 had two firing lines. It is likely that two storage buildings were present south of the firing lines during military occupation.
- **Ranges 4 through 8:** High Tower Shotgun Turret Ranges – Near the southern boundary of the SLCAABGR site (to the southeast of Ranges 2 and 3) there are five groups of six concrete emplacements (each approximately 15-foot square) spaced along 1,400 feet. These apparently were shotgun mounting pads. The fan of the shotgun ranges extends a short distance (approximately 900 feet) to the north of the concrete pads. Also, it is likely that a storage building was located south of these ranges as noted by a graded area identified in the 1946 aerial photograph.

## 1.9 Previous Investigations

### 1.9.1 **Inventory Project Report**

On behalf of the USACE, Sacramento District, Dynamac Corporation conducted a site survey of the property in 1992 resulting in an Inventory Project Report dated July 1992.

Dynamac reviewed several aerial photographs, interviewed local owners and residents, and examined the property for existing features and evidence of debris. The report concluded that the site qualified for inclusion in the FUDS program and recommended that the site be evaluated by USACE, Huntsville District, for determination of further action (Dynamac, 1992).

### **1.9.2 Preliminary Assessment**

The UDERR conducted a Preliminary Assessment (PA) in 1997 and the results were published in October of the same year. The purpose of the PA was to determine the likelihood of contamination, identify potential exposure pathways, and gather information on the status of the site. The PA concluded that spent munitions were left on-site from previous site activities and that there was a possibility that hazardous wastes may have been left behind since site operation connected to the military gunnery range ceased. The report outlined potential exposure scenarios but recognized that there were few people in the area to serve as target receptors and no drinking water sources within four miles of the site. While no specific recommendations for further work were made, the report did state that the exact size and boundaries of the affected area might be the subject for future investigations (UDERR, 1997).

### **1.9.3 Site Inspection Analytical Results Report**

The UDERR conducted a Site Inspection (SI) in early 2000 and published their findings in a January 2001 report. During the SI, nine surface soil samples and two sediment samples were collected in the vicinity of the earthen embankments. One soil sample and one sediment sample were collected as background samples. Seven metals (antimony, arsenic, calcium, copper, lead, silver and sodium) were found in surface soils at concentrations three or more times greater than the background sample. Sediment samples showed no elevated levels of any metals above background, indicating that the surrounding wetlands and drainages have not been impacted by site activities. Only one sample exceeded the EPA Region 9 PRG of 400 mg/kg for lead. This occurred in the sample collected from the south side of the eastern-most earthen embankment (Range 3), leading to the conclusion that elevated levels of metals appear to be in localized areas of the embankments. Although the soil exposure pathway was confirmed, the pathway is limited as no residents or workers are on-site on a regular basis. The report concluded a more thorough evaluation of other pathways was needed to determine if contamination was being released via the groundwater, surface water, or air pathways (UDERR, 2001).

### **1.9.4 Archives Search Report**

The USACE, St. Louis District, conducted an archives search during 2003 and issued the

Archive Search Report, Salt Lake City Army Air Base Gunnery Range, Final Report (USACE, 2004c) in September 2004. The ASR evaluated the hazards associated with OE at SLCAABGR. The ASR findings stated that the site had been in use as a small arms range for less than six months and included 13 ranges and a malfunction range building. The types of ranges noted in the report were: skeet range, moving target (jeep type) ranges (2), high tower shotgun turret ranges (5), sub-machine gun ranges (2), pistol range, 200-yard known distance rifle range, and a Poorman range (see Figure 2). The Poorman range was likely never used. An additional feature thought to be a malfunction range building was also identified.

The ASR team did not find any overt indication of a current OE hazard at SLCAABGR, and no evidence was found to indicate there were chemical warfare training activities associated with the site. A risk assessment code hazard ranking of “5” was assigned meaning there is no evidence that a hazard has been, or will be, created on a FUDS due to the presence of OE (USACE, 2004d).

### **1.10 Cultural and Environmental Resources**

The Utah State Historic Preservation Office was contacted regarding SLCAABGR during the writing of the ASR. At that time, there were no known culturally significant historic or archeological sites in the vicinity but no surveys have been completed along the south shore of the Great Salt Lake. This should not be construed to mean that no culturally significant sites exist, especially given discoveries over the years along the lake margins, which indicate the potential for buried archeological sites and buried human remains are high (USACE, 2003). However, the surface and shallow subsurface soil sampling conducted during this event took place primarily in areas far from the lake margins. These areas have been previously disturbed and it was not expected that any historically or archeologically significant objects would be encountered. In fact, no evidence of culturally significant historic or archeological sites was noted during this investigation.

The U.S. Fish and Wildlife Service (USFWS) and the Utah Division of Wildlife Resources have indicated that the following federally and/or state listed, proposed, candidate, species of concern, and critical habitats may occur within or near the former SLCAABGR (USACE, 2003).

**Table 1-2 Listed, Threatened or Endangered Species Potential Habitats**

Species Common Name	Scientific Name	Group	Federal Status	State Status
American white pelican	<i>Pelecanus erythrorhynchos</i>	Bird		SC
Bald eagle	<i>Haliaeetus leucocephalus</i>	Bird	T	
Western yellow-billed cuckoo	<i>Coccyzus americanus occidentalis</i>	Bird	C	
Peregrine falcon	<i>Falco peregrinus</i>	Bird		E
Long-billed curlew	<i>Numenius americanus</i>	Bird		SC
Burrowing owl	<i>Athene cunicularia</i>	Bird		SC
June sucker	<i>Chasmistes liorus</i>	Fish	E	E
Bonneville cutthroat trout	<i>Oncorhynchus clarki utah</i>	Fish	CA	CS
Western toad	<i>Bufo boreas</i>	Amphibian		SC
Ute ladies' -tresses	<i>Spiranthes diluvialis</i>	Plant	T	
Slender moonwort	<i>Botrychium lineare</i>	Plant	C	

**Federal Status:** E – Endangered, T – Threatened, C – Candidate, CA - Conservation Agreement

**State Status:** E – Endangered, SC – Species of Concern, CS – Conservation Species

No additional information on the occurrence of rare or endangered species or natural communities is known at this time. The fieldwork conducted during this event took place primarily in areas far from the lake margin, and plant growth in the area was sparse.

### **1.11 Project Staffing**

The USACE, Sacramento District, performed the fieldwork and wrote this report.

#### USACE Team Members

Project Manager	Meegan Nagy and Jerry Vincent
Technical Team Lead	Eileen McBride
Project Chemist	Pam Wehrmann
Project Geologist	April Fontaine
Industrial Hygienist	Donna Maxey
Data Validation Chemist	John Yaremchuk
Environmental Engineer	James Stellmach

#### Contract Team Members

GIS Specialist	Ben Mundell (EM Assist, Inc.)
Analytical Laboratories	Eric Wendland (APCL)

Pat Flynn (Curtis & Tompkins, C&T)

Richard Beauvil (EMAX Laboratories, Inc.)

Excavation/Backfill Activities

EM Assist, Inc.

All laboratories are State of Utah certified and have been reviewed for compliance with the standards set in the DoD Quality Systems Manual for Environmental Laboratories. APCL and EMAX performed sample preparation and analyses of primary samples. APCL would have been used for all primary samples had they not changed their business structure prior to the field work conducted in 2006. APCL no longer analyzes environmental samples. C&T performed sample preparation and analyses of disposal samples.

## 2.0 FIELD ACTIVITIES AND RESULTS

Field activities were performed in accordance with the WP and the WP Addendum. Any deviations from these plans were minor and are noted in the text below. All soil samples were analyzed for lead, using EPA Method SW-846 6010C. The *Site Safety and Health Plan* (USACE 2004c) developed for this sampling event was adhered to during all sampling activities. Sample locations were recorded using a Trimble Global Positioning System (GPS). The reference grid is North American Datum (NAD) 1983, Universal Transverse Mercator (UTM), Zone 12N (meters).

### 2.1 Ambient

#### 2.1.1 Investigation Activities

Seven composite ambient samples, two samples each from the areas south of the firing lines at Ranges 2 and 3, and three samples from the area south of the firing line at Ranges 4-8, were collected (see Figure 4). For each ambient sample, twelve sub-samples were composited from surface soil collected from 0 to 2 inches below ground surface (bgs) (see Figure 6). One composite ambient sample was collected per 10' by 20' grid (see Figure 5).

#### 2.1.2 Evaluation of Results

Ambient sample results ranged from 27.2 mg/kg to 98.8 mg/kg. Results are shown in Table 2-1.

**Table 2-1 Ambient Samples – Soil Sampling Results (all results: mg/kg)**

Grid Number	Result (mg/kg)	Notes	Field Dup. RPD <sup>a</sup>
G1	38.2	South of R2	
G2	87.4	South of R2	
G3	27.2	South of R3	
G4	75.0	South of R3	
G5	98.8	South of R4/8	
G6	77.9	South of R4/8	
G7	83.7	South of R4/8	
G8	61.6	Duplicate of G7	30.4 %

Notes:

<sup>a</sup> RPD = Relative Percent Difference between primary sample and field duplicate. Measure of sampling precision; project goal of RPD <50% for soil duplicate QC pairs.

mg/kg = milligrams per kilogram

### 2.1.3 Conclusion and Recommendation

All of the results of the ambient sampling were less than the EPA Region 9 PRG for lead of 400 mg/kg. Ambient sample results were only to be applicable as the comparison criterion if higher than the PRG. Since all ambient sample results were below the PRG, the PRG became the sole comparison criterion.

## 2.2 Range 2

### 2.2.1 Investigation Activities

The following activities were conducted in May 2004 at Range 2:

- Composite samples from Range 2 were collected from each of 15 grid locations on the southern end of each earthen embankment (see Figures 4 and 7). Each grid was approximately ten feet by twenty feet. Each composite sample consisted of twelve sub-samples from each of the grids as shown in Figure 6. Each of the sub-samples was collected from depths of 0 to 6 inches bgs.
- A visual inspection of the area immediately to the south of the southern tip of the embankment was conducted. This area was visually inspected to a distance 40 feet out from the proposed sampling area. If bullet density exceeded 15 bullets per square yard (high bullet density), sampling would have been conducted. No areas of high bullet density were noted, therefore no additional sampling occurred in this area.
- A visual inspection of the interior portion of the northern wall of the earthen embankment was conducted. Although some DoD and non-DoD munitions were identified, no areas of high bullet density were noted, so no additional sampling occurred at Range 2. Photographs taken during the visual inspection are presented in Appendix A.

### 2.2.2 Evaluation of Results

None of the lead results exceeded the comparison criterion of 400 mg/kg. Results are shown in Table 2-2.

**Table 2-2 Range 2 – Soil Sampling Results (all results: mg/kg)**

Grid Number	Result (mg/kg)	Notes	Field Dup. RPD <sup>a</sup>
G1	27.7	Western side of embankment	
G2	27.2	Western side of embankment	
G3	29.1	Western side of embankment	
G4	26.5	Western side of embankment	
G5	37.1	Western side of embankment	
G6	51.9	Western side of embankment	
G7	60.8	Western side of embankment	
G8	93.4	Southern most tip of embankment	
G9	82.2	Eastern side of embankment	
G10	50.0	Eastern side of embankment	
G11	93.9	Eastern side of embankment	
G12	46.3	Eastern side of embankment	
G13	43.7	Eastern side of embankment	
G14	38.5	Eastern side of embankment	
G15	58.8	Eastern side of embankment	
G16	52.8	Duplicate of G15	10.8 %

Notes:

<sup>a</sup> RPD = Relative Percent Difference between primary sample and field duplicate. Measure of sampling precision; project goal of RPD <50% for soil duplicate QC pairs.  
mg/kg = milligrams per kilogram

### 2.2.3 Conclusions and Recommendations

At Range 2, composite samples were collected from 15 grids and analyzed for lead. None of the analytical results from the 15 grids exceeded the 400 mg/kg comparison criterion. Analytical results were discussed with UDEQ and the property owner. No DoD action indicated (NDAI) is recommended at Range 2.

## 2.3 Range 3

### 2.3.1 Investigation Activities

Because spent .50 caliber bullets have been found previously in the embankment at Range 3, and previous sampling in that area indicated some localized soil contamination, the following activities were conducted at Range 3 in May 2005:

- Composite samples from Range 3 were collected from each of 15 grid locations on the southern end of each earthen embankment (see Figures 4 and 8). Each grid was approximately ten feet by twenty feet. Each composite sample consisted of twelve sub-samples from each of the grids as shown in Figure 6. Each of the sub-

samples was collected from depths of 0 to 6 inches bgs.

- A visual inspection of the area immediately to the south of the southern tip of the embankment was conducted. This area was visually inspected to a distance 40 feet out from the proposed sampling area. If bullet density exceeded 15 bullets per square yard (high bullet density), sampling would have been conducted. No areas of high bullet density were noted, therefore no additional sampling occurred in this area.
- A visual inspection of the interior portion of the northern wall of the earthen embankment was conducted. Both DoD and non-DoD munitions were identified, however, several areas of high bullet density for .50 caliber bullets were noted. Six grid areas were delineated and sampling conducted (grids G17-G22 – see Figures 4 and 9). Photographs taken during the visual inspection are presented in Appendix A.

Initially, composite samples were collected from each of 15 grid locations on the southern end of the earthen embankment (Grids 1-15, with sample G16 a duplicate sample of G15). Upon analysis of the preliminary sample results, six of these sample concentrations exceeded the comparison criterion (see Table 2-3).

Eight step-out sampling grids were identified to be sampled during the June 17-18, 2004 sampling event in order to delineate the horizontal extent of the areas of contamination. Step-out grids were established at the toe and sides of the six grids that had lead results exceeding the PRG for lead of 400 mg/kg. Each grid was ten feet by twenty feet. Each composite sample consisted of twelve sub-samples from each of the grids as shown in Figure 6. Each of the sub-samples was collected from depths of 0 to 6 inches bgs. Due to a measuring error, two samples (G31 and G31/32) were collected in addition to the one originally planned for collection at the toe of G11. Because the result at grid G15 was over 700 mg/kg, two samples (G35 and G36) were collected in addition to G33 and G34 to minimize the chances of having to return to the site to conduct further step-out sampling. None of the step-out sample results exceeded 400 mg/kg. See Figure 8 for the grid layout and Table 2-3 for sampling results.

A visual inspection of the area immediately to the south of the southern tip of the embankments was conducted. This area was visually inspected to a distance 40 feet out from the

proposed sampling area. No areas of high bullet density were noted, therefore, no sampling occurred in these areas.

A visual inspection of the interior portion of the northern wall of the earthen embankment was conducted, and areas of high bullet density were noted. Photographs taken during the visual inspections show spent DoD and non-DoD munitions as well as non-DoD refuse used as shooting targets (see Appendix A). Sampling occurred in three areas of high bullet density. These areas were sectioned into six grids (Grids 17-22, each 10 feet by 20 feet) with the high-density areas being in the center of the grid. Based upon the preliminary analytical results, only the results from grid G22 exceeded the PRG for lead of 400 mg/kg. Three step-out sampling grids (Grids 23-25) were identified and sampled during the June 2004 sampling event in order to delineate the horizontal extent of the areas of contamination (see Figures 4 and 9). A composite sample was collected from each grid consistent with the previous sampling method (twelve subsamples from depths of 0 to 6 inches bgs).

### 2.3.2 Evaluation of Results

For Range 3, seven of the original sample results (and one duplicate sample result, G16) exceeded 400 mg/kg. None of the step-out samples exceeded 400 mg/kg. Results are shown in Table 2-3.

**Table 2-3 Range 3 – Soil Sampling Results (all results: mg/kg)**

Grid Number	Result (mg/kg)	Notes	Field Dup. RPD <sup>a</sup>
G1	<b>458</b>	Western side of embankment	
G2	145	Western side of embankment	
G3	134	Western side of embankment	
G4	78.3	Western side of embankment	
G5	<b>823</b>	Western side of embankment	
G6	<b>1090</b>	Western side of embankment	
G7	<b>432</b>	Western side of embankment	
G8	68.6	Southern-most tip of embankment	
G9	186	Eastern side of embankment	
G10	394	Eastern side of embankment	
G11	<b>408</b>	Eastern side of embankment	
G12	105	Eastern side of embankment	
G13	165	Eastern side of embankment	
G14	368	Eastern side of embankment	
G15	<b>772</b>	Eastern side of embankment	
G16	<b>733</b>	Duplicate of G15	5.2 %
G17	59.2	Inside north edge of embankment	

Grid Number	Result (mg/kg)	Notes	Field Dup. RPD <sup>a</sup>
G18	37.5	Inside north edge of embankment	
G19	239	Inside north edge of embankment	
G20	74.2	Inside north edge of embankment	
G21	74.7	Inside north edge of embankment	
G22	<b>1230/554<sup>b</sup></b>	Inside north edge of embankment	
G23	76.3	West side of G22	
G24	118	East side of G22	
G25	44.1	At the toe of G22	
G26	68.9	West side of G1	
G27	123	At the toe of G1	
G28	395	At the toe of G5	
G29	330	At the toe of G6	
G30	344	At the toe of G7	
G31	119	At the toe of G9/G10	
G31/32	108	At the toe of G10/G11	
G32	148	At the toe of G11/G12	
G33	392	At the toe of G15	
G34	141	East side of G15	
G35	199	At the toe of G34	
G36	78.4	East side of G34	

Notes:

<sup>a</sup> RPD = Relative Percent Difference between primary sample and field duplicate. Measure of sampling precision; project goal of RPD <50% for soil duplicate QC pairs.

<sup>b</sup> Sample was analyzed twice due to non-homogenous matrix (metal flakes noted in the first sample).

Samples G1-G22 were collected 26-27 May 04.

Samples G23-G36 were collected 17-18 Jun 04.

Bold text indicates results greater than the EPA Region 9 Residential PRG of 400mg/kg.

mg/kg = milligrams per kilogram

### 2.3.3 Soil Excavation and Confirmation Sampling

Excavation activities at Range 3 commenced September 3, 2004; soil excavation and initial confirmation sampling were completed on that date. Soil from grids G1, G5, G6, G7, G11, G15, and G22 (see Figures 8 and 9) was excavated to a depth of approximately 18 inches bgs using a backhoe. This is 6 inches deeper than the WP Addendum originally prescribed.

Grid excavations extended a short distance outside the boundaries of the marked grids to account for measurement errors and limitations of the GPS equipment. The final excavation outlines were recorded using GPS equipment. The excavated site soils were collected on-site for later disposal (refer to Section 2.5).

Upon completion of the excavation activities, confirmation samples were collected to verify that lead had been removed to levels below the comparison criterion (see Table 2-4).

Consistent with the WP, samples were acquired at a rate of one 12-point composite soil sample per grid as described in Section 3.1 of the WP.

The confirmation sample for grid G7 exceeded the 400 mg/kg comparison criterion; thus, additional excavation and confirmation sampling were required at grid G7. Further excavation and sampling took place on September 14, 2004. An additional 24 inches of material were removed. The excavated site soils were collected on-site for later disposal (see Section 2.5). A confirmation sample was collected to verify that lead had been removed to levels below the comparison criterion (see Table 2-4).

### 2.3.4 Evaluation of Results

At grid G7, the 1.5-ft confirmation sample result indicated a lead level of 617 mg/kg which exceeded the PRG of 400 mg/kg. The grid G7 sample was reanalyzed, with a result of 286 mg/kg (see Section 3.2 for further evaluation of these results). Since one result at this grid exceeded the comparison criterion, the excavation and confirmation sampling process was repeated, with excavation of an additional 24 inches of soil, followed by 12-point composite soil sampling (approximate final depth: 3.5 ft bgs). The 3.5-foot confirmation sample result for grid G7 was 32.7 mg/kg, well below the 400 mg/kg PRG for lead.

None of the other 1.5-ft confirmation sample results exceeded 400 mg/kg. Sample results are as follows:

**Table 2-4 Range 3 – 2004 Confirmation Sample Results (all results: mg/kg)**

<b>Grid Number</b>	<b>May 2004 Results (0'-6''depth)</b>		<b>September 2004 Results (1.5'-2' depth)</b>		<b>September 2004 Results (3.5'- 4' depth)</b>
G1	458	-	56.2	-	-
G5	<b>823</b>	-	233	-	-
G6	<b>1090</b>	-	318	300 <sup>a</sup>	-
G7	<b>432</b>	-	<b>617</b>	286 <sup>a</sup>	32.7
G11	<b>408</b>	-	229	-	-
G15	<b>772</b>	-	384	-	-
G22	<b>1230</b>	<b>554<sup>a</sup></b>	33.2	-	-

Notes:

Bold text indicates results greater than the EPA Region 9 Residential PRG of 400mg/kg.

<sup>a</sup> Lab duplicate results. Duplicate analysis performed due to non-homogeneous matrix.

mg/kg =milligrams per kilogram

### 2.3.5 Conclusions and Recommendations

At Range 3, composite samples were collected from 21 grids and analyzed for lead. The

analytical results from 7 of the 21 grids exceeded the 400 mg/kg comparison criterion. Fifteen step-out samples were collected during a subsequent sampling event. No step-out sample results exceeded 400 mg/kg, thereby delineating the extent of lead levels greater than the comparison criterion. Analytical results were discussed with UDEQ and the property owner. All parties agreed that soil from the seven grids whose lead soil levels exceeded 400 mg/kg be excavated to a depth 12 inches bgs, and composite samples be collected to confirm that contamination had been removed to below the 400 mg/kg comparison criterion or that further excavation was necessary.

After soil excavation to 18 inches bgs, the confirmation sample result at grid G7 exceeded the PRG of 400 mg/kg. No other 1.5-foot confirmation sample results exceeded 400 mg/kg. The excavation and confirmation sampling process was repeated at grid G7, to an approximate total depth of 3.5 feet bgs. The 3.5-foot confirmation sample result for G7 was 32.7 mg/kg, which is below the 400 mg/kg PRG for lead.

Upon completion of these remedial activities, confirmation sampling results indicate lead soil levels below the comparison criterion; therefore, NDAI is recommended at Range 3.

## 2.4 Ranges 4-8

### 2.4.1 Investigation Activities

Twenty composite samples were collected and analyzed for lead in the composite range fan area of Ranges 4-8. The grids in the fan were approximately 100 feet by 100 feet (see Figures 5 and 10). Each composite sample consisted of sixteen sub-samples from each of the grids as shown in Figure 6. Each of the sub-samples was collected from a depth of 0 to 2 inches bgs.

### 2.4.2 Evaluation of Results

For Ranges 4-8, all results were less than the comparison criterion for lead, 400 mg/kg. Results ranged from 60.5 mg/kg to 232 mg/kg. Results are shown in Table 2-5.

**Table 2-5 Ranges 4-8 – Soil Sampling Results (all results: mg/kg)**

Grid Number	Result (mg/kg)	Notes	Field Dup. RPD <sup>a</sup>
G1	67.2		
G2	78.8		
G3	80.1		
G4	87.0		

Grid Number	Result (mg/kg)	Notes	Field Dup. RPD <sup>a</sup>
G5	96.6		
G6	108		
G7	160		
G8	156		
G9	186		
G10	159		
G11	60.5		
G12	81.5		
G13	67.2		
G14	81.6		
G15	92.6		
G16	162		
G17	195		
G18	232		
G19	140		
G20	185		
G21	62.0	Duplicate of G11	2.4 %
G22	193	Duplicate of G20	4.2 %

Notes:

<sup>a</sup> RPD = Relative Percent Difference between primary sample and field duplicate. Measure of sampling precision; project goal of RPD <50% for soil duplicate QC pairs.  
mg/kg = milligram per kilogram

### 2.4.3 Conclusions and Recommendations

At Ranges 4-8, composite samples were collected from 20 grids and analyzed for lead. No analytical results from the 20 grids exceeded the 400 mg/kg comparison criterion. Analytical results were discussed with UDEQ and the property owner. NDAI is recommended at Ranges 4-8.

## 2.5 Soil Disposal

### 2.5.1 September-October 2004

All soil from the initial excavation activity was stockpiled together. The soil from the second excavation at grid G7 was stockpiled separately. The excavated soil remained on-site until waste characterization was completed and transportation to an appropriate disposal facility could be arranged. Waste characterization was completed on September 17, 2004 and the initial excavation soils were removed from the site on October 1, 2004.

#### 2.5.1.1 Waste Characterization

Eight composite soil samples were collected for waste characterization. The first sample

(SLCAABGR-EM1) was a composite sample taken from the staging pile during the initial excavations. This composite sample consisted of 12 sub-samples: four taken from the top two feet of pile, four taken from the two to four feet depth interval, and four taken from four feet to the bottom of the pile. At the conclusion of the initial excavation, the soil staging pile was gridded and four composite samples (SLCAABGR-EM2 to -EM5) taken from representative locations and depths.

Each composite soil sample was analyzed for toxicity characteristics by extraction using the toxicity characteristic leachate procedure (TCLP) EPA SW-846 Method 3010. The TCLP extracts were then analyzed for metal content according to the method requirements of SW-846 and Title 40 of the Code of Federal Regulations (*i.e.*, EPA Method 7470A for Mercury and EPA Method 6010B for the remaining metals). The results of the analyses for the excavated soils are presented in Table 2-6 (see Appendix C for the laboratory results). These results were compared to the State of Utah and EPA regulations for hazardous waste (TCLP Comparison, Table 2-6).

The levels of lead in the TCLP extract of two samples (SLCAABGR-EM3 and -EM5) was determined to be high enough to warrant further sampling from the respective grids of the staging pile. The samples had lead concentrations of 4300 ug/l and 4000 ug/l, respectively, with the hazardous waste criteria being 5000 ug/l. These grids were resampled (composite samples SLCAABGR-EM6 and -EM7). Based on the results of the resampling, it was determined that the soils were nonhazardous per State of Utah and EPA hazardous waste regulations.

Because the soil from the second excavation at grid G7 was staged separately, composite sample SLCAABGR-EM8 was collected separately from the other waste characterization samples. The results from this were well below the TCLP comparison values (see Table 2-6).

**Table 2-6 Range 3 – Stockpiled Soil Sample Results (all results: ug/L)**

Sample ID Number	Arsenic	Barium	Cadmium	Chromium	Lead	Mercury	Selenium	Silver
TCLP Comparison	5,000	100,000	1,000	5,000	5,000	200	1,000	5,000
SLCAABGR-EM1	< 50	550 J	< 50	<100	< 30	< 1.0	< 50	< 50
SLCAABGR-EM2	< 50	670 J	4.8 J	<100	1,000	0.27 J	< 50	< 50
SLCAABGR-EM3	< 50	700 J	5.0 J	<100	4,300	0.32 J	< 50	< 50

Sample ID Number	Arsenic	Barium	Cadmium	Chromium	Lead	Mercury	Selenium	Silver
SLCAABGR-EM4	< 50	710 J	6.0 J	<100	1,500	0.51 J	< 50	< 50
SLCAABGR-EM5	< 50	690 J	5.4 J	<100	4,000	0.78 J	< 50	< 50
SLCAABGR-EM6	< 500	680	2.9 J	4.3 J	1,200	< 1.0	< 500	< 5.0
SLCAABGR-EM7	< 500	570	< 5.0	< 10	< 300	< 1.0	< 500	< 5.0
SLCAABGR-EM8	55.2	429	1.2 J	< 10	42.6	0.039 J	< 20	< 20

Notes:

J = Estimated value reported between the lab method detection limit (MDL) and reporting limit (RL)

ug/L = micrograms per liter

### 2.5.1.2 Transportation

Once the waste characterization results were received, they were provided to E.T. Technologies, the operator of the Salt Lake Valley Landfill in Salt Lake City, Utah. The facility operator provided concurrence that the non-hazardous soil was suitable for disposal at their facility. On October 1, 2004, approximately 189.1 tons of soil were removed from the main stockpile and loaded into trucks for disposal. Ten loads were transported to the disposal facility (see Appendix E for waste manifests).

Because the re-analysis of the confirmation sample from the first excavation at grid G7 yielded a result less than the comparison criterion, the soil from the second excavation at grid G7 was staged and sampled separately from the rest of the stockpiled soils. The metals results from this sample were well below the TCLP comparison values and the soil was considered non-hazardous. Due to a miscommunication between the office staff and the field staff, this soil was spread out and compacted in the area to the front of the berm at between grids G2-G13.

### 2.5.2 May 2006

To correct the error created by the miscommunication mentioned above, the soil in the area in front of grids G2 – G 13 (see Figure 11) was removed on May 22, 2006. This differs slightly from the action proposed in a supplemental addendum to the original work plan (USACE, 2006). That document stated that the soil would be removed from the area in front of grids G1 to G14. This information was gathered during January 2006 while some snow still remained on the ground. Upon arrival in May, it was easier to see the area where the soil had been spread. The soil was removed from the area in front of grids G2-G13 using a loader to

scrape the top 6 inches of soil. This resulted in two fewer grids for confirmation sampling than originally proposed.

### 2.5.2.1 Waste Characterization

To prevent a similar situation from occurring again, one composite sample was collected for disposal purposes on March 13, 2006, well in advance of the field effort to remove the soil from the site. The sample consisted of 10 sub-samples collected from evenly spaced points along the area in front of grids G2-G13. The results of this sample are presented below. This result along with the results from SLCAABGR-EM8 (see Table 2-6 above) were submitted to the disposal facility (E.T. Technologies) characterization.

**Table 2-7 Range 3 – Disposal Soil Sample Results**

<b>Sample ID Number</b>	<b>Lead – Method 6010B mg/kg</b>	<b>Lead – TCLP ug/L</b>
Comparison Value	400 <sup>1</sup>	5000 <sup>2</sup>
SLCAABGR-WS-0306	16.9	139

Notes:

<sup>1</sup> U.S. Environmental Protection Agency Region 9 Preliminary Remediation Goal

<sup>2</sup> TCLP comparison value

TCLP = Toxicity Characteristic Leachate Procedure

mg/kg = milligrams per kilogram

ug/L = micrograms per liter

### 2.5.2.2 Transportation

The disposal facility characterized the waste as non-hazardous. Soil was loaded directly onto a transport truck for disposal on May 22, 2006. E.T. Technologies, the operator of the Salt Lake Valley Landfill in Salt Lake City, Utah, transported two separate truckloads of soil to the landfill totaling approximately 40 tons (see Appendix E for manifests).

### 2.5.2.3 Confirmation Sampling

Once the soil was removed, the area was divided into 14 grids; each grid measured approximately 20 feet X 6 feet. Confirmation sampling was conducted on the same day. One composite sample was collected from each of the grids. The composite sample consisted of four sub-samples collected at a depth of 0-2 inches below ground surface.

The results of the confirmation sampling are presented below in Table 2-8. All results from this sampling effort were below the residential PRG of 400 mg/kg.

**Table 2-8 Range 3 – 2006 Confirmation Sample Results (all results: mg/kg)**

<b>Grid Number</b>	<b>May 2006 Results (0"-2"depth)</b>	<b>Notes</b>	<b>Field Duplicate RPD<sup>a</sup></b>
G37	49		
G38	16.6		
G39	249		
G40	91.2		
G41	14.5		
G42	12.2		
G43	21.9		
G44	15.6		
G45	12.9		
G46	17.5		
G47	17		
G48	16		
G49	26.1		
G50	51.5		
G51	52.2	Duplicate of G50	1.35 %
G52	14.9	Duplicate of G44	4.59 %

Notes:

<sup>a</sup> RPD = Relative Percent Difference between primary sample and field duplicate. Measure of sampling precision; project goal of RPD <50% for soil duplicate QC pairs.

mg/kg = milligrams per kilogram

Since all confirmation sample results were less than the comparison criterion for lead, 400 mg/kg, the area was backfilled with clean soil and compacted on May 24, 2006. Rik Ombach of UDEQ was on site to witness this portion of the field effort. A total of 55 tons of clean backfill were brought to the site.

## **2.6 Concrete Work**

### **2.6.1 Removal**

The WP Addendum describes the removal of a number of concrete pads and pits at the SLCAABGR. Concrete removal took place September 4-5, 2004. The concrete gun emplacements at the firing line and the high tower mounting pads were removed from Ranges 4-8. In addition, three miscellaneous concrete pads with metal protrusions just north of the firing line at Ranges 4-8 were removed.

Two concrete storage pits located on Range 3 and one concrete storage pit located on Range 2 were removed. At the request of the property tenant, other pieces of concrete in the corral area (south of Range 2 and adjacent to the access roads) were also removed.

### **2.6.2 Disposal**

The removed concrete was taken to the West Valley City location of Bland Recycling and Rock. A total of 25 five-cubic yard loads of concrete were removed for recycling; four loads were removed from the staging area and transferred to the disposal site on September 9, 2004 and 21 loads were transported for disposal on September 10, 2004. All concrete rubble was transported as non-hazardous waste (see Appendix E for invoice).

### **2.7 Surface Finishing**

During the excavation process, the edges of the grids being excavated were graded to produce a smooth transition between the excavated grid and original grade. Because the concrete gun emplacements on Ranges 4-8 (referenced above) are at a slightly higher elevation than the surrounding terrain, the depressions left by the concrete removal were smoothed on the edges and the area groomed to leave a relatively flat surface. The holes left by the removal of the storage pits and the three miscellaneous concrete pads on Ranges 4-8 were backfilled.

Road base was used to partially fill the holes remaining from removal of the concrete storage pit. Soil used to complete the backfill of the storage pits was removed from the western-most embankment (Range 2). The soil was taken from the point on the south side of the opening into the center of the embankment on the eastern side. At the request of the tenant, the remainder of the road base material was placed on the dirt road for stabilization.

The road base used for backfill came from two sources: 132 cubic yards from Construction Recycling Inc., and 124 tons from Big Cottonwood Sand & Gravel. A general “rule of thumb” for calculating volume based on tonnage is 2 tons per cubic yard. After converting the weight to volume, the total volume of road base delivered was 194 cubic yards. The volume of excavated soil removed from the site was calculated to be approximately 150 cubic yards. Per agreement with the property owner, the USACE fulfilled its requirement to replace the excavated soil with an equal or greater volume of fill.

### **3.0 ANALYTICAL DATA – COMPLETENESS AND ACCURACY**

#### **3.1 Project Data Overall Completeness and Accuracy**

All lead data met both the requirements of the method and the project Quality Assurance Project Plan (QAPP). All data are considered usable for their intended purpose. All field QC samples were evaluated against the project goal of RPD <50% for soil duplicate QC pairs. Duplicate precision calculations indicated excellent field sample comparability. No QC deficiencies were noted in any of the data sets that resulted in qualified data. Analytical and technical completeness goals were met. A complete data quality assessment per method QC element is located in Appendix D of this report.

#### **3.2 Lab QC Data Evaluation**

The field sample for Range 3, Grid 7, at the 1.5-ft depth was reanalyzed. The lead values for these two analyses are 617 mg/kg and 286 mg/kg, which results in a calculated relative percent difference of 73.3%. Discussion between the APCL lab director and USACE indicated there were fine visible metal particles that he believes are responsible for the differing values for the G7 sample pair. The analytical data report documents that samples were dried and sieved per project QAPP requirements prior to analysis.

These results indicated one value above and one value below the 400mg/kg remediation goal. Due to this discrepancy, the USACE team chose to remove an additional 24-inch lift of soil at grid G7 and collect an additional composite confirmatory sample at the 3.5-foot depth.

A similar issue occurred with the 0 to 6 inches bgs field sample for Range 3, Grid 22, as this sample was also reanalyzed. The lead values for these two analyses are 1230 mg/kg and 544 mg/kg, respectively. Discussion between the APCL lab director and USACE indicated there were fine visible metal particles that he believes are responsible for these differing values. Since both results exceeded the 400 mg/kg PRG, it was determined that excavation at Grid 22 was necessary.

## **4.0 RECOMMENDATIONS AND CONCLUSIONS**

All ambient results were less than the USEPA Region 9 PRG for lead. Ambient sample results were only to be applicable as the comparison criteria if higher than the PRG. Since all ambient sample results were below the PRG, the PRG became to the sole comparison criterion.

### **4.1 Range 2**

No samples had detected concentrations above the comparison criterion, therefore, NDAI is recommended.

### **4.2 Range 3**

The sampling conducted May 24-28 and June 17-18, 2004, resulted in the following: lead results of composite samples above comparison criterion in seven grids. The recommendation was made that soil be removed to a depth of 12 inches in each of these grids and composite sampling occur to confirm removal of contamination.

Excavation activities and confirmation sampling was conducted in September 2004. Soil excavation occurred at grids G1, G5, G6, G7, G11, G15, and G22. The approximate depth of excavation at these grids was 1.5 feet. Following soil removal, confirmation sampling results at G7 indicated that the concentration of lead contamination at grid G7 may have still exceeded the comparison criterion. At the other six grids, the level of lead contamination did not exceed the comparison criterion. An additional 24 inches of soil was excavated at grid G7. Following this excavation, confirmation sampling indicated lead concentrations at grid G7 to be well below the 400mg/kg criterion.

Upon completion of these remedial activities, confirmation sampling results indicate lead concentrations in soil are at levels below the comparison criterion of 400mg/kg; therefore, NDAI is recommended.

### **4.3 Ranges 4-8**

Ranges 4-8 - No samples had detected concentrations above the comparison criterion, therefore, NDAI is recommended

### **4.4 Site Closure**

No DoD action is indicated at the sites listed above or at any other ranges originally located at this site (see justification in WP). NDAI is recommended for the entire site.

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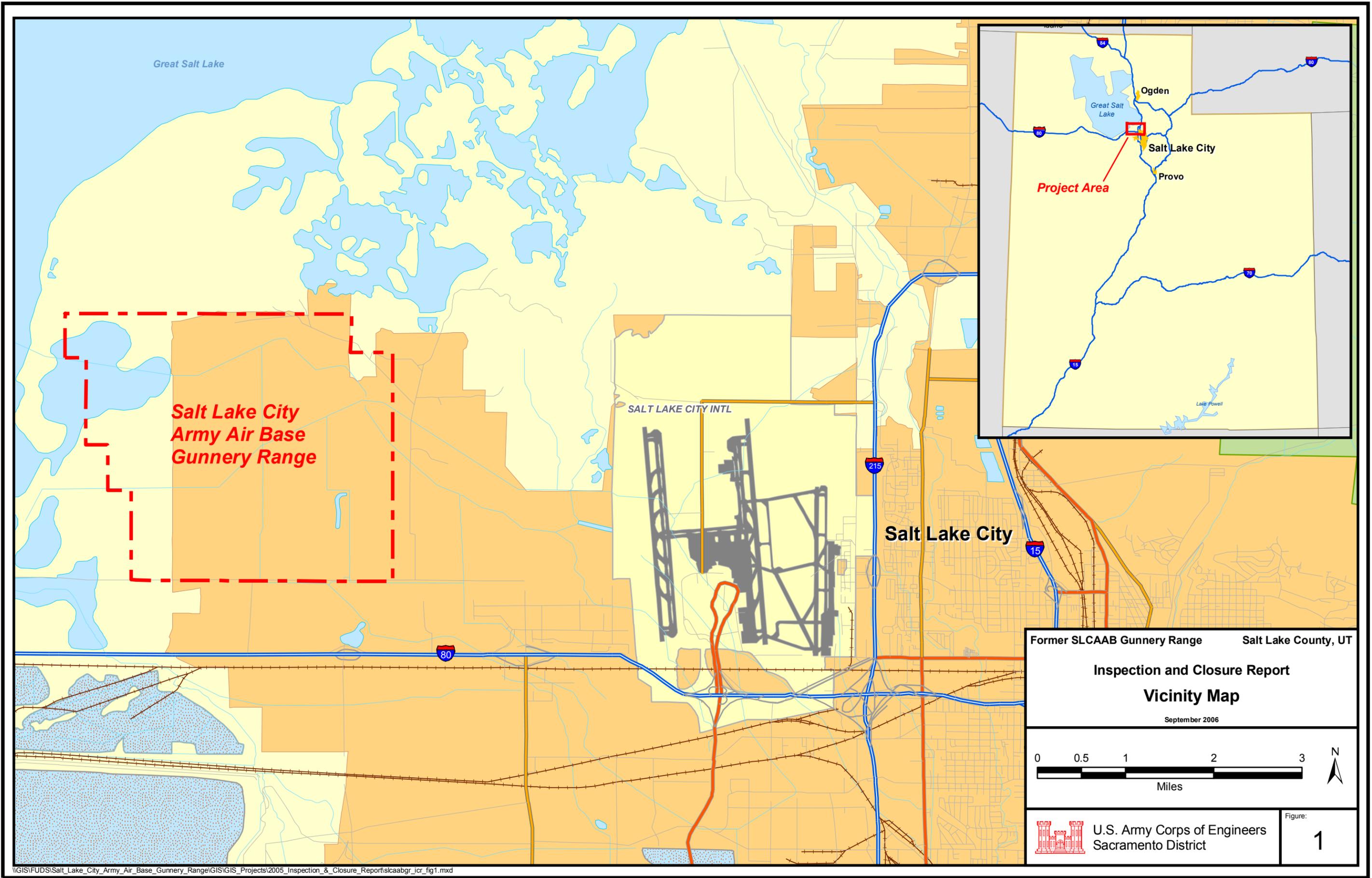
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Utah Department of Environmental Quality, Division of Environmental Response and Remediation (UDERR), 2001, *Site Inspection Analytical Results Report, Salt Air Gunnery Range*, January.

# **FIGURES**



Great Salt Lake

**Salt Lake City  
Army Air Base  
Gunnery Range**

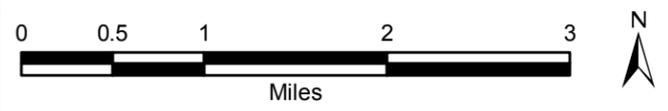
SALT LAKE CITY INTL

Salt Lake City

Former SLCAAB Gunnery Range Salt Lake County, UT

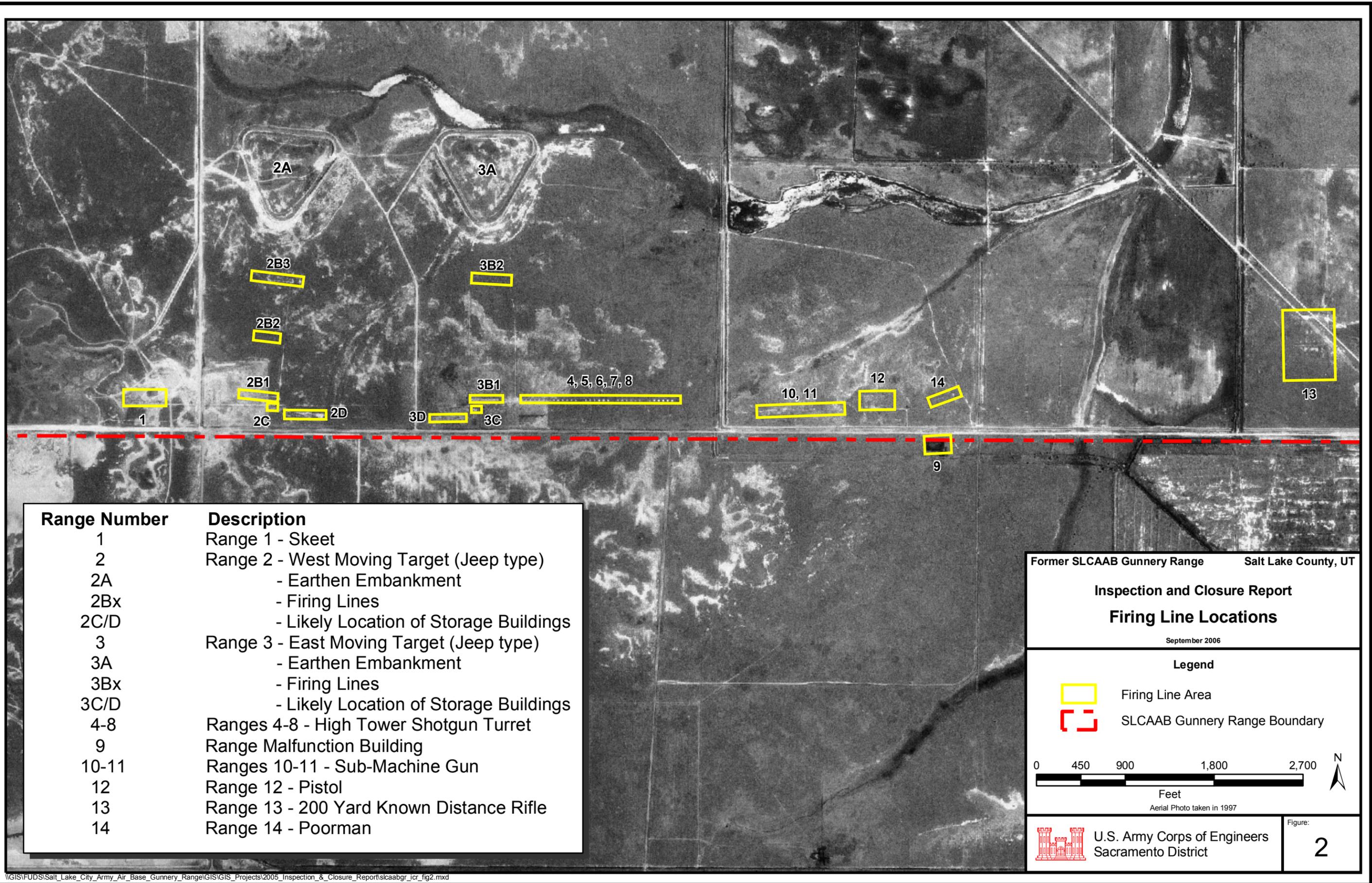
**Inspection and Closure Report  
Vicinity Map**

September 2006



U.S. Army Corps of Engineers  
Sacramento District

Figure:  
**1**



Range Number	Description
1	Range 1 - Skeet
2	Range 2 - West Moving Target (Jeep type)
2A	- Earthen Embankment
2Bx	- Firing Lines
2C/D	- Likely Location of Storage Buildings
3	Range 3 - East Moving Target (Jeep type)
3A	- Earthen Embankment
3Bx	- Firing Lines
3C/D	- Likely Location of Storage Buildings
4-8	Ranges 4-8 - High Tower Shotgun Turret
9	Range Malfunction Building
10-11	Ranges 10-11 - Sub-Machine Gun
12	Range 12 - Pistol
13	Range 13 - 200 Yard Known Distance Rifle
14	Range 14 - Poorman

Former SLCAAB Gunnery Range Salt Lake County, UT

**Inspection and Closure Report**  
**Firing Line Locations**

September 2006

**Legend**

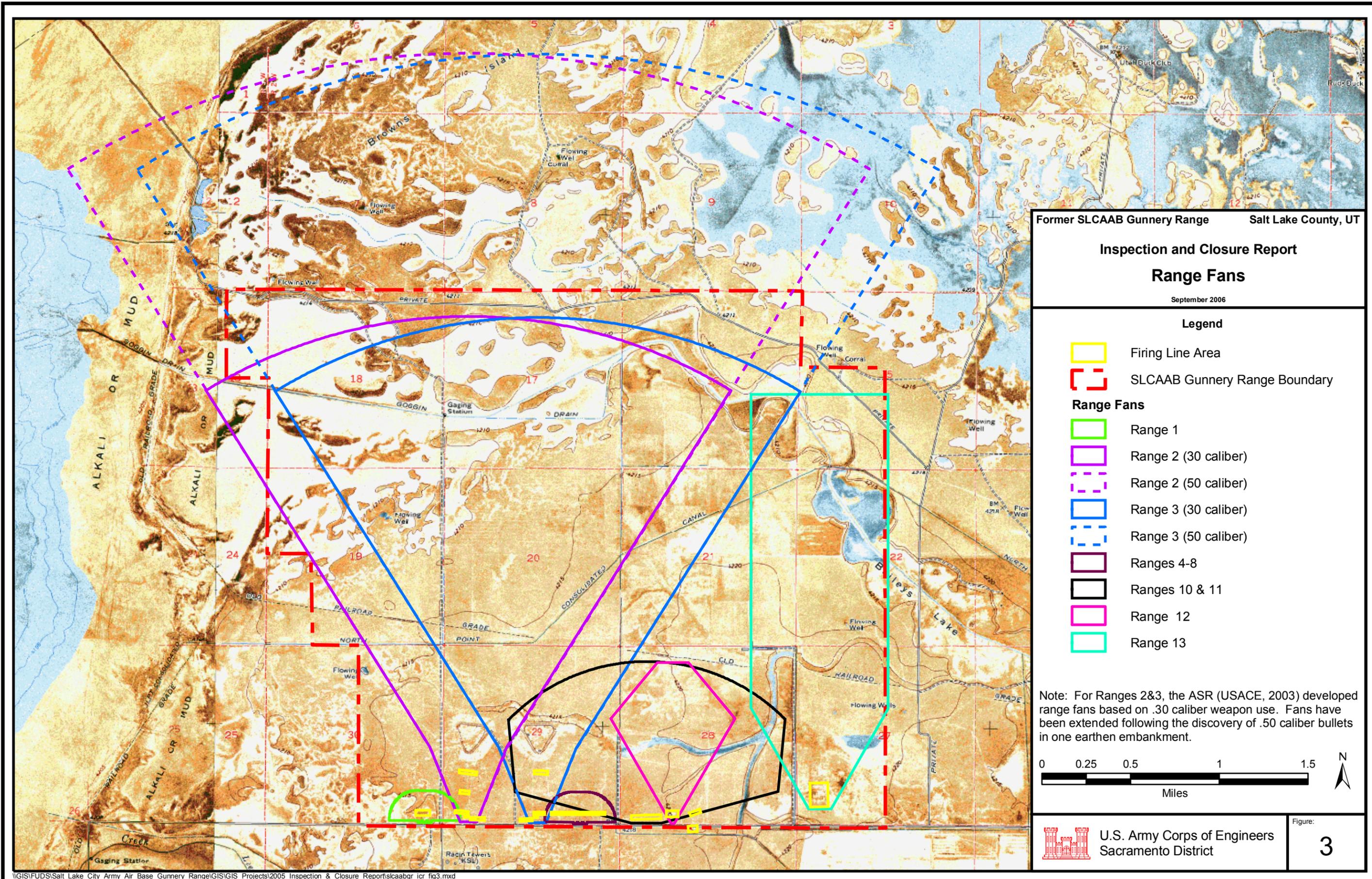
- Firing Line Area
- SLCAAB Gunnery Range Boundary

0 450 900 1,800 2,700  
 Feet

Aerial Photo taken in 1997

U.S. Army Corps of Engineers  
 Sacramento District

Figure: **2**

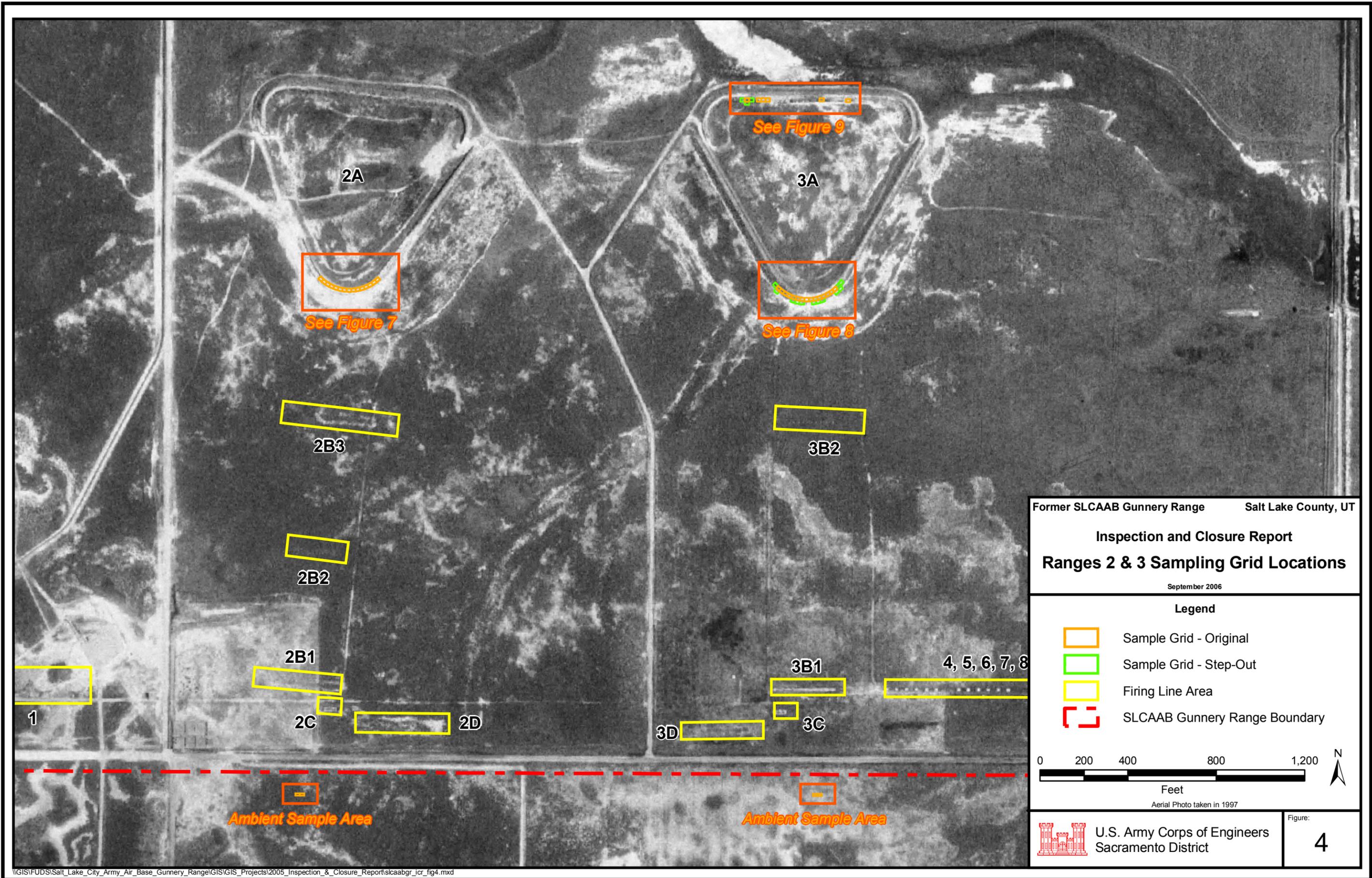


Former SLCAAB Gunnery Range Salt Lake County, UT  
**Inspection and Closure Report**  
**Range Fans**  
 September 2006

- Legend**
- Firing Line Area
  - SLCAAB Gunnery Range Boundary
- Range Fans**
- Range 1
  - Range 2 (30 caliber)
  - Range 2 (50 caliber)
  - Range 3 (30 caliber)
  - Range 3 (50 caliber)
  - Ranges 4-8
  - Ranges 10 & 11
  - Range 12
  - Range 13

Note: For Ranges 2&3, the ASR (USACE, 2003) developed range fans based on .30 caliber weapon use. Fans have been extended following the discovery of .50 caliber bullets in one earthen embankment.





Former SLCAAB Gunnery Range      Salt Lake County, UT

**Inspection and Closure Report**

**Ranges 2 & 3 Sampling Grid Locations**

September 2006

**Legend**

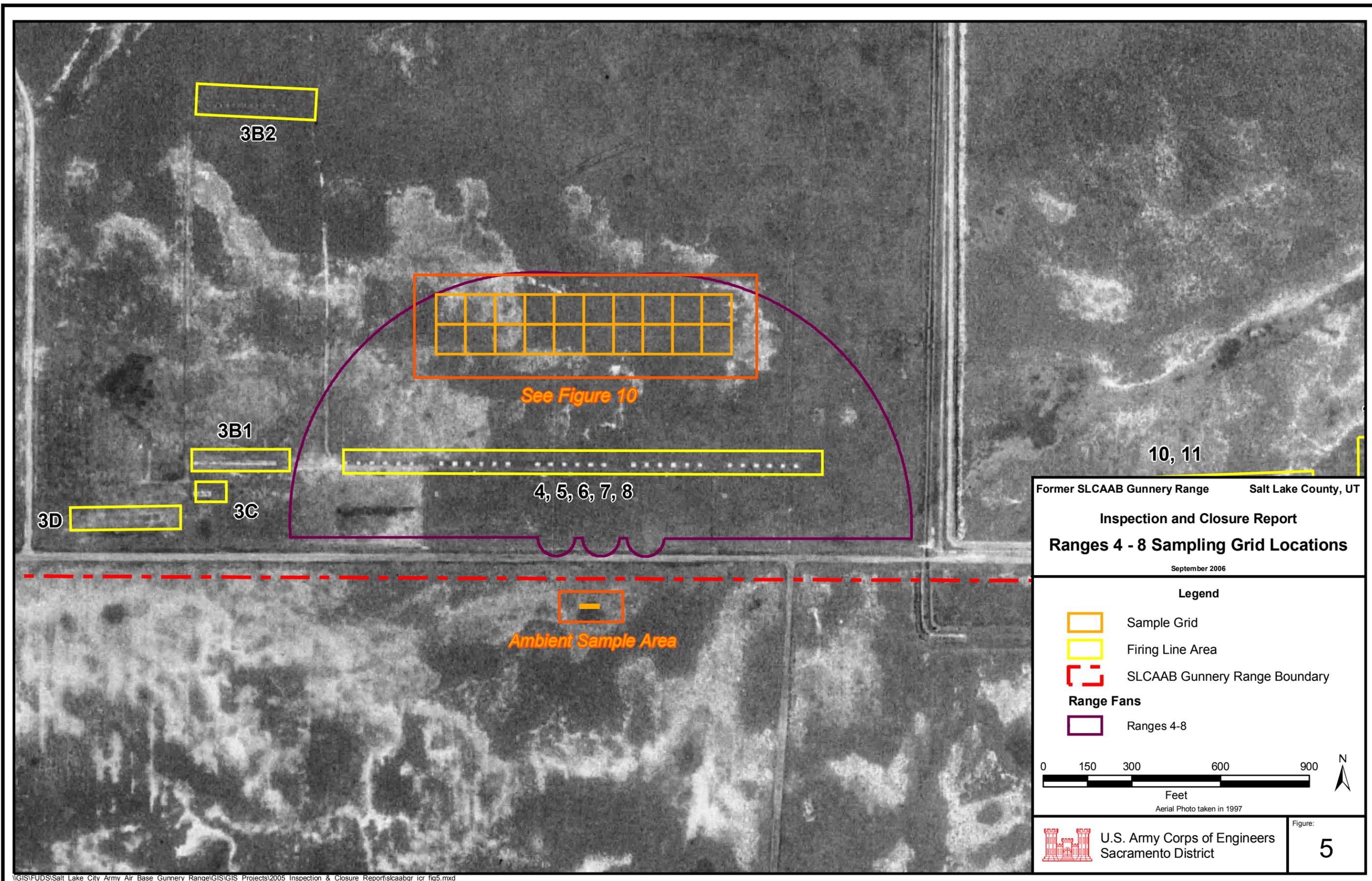
- Sample Grid - Original
- Sample Grid - Step-Out
- Firing Line Area
- SLCAAB Gunnery Range Boundary

0    200    400    800    1,200

Feet

Aerial Photo taken in 1997

\\GIS\FUDS\Salt\_Lake\_City\_Army\_Air\_Base\_Gunnery\_Range\GIS\GIS\_Projects\2005\_Inspection\_&\_Closure\_Report\scaabgr\_jcr\_fig4.mxd



Former SLCAAB Gunnery Range Salt Lake County, UT

**Inspection and Closure Report**  
**Ranges 4 - 8 Sampling Grid Locations**

September 2006

**Legend**

-  Sample Grid
-  Firing Line Area
-  SLCAAB Gunnery Range Boundary

**Range Fans**

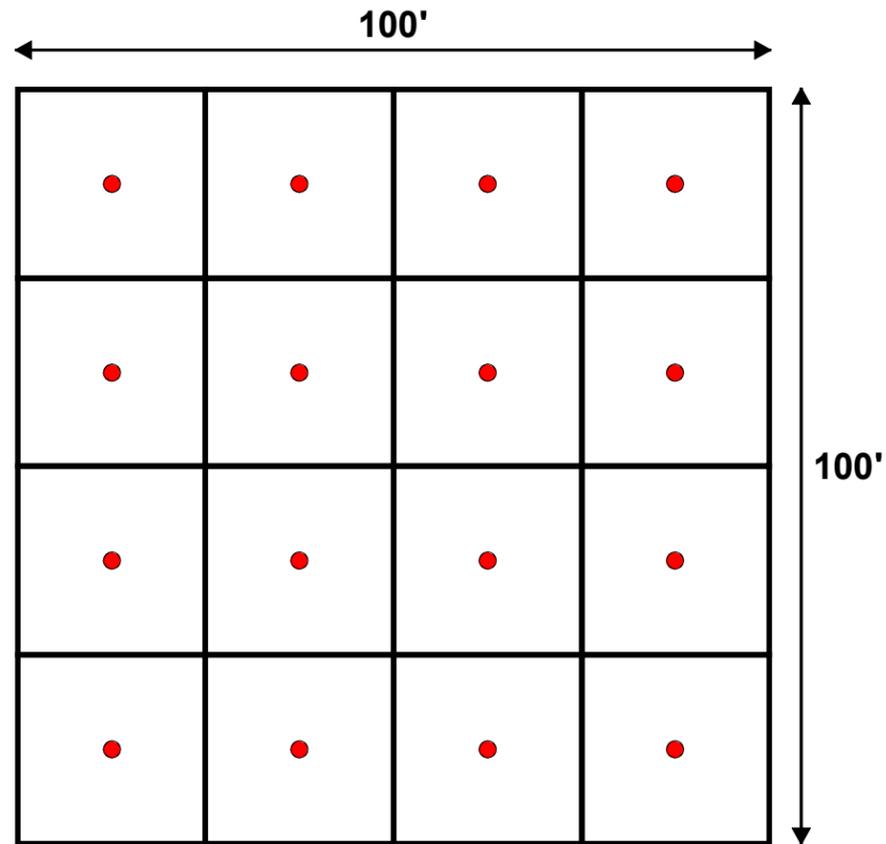
-  Ranges 4-8

0 150 300 600 900  
 Feet

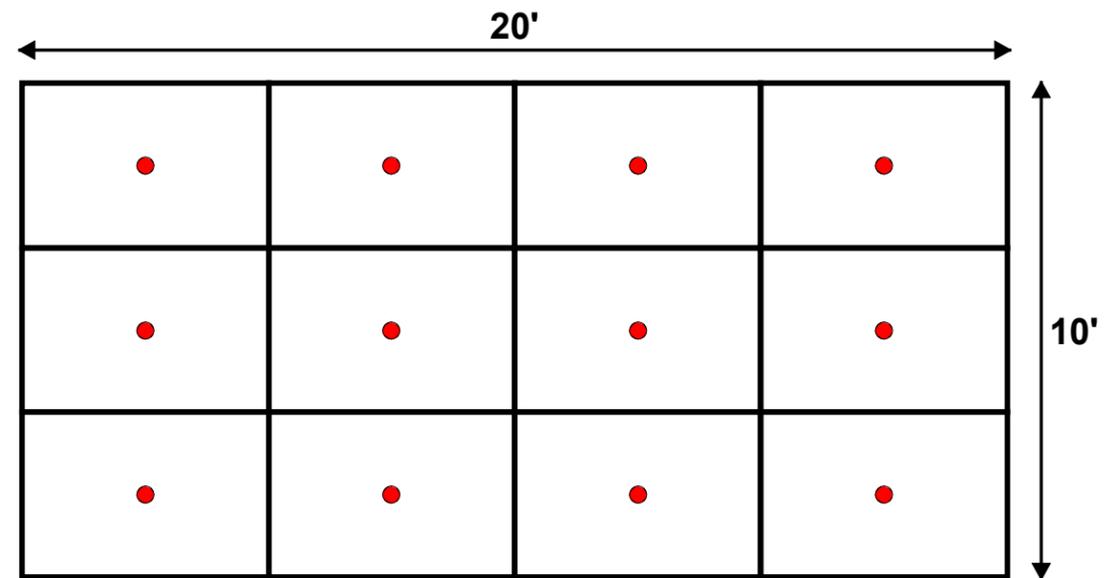
Aerial Photo taken in 1997

 U.S. Army Corps of Engineers  
 Sacramento District

Figure: **5**



**Ranges 4 - 8, Sample Grid**



**Ranges 2 & 3, Ambient Sample Grid**

**Notes:**

1. Range 2 & 3 samples - Depth of samples is 0" - 6"
2. Ambient samples - Depth of samples is 0" - 2"
3. Ranges 4 - 8 samples - Depth of sub-samples is 0' - 2"

Former SLCAAB Gunnery Range Salt Lake County, UT

**Inspection and Closure Report**

**Sample Grids**

September 2006

**Legend**

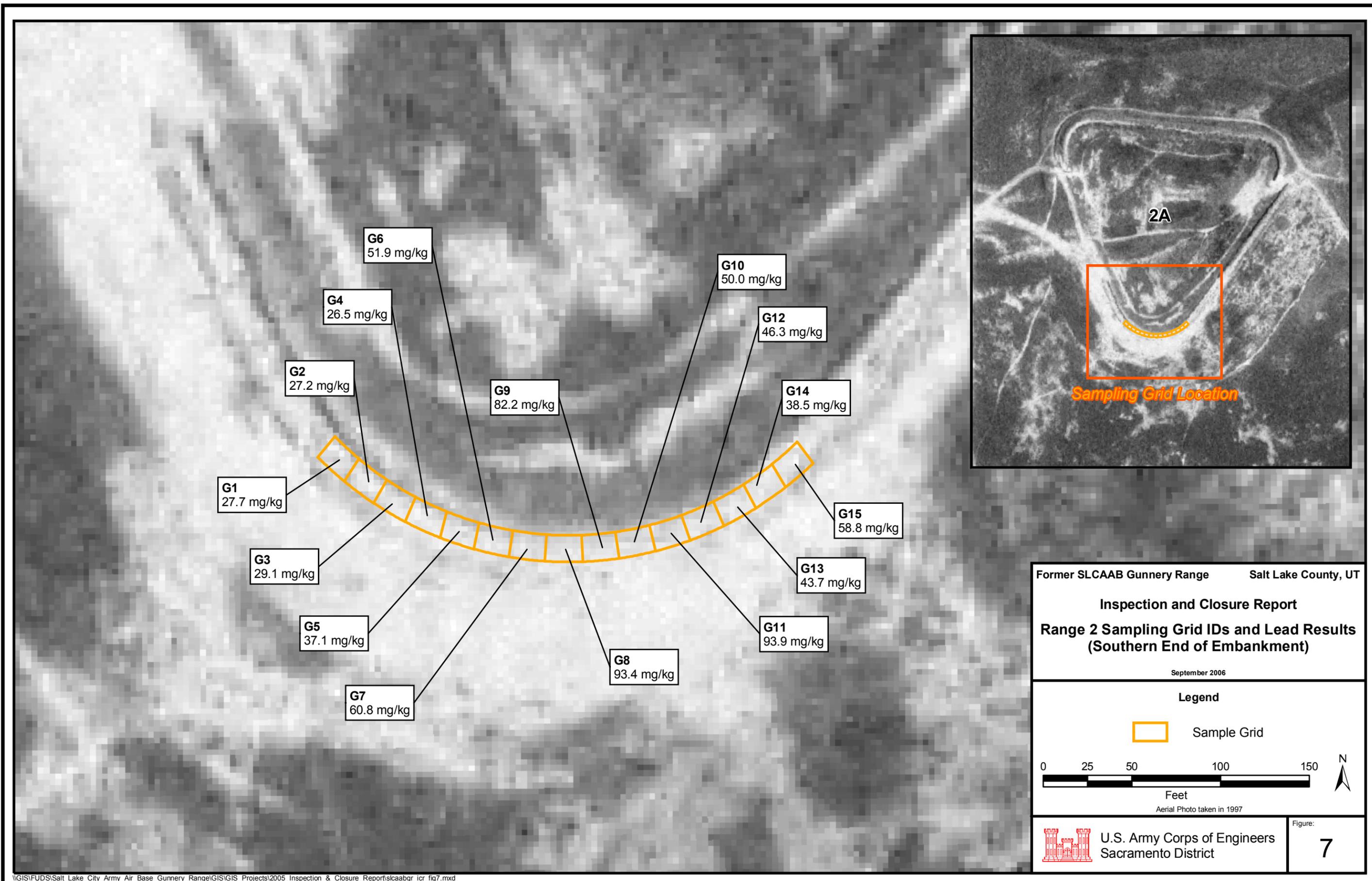
● Sub-Sample Location



U.S. Army Corps of Engineers  
Sacramento District

Figure:

**6**



Former SLCAAB Gunnery Range Salt Lake County, UT

**Inspection and Closure Report**  
**Range 2 Sampling Grid IDs and Lead Results**  
**(Southern End of Embankment)**

September 2006

**Legend**

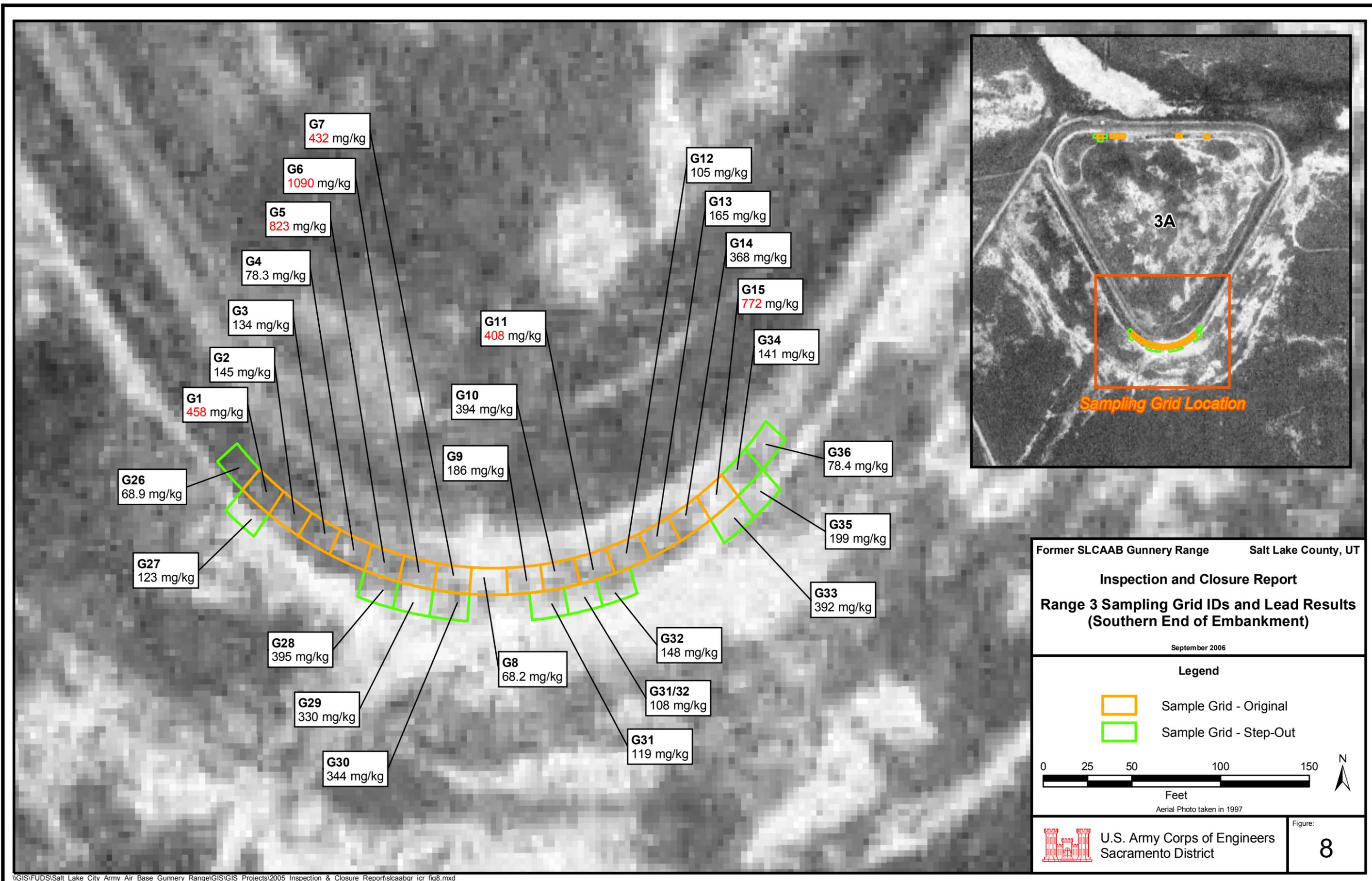
 Sample Grid

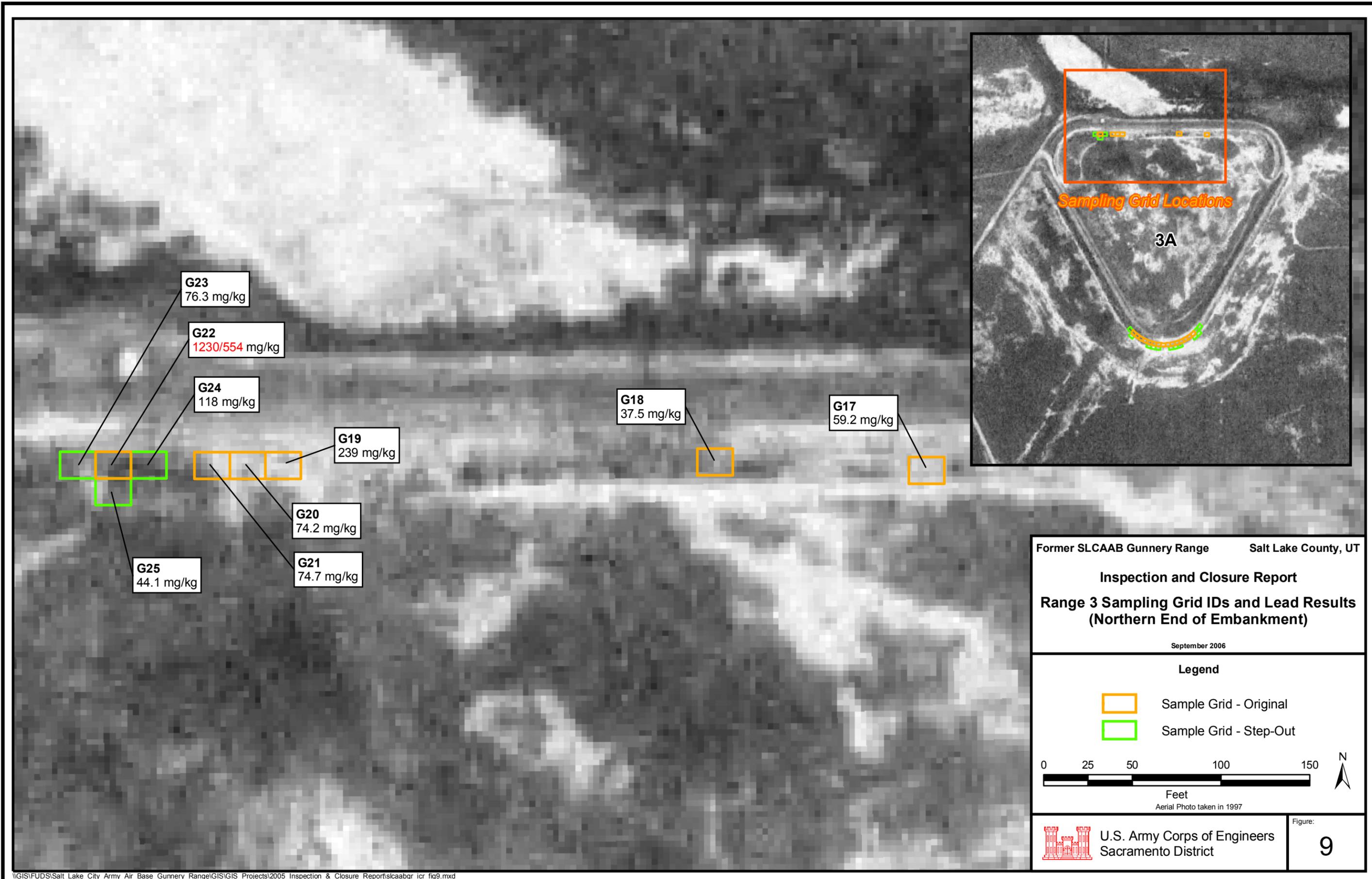
0 25 50 100 150  
 Feet

Aerial Photo taken in 1997

 U.S. Army Corps of Engineers  
 Sacramento District

Figure:  
**7**





**G23**  
76.3 mg/kg

**G22**  
1230/554 mg/kg

**G24**  
118 mg/kg

**G19**  
239 mg/kg

**G18**  
37.5 mg/kg

**G17**  
59.2 mg/kg

**G20**  
74.2 mg/kg

**G21**  
74.7 mg/kg

**G25**  
44.1 mg/kg

Former SLCAAB Gunnery Range      Salt Lake County, UT

**Inspection and Closure Report**

**Range 3 Sampling Grid IDs and Lead Results**  
(Northern End of Embankment)

September 2006

**Legend**

- Sample Grid - Original
- Sample Grid - Step-Out

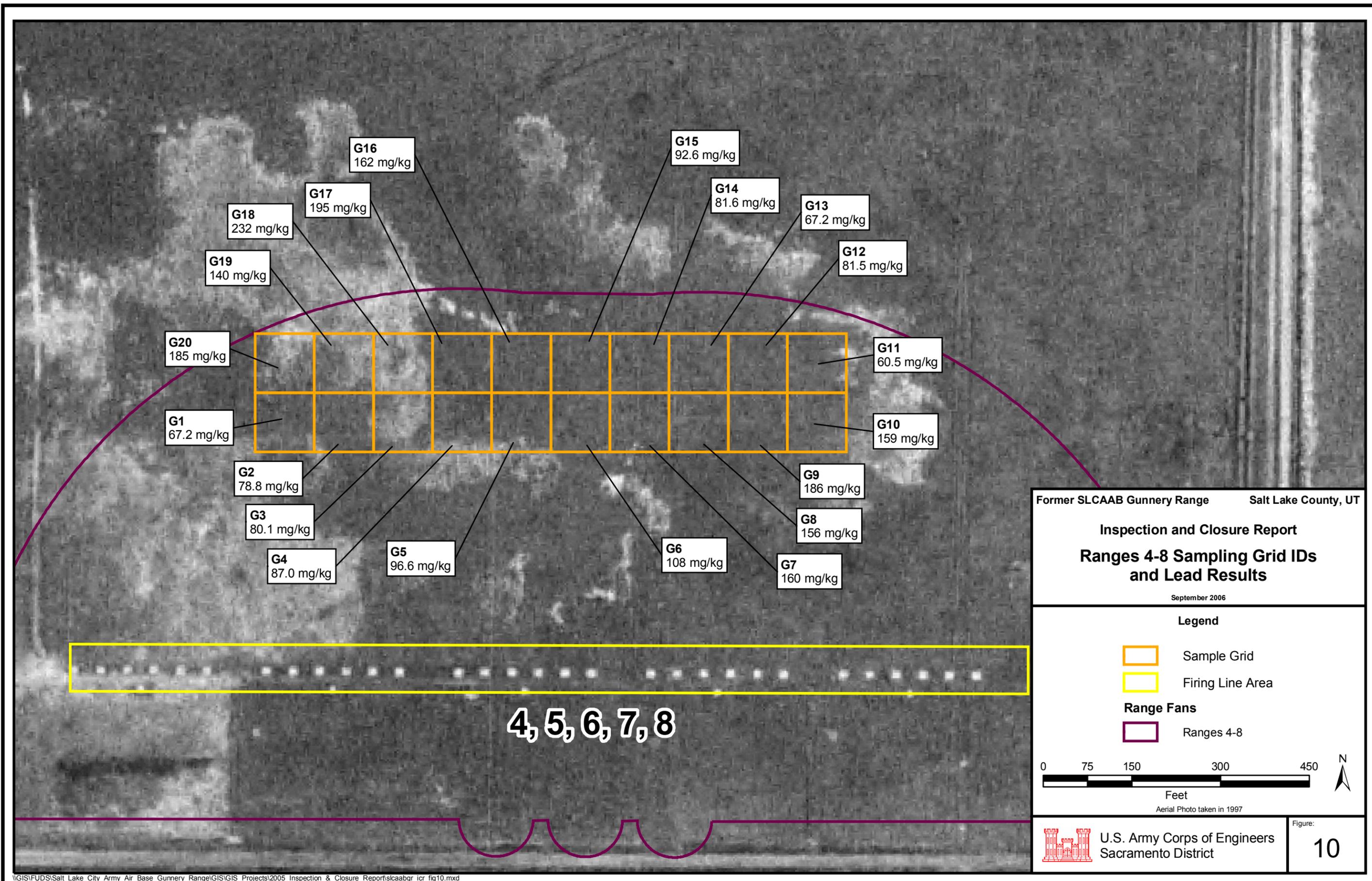
0    25    50    100    150

Feet

Aerial Photo taken in 1997

U.S. Army Corps of Engineers  
Sacramento District

Figure: **9**



Former SLCAAB Gunnery Range      Salt Lake County, UT

**Inspection and Closure Report**  
**Ranges 4-8 Sampling Grid IDs and Lead Results**

September 2006

**Legend**

- Sample Grid
- Firing Line Area

**Range Fans**

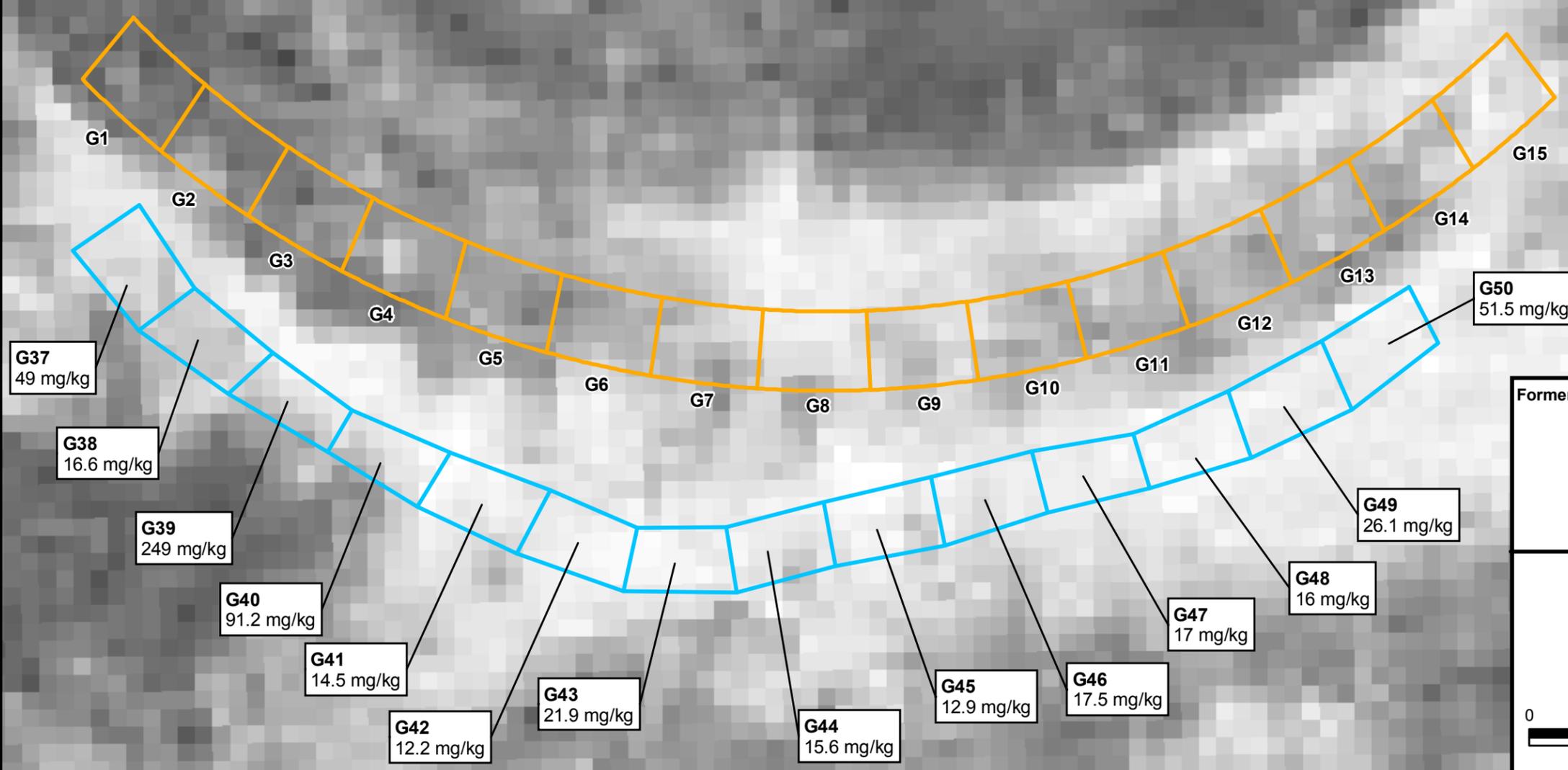
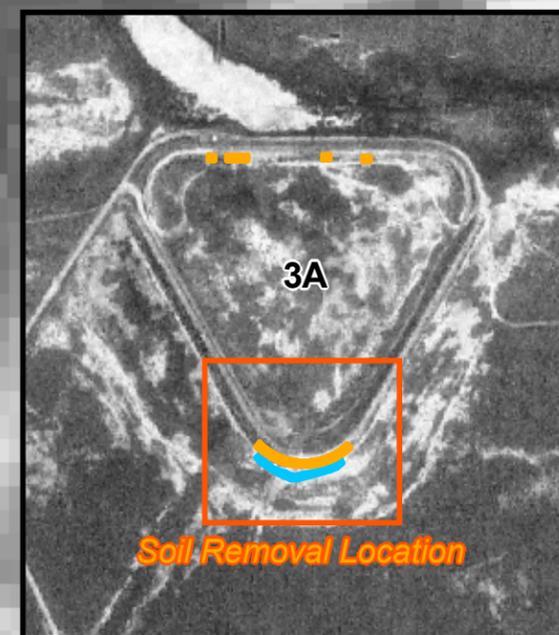
- Ranges 4-8

0    75    150    300    450  
 Feet

Aerial Photo taken in 1997

U.S. Army Corps of Engineers  
 Sacramento District

Figure: **10**



Former SLCAAB Gunnery Range Salt Lake County, UT

**Inspection and Closure Report**  
**Range 3 Soil Removal Location**  
**Sampling Grids and Results**

September 2006

**Legend**

- Sample Grid - Original
- Soil Removal Area/Sample Grid

0 12.5 25 50 75  
 Feet  
 Aerial Photo taken in 1997

U.S. Army Corps of Engineers  
 Sacramento District

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## **Appendix A**

### **Photographs**



Project Site Visit, November 2003



Range 2 – Non-DoD target debris, inside face of northern wall of embankment,  
May 2004



Range 2 – Non-DoD target debris, interior of the embankment, May 2004



Range 2 – Non-DoD target debris, interior of the embankment, May 2004



Range 2 – Typical spent munititions found on the interior portion of the northern wall of the earthen embankment, May 2004



Range 2 – Typical spent munititions found on the southern tip of the embankment;  
note the absence of .50 caliber rounds, May 2004



Range 2 - Sampling southern tip of embankment using stainless steel tubes, May 2004



Range 3 - New spent shotgun shells found on Grid 1, May 2004



Range 3 - Spent shotgun shells found on the interior portion of the northern wall of the earthen embankment, May 2004



Range 3 - .50 caliber rounds embedded in the interior portion of the northern wall of the earthen embankment, May 2004



Range 3 - .50 caliber and non-DoD shotgun shells found on the southern tip of the embankment, May 2004



Range 3 – Non-DoD target debris, inside face of northern wall of embankment,  
May 2004



Range 3 - Typical spent munitions found on the interior portion of the northern  
wall of the earthen embankment, May 2004



Range 3 – Grid G7, pre-excavation, September 2004



Range 3 – Grid G7, pre-excavation, September 2004



Range 3 – Grid G15, pre-excavation, September 2004



Range 3 – Grid G22, pre-excavation, September 2004



Range 3 – Initial 18-inch excavation of lead contaminated soil, September 2004



Range 3 – Initial 18-inch excavation of lead contaminated soil, September 2004



Range 3 – Excavated Grid G11, September 2004



Range 3 – Excavated Grid G15, September 2004



Ranges 4-8 Concrete removal, September 2004



Ranges 4-8 Concrete pad to be removed, September 2004



Ranges 4-8 Concrete footings to be removed, September 2004



Ranges 4-8 Excavated footings, September 2004



Stockpiled excavated soil; note the grid markings for composite sampling,  
September 2004



Stockpiled waste concrete, September 2004

**MAY 2006 FIELD ACTIVITIES – Range 3**



Starting removal of soil in front of embankment – east end



Continuing the removal of soil in front of the embankment – heading west



Beginning stockpile of excavated soil near the west end of excavated area



Continuing to stockpile excavated soil



West end of excavated area – stockpile visible at right side of photo



Delivery of first load of clean soil for backfill at east end of excavated soil area



Loading excavated soil into truck for disposal



Measuring length of excavated area to mark grids



Preparing sampling supplies



Delivery of second load of clean backfill material. First load can be seen in the background at the back end of the trailer.



Loading remaining soil for disposal



Completed loading soil for disposal



Beginning to backfill with clean soil near grid 41



Continuing to distribute clean fill



Starting to smooth soil at east end of excavated area



Smoothing soil near the southern end of the embankment



Smoothing and compacting soil at west end of excavated area



Completed backfill of excavated area.

## **Appendix B**

### **Chain of Custody Forms and Laboratory Receiving Checklist**

## Primary Samples



**USEPA Contract Laboratory Program**  
**Generic Chain of Custody**

USACE, SACRAMENTO DIST.  
 1325 J STREET  
 SACRAMENTO, CA 95814

Reference Case  
 Client No:  
 SDG No: **L**

Date Shipped: <b>5/28/04</b> Carrier Name: <b>FedEx</b> Airbill: <b>8409 4676 5649</b> Shipped to: <b>Applied Physics and Chemistry Laboratory          13760 Magnolia Ave.          Chino CA 91710          (909) 590-1828</b>	<b>Chain of Custody Record</b>		<b>Sampler Signature:</b>	
	<b>Relinquished By</b>	<b>(Date / Time)</b>	<b>Received By</b>	<b>(Date / Time)</b>
	<b>P. Wehrmann</b>	<b>5/28/04 09:15</b>	<b>[Signature]</b>	<b>6/1/04 0930</b>
	2			
	3			
	4			

**For Lab Use Only**

Lab Contract No: \_\_\_\_\_

Unit Price: \_\_\_\_\_

Transfer To: \_\_\_\_\_

Lab Contract No: \_\_\_\_\_

Unit Price: \_\_\_\_\_

SAMPLE No.	MATRIX/SAMPLER	CONC/TYPE	ANALYSIS/TURNAROUND	TAG No./PRESERVATIVE/ Bottles	STATION LOCATION / Sample number	SAMPLE COLLECT DATE/TIME	FOR LAB USE ONLY Sample Condition On Receipt
SLCGR-AS-G1	Soil (0"-2")/ Pam Wehrmann	/C	Pb (21)	(1) <i>baggie</i>	SLCGR-AS-G1	5/24/04 16:30	
SLCGR-AS-G2	Soil (0"-2")/ Pam Wehrmann	/C	Pb (21)	(1)	SLCGR-AS-G2	5/24/04 16:35	
SLCGR-AS-G3	Soil (0"-2")/ Pam Wehrmann	/C	Pb (21)	(1)	SLCGR-AS-G3	5/24/04 17:13	
SLCGR-AS-G4	Soil (0"-2")/ Pam Wehrmann	/C	Pb (21)	(1)	SLCGR-AS-G4	5/24/04 17:11	
SLCGR-AS-G5	Soil (0"-2")/ Pam Wehrmann	/C	Pb (21)	(1)	SLCGR-AS-G5	5/27/04 11:46	
SLCGR-AS-G6	Soil (0"-2")/ Pam Wehrmann	/C	Pb (21)	(1)	SLCGR-AS-G6	5/27/04 11:48	
SLCGR-AS-G7	Soil (0"-2")/ Pam Wehrmann	/C	Pb (21)	(1)	SLCGR-AS-G7	5/27/04 11:55	<i>primary / MS/MSD</i>
SLCGR-AS-G8	Soil (0"-2")/ Pam Wehrmann	/C	Pb (21)	(1)	SLCGR-AS-G8	5/27/04 11:55	<i>field dup. / lab dup.</i>
SLCGR-R2-G1	Soil (0"-6")/ Pam Wehrmann	/C	Pb (21)	(1)	SLCGR-R2-G1	5/25/04 09:24	
SLCGR-R2-G10	Soil (0"-6")/ Pam Wehrmann	/C	Pb (21)	(1)	SLCGR-R2-G10	5/25/04 11:50	

**3144**

Shipment for Case Complete? <b>Y</b>	Sample(s) to be used for laboratory QC: SLCGR-AS-G7, SLCGR-AS-G8, SLCGR-R3-15, SLCGR-R3-16, SLCGR-R4/8-10, SLCGR-R4/8-11	Additional Sampler Signature(s):	Cooler Temperature Upon Receipt:	Chain of Custody Seal Number:
Analysis Key: Pb = Lead	Location: 1 L = Low, M = Low/Medium, H = High	Type/Designate: Composite = C, Grab = G	Custody Seal Intact? <input type="checkbox"/>	Shipment Iced? <input type="checkbox"/>

TR Number: **Non-EPA-481234730-051804-0010**

**LABORATORY COPY**



**USEPA Contract Laboratory Program**  
**Generic Chain of Custody**

**Reference Case**  
 Client No: \_\_\_\_\_  
 SDG No: \_\_\_\_\_

L

Date Shipped: Carrier Name: FedEx Airbill: <b>8469 4676 5649</b> Shipped to: Applied Physics and Chemistry Laboratory 13760 Magnolia Ave. Chino CA 91710 (909) 590-1828	<b>Chain of Custody Record</b>		Sampler Signature:	<b>For Lab Use Only</b> Lab Contract No: _____ Unit Price: _____ Transfer To: _____ Lab Contract No: _____ Unit Price: _____	
	Relinquished By	(Date / Time)	Received By		(Date / Time)
	1		<i>[Signature]</i>		6/1/04 09:30
	2				
	3				
4					

SAMPLE No.	MATRIX/SAMPLER	CONC/TYPE	ANALYSIS/TURNAROUND	TAG No./PRESERVATIVE/ Bottles	STATION LOCATION / Sample number	SAMPLE COLLECT DATE/TIME	FOR LAB USE ONLY Sample Condition On Receipt
SLCGR-R2-G11	Soil (0"-6")/ Pam Wehrmann	/C	Pb (21)	(1) <i>baggie</i>	SLCGR-R2-G11	5/25/04 12:05	
SLCGR-R2-G12	Soil (0"-6")/ Pam Wehrmann	/C	Pb (21)	(1)	SLCGR-R2-G12	5/25/04 12:32	
SLCGR-R2-G13	Soil (0"-6")/ Pam Wehrmann	/C	Pb (21)	(1)	SLCGR-R2-G13	5/25/04 12:29	
SLCGR-R2-G14	Soil (0"-6")/ Pam Wehrmann	/C	Pb (21)	(1)	SLCGR-R2-G14	5/25/04 13:00	
SLCGR-R2-G15	Soil (0"-6")/ Pam Wehrmann	/C	Pb (21)	(1)	SLCGR-R2-G15	5/25/04 13:03	
SLCGR-R2-G16	Soil (0"-6")/ Pam Wehrmann	/C	Pb (21)	(1)	SLCGR-R2-G16	5/25/04 13:03 <i>FD field duplicate</i>	
SLCGR-R2-G2	Soil (0"-6")/ Pam Wehrmann	/C	Pb (21)	(1)	SLCGR-R2-G2	5/25/04 09:27	
SLCGR-R2-G3	Soil (0"-6")/ Pam Wehrmann	/C	Pb (21)	(1)	SLCGR-R2-G3	5/25/04 09:51	
SLCGR-R2-G4	Soil (0"-6")/ Pam Wehrmann	/C	Pb (21)	(1)	SLCGR-R2-G4	5/25/04 10:14	
SLCGR-R2-G5	Soil (0"-6")/ Pam Wehrmann	/C	Pb (21)	(1)	SLCGR-R2-G5	5/25/04 10:22	

**3144**

Shipment for Case Complete? Y	Sample(s) to be used for laboratory QC: SLCGR-AS-G7, SLCGR-AS-G8, SLCGR-R3-15, SLCGR-R3-16, SLCGR-R4/8-10, SLCGR-R4/8-11	Additional Sampler Signature(s):	Cooler Temperature Upon Receipt:	Chain of Custody Seal Number:
Analysis Key: Pb = Lead	SLCGR-R4/8-11 L = Low, M = Low/Medium, H = High	Type/Designate: Composite = C, Grab = G	Custody Seal Intact? <input type="checkbox"/>	Shipment Iced? <input type="checkbox"/>

TR Number: **Non-EPA-481234730-051804-0010**

**LABORATORY COPY**

# Sample Receiving Checklist

APCL ServiceID: **3144** Client Name/Project: USACE

### 1. Sample Arrival

Date/Time Received 6/1/04 0930 Date/Time Opened 6/1/04 0930 By (name): Jason N.  
Custody Transfer:  Client  Golden State  UPS  US Mail  FedEx  APCL Empl: \_\_\_\_\_

### 2. Chain-of-Custody (CoC)

With Samples?  Faxed?  Client has Copy?  Signed, dated? By: \_\_\_\_\_  
 Project ID?  Analyses Clear?  Hold Samples? #on Hold \_\_\_\_\_ # Received \_\_\_\_\_  
 CoC/Docs Zip-Locked under lid?  Compos. #: \_\_\_\_\_  #Samples OK? \_\_\_\_\_  
 Discrepancies?  Client notified?  Response (attach docs): \_\_\_\_\_

### 3. Shipping Container/Cooler

Cooler Used? # of \_\_\_\_\_ Cooled by:  Ice  Blue Ice  Dry Ice  None  
Temp °C \_\_\_\_\_  
(Cooler temperature measured from temp blank if present, otherwise measured from the cooler).  
Cooler Custody Seal?  Absent  Intact  Tampered?

### 4. Sample Preservation

pH <2  pH >12  
If Not, pH = \_\_\_\_\_ Preserved by:  Client  APCL  Third Party \_\_\_\_\_

### 5. Holding-time Requirements

pH 24hr  BACT 6/24hr  Cr<sup>VI</sup> 24hr  NO<sub>3</sub><sup>-</sup> 48hr  BOD 48hr  
 Cl<sub>2</sub> ASAP  Turbidity 48hr  DO ASAP  Fe(II) ASAP  
 HT Expired?  Client notified?

### 6. Sample Container Condition

Intact?  Broken?  Documented? Number: \_\_\_\_\_  
Type:  plastic  glass  Tube: brass/SS  Tedlar Bag  
 Quantity OK?  Leaking?  Anomaly?  
 Caps tight?  Air Bubbles?  Anomaly?  
Labels:  Unique ID?  Date/Time  Preserved?

### 7. Turn Around Time

RUSH TAT: \_\_\_\_\_  Std (7-10 days)  Not Marked

### 8. Sample Matrix

Drinking H<sub>2</sub>O  Other Liq  Soil  Wipe  Polymer  Air  Other: \_\_\_\_\_  
 Ground H<sub>2</sub>O  Sludge  Filter  Oil/Petro  Paint  W. Water  Extract  Unknown

### 9. Pre-Login Check List Completed & OK?

ALL OK? (if not, attach docs)  Client Contact? (Name: \_\_\_\_\_) Date/Time: \_\_\_\_\_  
Received/Checked by: \_\_\_\_\_ Printed: 1 Jun 2004 7:32 a.m.

\*HT: Samples must be analyzed for results to reflect total concentrations. Results generated outside required of holding times are considered minimal values and may be used to define waste as hazardous but not as non-hazardous.



## Part 2: Sample Information

Seq. #	Sample ID (on COC)	Sample Sub-ID	APCL Sample ID	Matrix	Cont- tainer	Preser- vative	Vol, ml Am. g	# of Replica	Condition G, L, B	Collected mmmddyy	Hold ?	Composite Group	TAT Days
1	SLCGR-AS-G1		04-03144-1	S	P		250	1	G	052404	N	0	7 <input type="checkbox"/>
2	SLCGR-AS-G2		04-03144-2	S	P		250	1	G	052404	N	0	7 <input type="checkbox"/>
3	SLCGR-AS-G3		04-03144-3	S	P		250	1	G	052404	N	0	7 <input type="checkbox"/>
4	SLCGR-AS-G4		04-03144-4	S	P		250	1	G	052404	N	0	7 <input type="checkbox"/>
5	SLCGR-AS-G5		04-03144-5	S	P		250	1	G	052704	N	0	7 <input type="checkbox"/>
6	SLCGR-AS-G6		04-03144-6	S	P		250	1	G	052704	N	0	7 <input type="checkbox"/>
7	SLCGR-AS-G7		04-03144-7	S	P		250	1	G	052704	N	0	7 <input type="checkbox"/>
8	SLCGR-AS-G8		04-03144-8	S	P		250	1	G	052704	N	0	7 <input type="checkbox"/>
9	SLCGR-R2-G1		04-03144-9	S	P		250	1	G	052504	N	0	7 <input type="checkbox"/>
10	SLCGR-R2-G10		04-03144-10	S	P		250	1	G	052504	N	0	7 <input type="checkbox"/>
11	SLCGR-R2-G11		04-03144-11	S	P		250	1	G	052504	N	0	7 <input type="checkbox"/>
12	SLCGR-R2-G12		04-03144-12	S	P		250	1	G	052504	N	0	7 <input type="checkbox"/>
13	SLCGR-R2-G13		04-03144-13	S	P		250	1	G	052504	N	0	7 <input type="checkbox"/>
14	SLCGR-R2-G14		04-03144-14	S	P		250	1	G	052504	N	0	7 <input type="checkbox"/>
15	SLCGR-R2-G15		04-03144-15	S	P		250	1	G	052504	N	0	7 <input type="checkbox"/>
16	SLCGR-R2-G16		04-03144-16	S	P		250	1	G	052504	N	0	7 <input type="checkbox"/>
17	SLCGR-R2-G2		04-03144-17	S	P		250	1	G	052504	N	0	7 <input type="checkbox"/>
18	SLCGR-R2-G3		04-03144-18	S	P		250	1	G	052504	N	0	7 <input type="checkbox"/>
19	SLCGR-R2-G4		04-03144-19	S	P		250	1	G	052504	N	0	7 <input type="checkbox"/>
20	SLCGR-R2-G5		04-03144-20	S	P		250	1	G	052504	N	0	7 <input type="checkbox"/>

## Part 3: Analysis Information

Test Items:  200.7/6010B Lead, Pb, by ICP  
 ASTM-D2216 Moisture, percent in soil

Seq. #	Client's Sample ID (as given on COC)	Sample Sub-ID	APCL Sample ID	Matrix	PB	MOIST
1	SLCGR-AS-G1		04-03144-1	S	X	X <input type="checkbox"/>
2	SLCGR-AS-G2		04-03144-2	S	X	X <input type="checkbox"/>
3	SLCGR-AS-G3		04-03144-3	S	X	X <input type="checkbox"/>
4	SLCGR-AS-G4		04-03144-4	S	X	X <input type="checkbox"/>
5	SLCGR-AS-G5		04-03144-5	S	X	X <input type="checkbox"/>
6	SLCGR-AS-G6		04-03144-6	S	X	X <input type="checkbox"/>
7	SLCGR-AS-G7		04-03144-7	S	X	X <input type="checkbox"/>
8	SLCGR-AS-G8		04-03144-8	S	X	X <input type="checkbox"/>
9	SLCGR-R2-G1		04-03144-9	S	X	X <input type="checkbox"/>
10	SLCGR-R2-G10		04-03144-10	S	X	X <input type="checkbox"/>
11	SLCGR-R2-G11		04-03144-11	S	X	X <input type="checkbox"/>
12	SLCGR-R2-G12		04-03144-12	S	X	X <input type="checkbox"/>
13	SLCGR-R2-G13		04-03144-13	S	X	X <input type="checkbox"/>
14	SLCGR-R2-G14		04-03144-14	S	X	X <input type="checkbox"/>

15	SLCGR-R2-G15	04-03144-15	S	X	X	<input type="checkbox"/>
16	SLCGR-R2-G16	04-03144-16	S	X	X	<input type="checkbox"/>
17	SLCGR-R2-G2	04-03144-17	S	X	X	<input type="checkbox"/>
18	SLCGR-R2-G3	04-03144-18	S	X	X	<input type="checkbox"/>
19	SLCGR-R2-G4	04-03144-19	S	X	X	<input type="checkbox"/>
20	SLCGR-R2-G5	04-03144-20	S	X	X	<input type="checkbox"/>

ms/msp # (7) JUN 6/1/04

Login By JASON M. NARIO

Check By *JMN*



**USEPA Contract Laboratory Program**  
**Generic Chain of Custody**

**Reference Case**  
 Client No: \_\_\_\_\_  
 SDG No: \_\_\_\_\_

**L**

<b>Date Shipped:</b> <b>Carrier Name:</b> FedEx <b>Airbill:</b> <b>Shipped to:</b> Applied Physics and Chemistry Laboratory 13760 Magnolia Ave. Chino CA 91710 (909) 590-1828	<b>Chain of Custody Record</b>		<b>Sampler Signature:</b>	<b>For Lab Use Only</b> <b>Lab Contract No:</b> _____ <b>Unit Price:</b> _____ <b>Transfer To:</b> _____ <b>Lab Contract No:</b> _____ <b>Unit Price:</b> _____	
	<b>Relinquished By</b>	<b>(Date / Time)</b>	<b>Received By</b>		<b>(Date / Time)</b>
	1		[Signature]		6/1/04 0930
	2				
	3				
4					

SAMPLE No.	MATRIX/SAMPLER	CONC/TYPE	ANALYSIS/TURNAROUND	TAG No/ PRESERVATIVE/ Bottles	STATION LOCATION / Sample Number	SAMPLE COLLECT DATE/TIME	FOR LAB USE ONLY Sample Condition On Receipt
SLCGR-R2-G6	Soil (0"-6")/ Pam Wehrmann	/C	Pb (21)	(1) <i>baggie</i>	SLCGR-R2-G6	5/25/04 10:49	
SLCGR-R2-G7	Soil (0"-6")/ Pam Wehrmann	/C	Pb (21)	(1)	SLCGR-R2-G7	5/25/04 10:55	
SLCGR-R2-G8	Soil (0"-6")/ Pam Wehrmann	/C	Pb (21)	(1)	SLCGR-R2-G8	5/25/04 11:19	
SLCGR-R2-G9	Soil (0"-6")/ Pam Wehrmann	/C	Pb (21)	(1)	SLCGR-R2-G9	5/25/04 11:32	
SLCGR-R3-G1	Soil (0"-6")/ Pam Wehrmann	/C	Pb (21)	(1)	SLCGR-R3-G1	5/25/04 17:15	
SLCGR-R3-G10	Soil (0"-6")/ Pam Wehrmann	/C	Pb (21)	(1)	SLCGR-R3-G10	5/26/04 09:10	
SLCGR-R3-G11	Soil (0"-6")/ Pam Wehrmann	/C	Pb (21)	(1)	SLCGR-R3-G11	5/26/04 09:34	
SLCGR-R3-G12	Soil (0"-6")/ Pam Wehrmann	/C	Pb (21)	(1)	SLCGR-R3-G12	5/26/04 10:06	
SLCGR-R3-G13	Soil (0"-6")/ Pam Wehrmann	/C	Pb (21)	(1)	SLCGR-R3-G13	5/26/04 10:15	
SLCGR-R3-G14	Soil (0"-6")/ Pam Wehrmann	/C	Pb (21)	(1)	SLCGR-R3-G14	5/26/04 10:32	

**3145**

<b>Shipment for Case Complete?</b> N	<b>Sample(s) to be used for laboratory QC:</b> SLCGR-AS-G7, SLCGR-AS-G8, SLCGR-R3-15, SLCGR-R3-16, SLCGR-R4/8-10, SLCGR-R4/10-11	<b>Additional Sampler Signature(s):</b>	<b>Cooler Temperature Upon Receipt:</b>	<b>Chain of Custody Seal Number:</b>
<b>Analysis Key:</b> Pb = Lead	<b>Location:</b> 1 L = Low, M = Low/Medium, H = High	<b>Type/Designate:</b> Composite = C, Grab = G	<b>Custody Seal Intact?</b> <input type="checkbox"/>	<b>Shipment Iced?</b> <input type="checkbox"/>

**TR Number: Non-EPA-481234730-051804-0010**

**LABORATORY COPY**



**USEPA Contract Laboratory Program**  
**Generic Chain of Custody**

**Reference Case**  
 Client No: \_\_\_\_\_  
 SDG No: \_\_\_\_\_

L

Date Shipped: Carrier Name: FedEx Airbill: Shipped to: Applied Physics and Chemistry Laboratory 13760 Magnolia Ave. Chino CA 91710 (909) 590-1828	<b>Chain of Custody Record</b>		<b>Sampler Signature:</b>	<b>For Lab Use Only</b> Lab Contract No: _____ Unit Price: _____ Transfer To: _____ Lab Contract No: _____ Unit Price: _____	
	Relinquished By	(Date / Time)	Received By		(Date / Time)
	1		<i>[Signature]</i>		6/1/04 09:30
	2				
	3				
4					

SAMPLE No.	MATRIX/SAMPLER	CONC/TYPE	ANALYSIS/TURNAROUND	TAG No./PRESERVATIVE/Bottles	STATION LOCATION / Sample number	SAMPLE COLLECT DATE/TIME	FOR LAB USE ONLY Sample Condition On Receipt
SLCGR-R3- <del>61</del> 65	Soil (0"-6")/ Pam Wehrmann	/C	Pb (21) (1)	<i>baggie</i>	SLCGR-R3- <del>61</del> 65	5/26/04 10:39	<i>primary / MS/MSD</i>
SLCGR-R3- <del>61</del> 66	Soil (0"-6")/ Pam Wehrmann	/C	Pb (21) (1)		SLCGR-R3- <del>61</del> 66	5/26/04 10:39	<i>lab dup / field dup</i>
SLCGR-R3- <del>62</del> 62	Soil (0"-6")/ Pam Wehrmann	/C	Pb (21) (1)		SLCGR-R3- <del>62</del> 62	5/25/04 17:17	
SLCGR-R3- <del>63</del> 63	Soil (0"-6")/ Pam Wehrmann	/C	Pb (21) (1)		SLCGR-R3- <del>63</del> 63	5/25/04 17:42	
SLCGR-R3- <del>64</del> 64	Soil (0"-6")/ Pam Wehrmann	/C	Pb (21) (1)		SLCGR-R3- <del>64</del> 64	5/25/04 17:45	
SLCGR-R3- <del>65</del> 65	Soil (0"-6")/ Pam Wehrmann	/C	Pb (21) (1)		SLCGR-R3- <del>65</del> 65	5/25/04 18:20	
SLCGR-R3- <del>66</del> 66	Soil (0"-6")/ Pam Wehrmann	/C	Pb (21) (1)		SLCGR-R3- <del>66</del> 66	5/25/04 18:22	
SLCGR-R3- <del>67</del> 67	Soil (0"-6")/ Pam Wehrmann	/C	Pb (21) (1)		SLCGR-R3- <del>67</del> 67	5/26/04 08:35	
SLCGR-R3- <del>68</del> 68	Soil (0"-6")/ Pam Wehrmann	/C	Pb (21) (1)		SLCGR-R3- <del>68</del> 68	5/26/04 08:38	
SLCGR-R3- <del>69</del> 69	Soil (0"-6")/ Pam Wehrmann	/C	Pb (21) (1)		SLCGR-R3- <del>69</del> 69	5/26/04 09:06	

**3145**

Shipment for Case Complete? <input type="checkbox"/>	Sample(s) to be used for laboratory QC: SLCGR-AS-G7, SLCGR-AS-G8, SLCGR-R3-15, SLCGR-R3-16, SLCGR-R4/8-10, SLCGR-R4/8-11	Additional Sampler Signature(s):	Cooler Temperature Upon Receipt:	Chain of Custody Seal Number:
Analysis Key: Pb = Lead	Concentration: 1 L = Low, M = Low/Medium, H = High	Type/Designate: Composite = C, Grab = G	Custody Seal Intact? <input type="checkbox"/>	Shipment Iced? <input type="checkbox"/>

**TR Number: Non-EPA-481234730-051804-0010**

**LABORATORY COPY**

# Sample Receiving Checklist

# 3145

APCL ServiceID: \_\_\_\_\_ Client Name/Project: USACE

### 1. Sample Arrival

Date/Time Received 6/1/04 0930 Date/Time Opened 6/1/04 0930 By (name): Jason N.  
Custody Transfer:  Client  Golden State  UPS  US Mail  FedEx  APCL Empl: \_\_\_\_\_

### 2. Chain-of-Custody (CoC)

With Samples?  Faxed?  Client has Copy?  Signed, dated? By: \_\_\_\_\_  
 Project ID?  Analyses Clear?  Hold Samples? #on Hold \_\_\_\_\_ # Received \_\_\_\_\_  
 CoC/Docs Zip-Locked under lid?  Compos. #: \_\_\_\_\_  #Samples OK? \_\_\_\_\_  
 Discrepancies?  Client notified?  Response (attach docs): \_\_\_\_\_

### 3. Shipping Container/Cooler

Cooler Used? # of \_\_\_\_\_ Cooled by:  Ice  Blue Ice  Dry Ice  None  
Temp °C \_\_\_\_\_  
(Cooler temperature measured from temp blank if present, otherwise measured from the cooler).  
Cooler Custody Seal?  Absent  Intact  Tampered?

### 4. Sample Preservation

pH <2  pH >12  
If Not, pH = \_\_\_\_\_ Preserved by:  Client  APCL  Third Party \_\_\_\_\_

### 5. Holding-time Requirements

pH 24hr  BACT 6/24hr  Cr<sup>VI</sup> 24hr  NO<sub>3</sub><sup>-</sup> 48hr  BOD 48hr  
 Cl<sub>2</sub> ASAP  Turbidity 48hr  DO ASAP  Fe(II) ASAP  
 HT Expired?  Client notified?

### 6. Sample Container Condition

Intact?  Broken?  Documented? Number: \_\_\_\_\_  
Type:  plastic  glass  Tube: brass/SS  Tedlar Bag  
 Quantity OK?  Leaking?  Anomaly?  
 Caps tight?  Air Bubbles?  Anomaly?  
Labels:  Unique ID?  Date/Time  Preserved?

### 7. Turn Around Time

RUSH TAT: \_\_\_\_\_  Std (7-10 days)  Not Marked

### 8. Sample Matrix

Drinking H<sub>2</sub>O  Other Liq  Soil  Wipe  Polymer  Air  Other: \_\_\_\_\_  
 Ground H<sub>2</sub>O  Sludge  Filter  Oil/Petro  Paint  W. Water  Extract  Unknown

### 9. Pre-Login Check List Completed & OK?

ALL OK? (if not, attach docs)  Client Contact? (Name: \_\_\_\_\_) Date/Time: \_\_\_\_\_  
Received/Checked by: \_\_\_\_\_ Printed: 1 Jun 2004 7:32 a.m.

\*HT: Samples must be analyzed for results to reflect total concentrations. Results generated outside required of holding times are considered minimal values and may be used to define waste as hazardous but not as non-hazardous.



## Part 2: Sample Information

Seq. #	Sample ID (on COC)	Sample APCL Sub-ID	Sample ID	Matrix	Cont- tainer	Preser- vative	Vol, ml Am. g	# of Replica	Condition G, L, B	Collected mmddyy	Hold ?	Composite Group	TAT Days
1	SLCGR-R2-G6		04-03145-1	S	P		250	1	G	052504	N	0	7 <input type="checkbox"/>
2	SLCGR-R2-G7		04-03145-2	S	P		250	1	G	052504	N	0	7 <input type="checkbox"/>
3	SLCGR-R2-G8		04-03145-3	S	P		250	1	G	052504	N	0	7 <input type="checkbox"/>
4	SLCGR-R2-G9		04-03145-4	S	P		250	1	G	052504	N	0	7 <input type="checkbox"/>
5	SLCGR-R3-G1		04-03145-5	S	P		250	1	G	052504	N	0	7 <input type="checkbox"/>
6	SLCGR-R3-G10		04-03145-14	S	P		250	1	G	052604	N	0	7 <input type="checkbox"/>
7	SLCGR-R3-G11		04-03145-15	S	P		250	1	G	052604	N	0	7 <input type="checkbox"/>
8	SLCGR-R3-G12		04-03145-16	S	P		250	1	G	052604	N	0	7 <input type="checkbox"/>
9	SLCGR-R3-G13		04-03145-17	S	P		250	1	G	052604	N	0	7 <input type="checkbox"/>
10	SLCGR-R3-G14		04-03145-18	S	P		250	1	G	052604	N	0	7 <input type="checkbox"/>
11	SLCGR-R3-G15		04-03145-19	S	P		250	1	G	052604	N	0	7 <input type="checkbox"/>
12	SLCGR-R3-G16		04-03145-20	S	P		250	1	G	052604	N	0	7 <input type="checkbox"/>
13	SLCGR-R3-G2		04-03145-6	S	P		250	1	G	052504	N	0	7 <input type="checkbox"/>
14	SLCGR-R3-G3		04-03145-7	S	P		250	1	G	052504	N	0	7 <input type="checkbox"/>
15	SLCGR-R3-G4		04-03145-8	S	P		250	1	G	052504	N	0	7 <input type="checkbox"/>
16	SLCGR-R3-G5		04-03145-9	S	P		250	1	G	052504	N	0	7 <input type="checkbox"/>
17	SLCGR-R3-G6		04-03145-10	S	P		250	1	G	052504	N	0	7 <input type="checkbox"/>
18	SLCGR-R3-G7		04-03145-11	S	P		250	1	G	052604	N	0	7 <input type="checkbox"/>
19	SLCGR-R3-G8		04-03145-12	S	P		250	1	G	052604	N	0	7 <input type="checkbox"/>
20	SLCGR-R3-G9		04-03145-13	S	P		250	1	G	052604	N	0	7 <input type="checkbox"/>

## Part 3: Analysis Information

Test Items:  200.7/6010B Lead, Pb, by ICP  
 ASTM-D2216 Moisture, percent in soil

Seq. #	Client's Sample ID (as given on COC)	Sample Sub-ID	APCL Sample ID	Matrix	PB	MOIST
1	SLCGR-R2-G6		04-03145-1	S	X	X <input type="checkbox"/>
2	SLCGR-R2-G7		04-03145-2	S	X	X <input type="checkbox"/>
3	SLCGR-R2-G8		04-03145-3	S	X	X <input type="checkbox"/>
4	SLCGR-R2-G9		04-03145-4	S	X	X <input type="checkbox"/>
5	SLCGR-R3-G1		04-03145-5	S	X	X <input type="checkbox"/>
6	SLCGR-R3-G10		04-03145-14	S	X	X <input type="checkbox"/>
7	SLCGR-R3-G11		04-03145-15	S	X	X <input type="checkbox"/>
8	SLCGR-R3-G12		04-03145-16	S	X	X <input type="checkbox"/>
9	SLCGR-R3-G13		04-03145-17	S	X	X <input type="checkbox"/>
10	SLCGR-R3-G14		04-03145-18	S	X	X <input type="checkbox"/>
11	SLCGR-R3-G15		04-03145-19	S	X	X <input type="checkbox"/>
12	SLCGR-R3-G16		04-03145-20	S	X	X <input type="checkbox"/>
13	SLCGR-R3-G2		04-03145-6	S	X	X <input type="checkbox"/>
14	SLCGR-R3-G3		04-03145-7	S	X	X <input type="checkbox"/>

15	SLCGR-R3-G4	04-03145-8	S	X	X	<input type="checkbox"/>
16	SLCGR-R3-G5	04-03145-9	S	X	X	<input type="checkbox"/>
17	SLCGR-R3-G6	04-03145-10	S	X	X	<input type="checkbox"/>
18	SLCGR-R3-G7	04-03145-11	S	X	X	<input type="checkbox"/>
19	SLCGR-R3-G8	04-03145-12	S	X	X	<input type="checkbox"/>
20	SLCGR-R3-G9	04-03145-13	S	X	X	<input type="checkbox"/>

Client's Requirement:

MS/MSD

19  
Jm  
6/1/04

Login By JASON M. NARIO

Check By *JM*



**USEPA Contract Laboratory Program**  
**Generic Chain of Custody**

**Reference Case**  
 Client No: \_\_\_\_\_  
 SDG No: \_\_\_\_\_

L

Date Shipped: Carrier Name: FedEx Airbill: Shipped to: Applied Physics and Chemistry Laboratory 13760 Magnolia Ave. Chino CA 91710 (909) 590-1828	<b>Chain of Custody Record</b>		Sampler Signature:	
	Relinquished By	(Date / Time)	Received By	(Date / Time)
	1		<i>[Signature]</i>	6/1/04 0930
	2			
	3			
	4			
<b>For Lab Use Only</b>				
Lab Contract No: _____				
Unit Price: _____				
Transfer To: _____				
Lab Contract No: _____				
Unit Price: _____				

SAMPLE No.	MATRIX/SAMPLER	CONC/TYPE	ANALYSIS/TURNAROUND	TAG No/ PRESERVATIVE/ Bottles	STATION LOCATION / <i>Sample number</i>	SAMPLE COLLECT DATE/TIME	FOR LAB USE ONLY Sample Condition On Receipt
SLCGR-R4/8-8	Soil (0"-2")/ Pam Wehrmann	/C	Pb (21) (1)	<i>baggie</i>	SLCGR-R4/8-88	5/27/04 15:23	
SLCGR-R4/8-9	Soil (0"-2")/ Pam Wehrmann	/C	Pb (21) (1)		SLCGR-R4/8-89	5/27/04 15:07	
SLCGR-R3-G17	Soil (0"-6")	/C	Pb (21) (1)		SLCGR-R3-G17	5/26/04 13:50 <i>[initials]</i> 15:12	
SLCGR-R3-G18			(1)		SLCGR-R3-G18	5/26/04 14:00 <i>[initials]</i> 15:06	
SLCGR-R3-G19			(1)		SLCGR-R3-G19	5/26/04 13:50	
SLCGR-R3-G20			(1)		SLCGR-R3-G20	5/26/04 14:00	
SLCGR-R3-G21			(1)		SLCGR-R3-G21	5/26/04 14:25	
SLCGR-R3-G22			(1)		SLCGR-R3-G22	5/26/04 14:24	

**3147**

*Pamela Wehrmann*

Shipment for Case Complete? <input type="checkbox"/>	Sample(s) to be used for laboratory QC: SLCGR-AS-G7, SLCGR-AS-G8, SLCGR-R3-15, SLCGR-R3-16, SLCGR-R4/8-10, SLCGR-R4/8-11	Additional Sampler Signature(s):	Cooler Temperature Upon Receipt:	Chain of Custody Seal Number:
Analysis Key: Pb = Lead	Type/Designate: Composite = C, Grab = G	Custody Seal Intact? <input type="checkbox"/>	Shipment Iced? <input type="checkbox"/>	

TR Number: **Non-EPA-481234730-051804-0010**

**LABORATORY COPY**

# Sample Receiving Checklist

APCL ServiceID: **3147** Client Name/Project: USACE

### 1. Sample Arrival

Date/Time Received 6/1/04 0930 Date/Time Opened 6/1/04 0930 By (name): Jason N.  
Custody Transfer:  Client  Golden State  UPS  US Mail  FedEx  APCL Empl: \_\_\_\_\_

### 2. Chain-of-Custody (CoC)

With Samples?  Faxed?  Client has Copy?  Signed, dated? By: \_\_\_\_\_  
 Project ID?  Analyses Clear?  Hold Samples? #on Hold \_\_\_\_\_ # Received \_\_\_\_\_  
 CoC/Docs Zip-Locked under lid?  Compos. #: \_\_\_\_\_  #Samples OK? \_\_\_\_\_  
 Discrepancies?  Client notified?  Response (attach docs): \_\_\_\_\_

### 3. Shipping Container/Cooler

Cooler Used? # of \_\_\_\_\_ Cooled by:  Ice  Blue Ice  Dry Ice  None  
Temp °C \_\_\_\_\_  
(Cooler temperature measured from temp blank if present, otherwise measured from the cooler).  
Cooler Custody Seal?  Absent  Intact  Tampered?

### 4. Sample Preservation

pH <2  pH >12  
If Not, pH = \_\_\_\_\_ Preserved by:  Client  APCL  Third Party \_\_\_\_\_

### 5. Holding-time Requirements

pH 24hr  BACT 6/24hr  Cr<sup>VI</sup> 24hr  NO<sub>3</sub> 48hr  BOD 48hr  
 Cl<sub>2</sub> ASAP  Turbidity 48hr  DO ASAP  Fe(II) ASAP  
 HT Expired?  Client notified?

### 6. Sample Container Condition

Intact?  Broken?  Documented? Number: \_\_\_\_\_  
Type:  plastic  glass  Tube: brass/SS  Tedlar Bag  
 Quantity OK?  Leaking?  Anomaly?  
 Caps tight?  Air Bubbles?  Anomaly?  
Labels:  Unique ID?  Date/Time  Preserved?

### 7. Turn Around Time

RUSH TAT: \_\_\_\_\_  Std (7-10 days)  Not Marked

### 8. Sample Matrix

Drinking H<sub>2</sub>O  Other Liq  Soil  Wipe  Polymer  Air  Other: \_\_\_\_\_  
 Ground H<sub>2</sub>O  Sludge  Filter  Oil/Petro  Paint  W. Water  Extract  Unknown

### 9. Pre-Login Check List Completed & OK?

ALL OK? (if not, attach docs)  Client Contact? (Name: \_\_\_\_\_) Date/Time: \_\_\_\_\_  
Received/Checked by: [Signature] Printed: 1 Jun 2004 7:32 a.m.

\*HT: Samples must be analyzed for results to reflect total concentrations. Results generated outside required of holding times are considered minimal values and may be used to define waste as hazardous but not as non-hazardous.

# Sample Login: Check List

**04-03147 (1451\_ 313) (5577646\_ 313)**

**06/01/04**

## Part 1: General Information

---

- |                          |                          |                      |   |
|--------------------------|--------------------------|----------------------|---|
| <input type="checkbox"/> | Company Information      | Name:                | <i>U.S. Army Corps of Engineers</i>             |
|                          |                          | Address:             | <i>1325 J Street ,Sacramento ,CA 95814-2922</i> |
| <input type="checkbox"/> | Project Information      | Project Description: |   |
|                          |                          | Project #:           |   |
| <input type="checkbox"/> | Billing Information      | P.O. #:              |   |
|                          |                          | Bill Address:        | <i>1325 J Street ,Sacramento ,CA 95814-2922</i> |
|                          |                          | Lab Project ID:      |   |
|                          |                          | Client Database #:   | <i>6</i>  |
| <input type="checkbox"/> | Receiving Information    | Who Received Sample? | <i>Jason Nario</i>                              |
|                          |                          | Receiving Date/Time: | <i>06/01/04 0930</i>                            |
|                          |                          | COC No.              |   |
| <input type="checkbox"/> | Shipping Information     | Shipping Company     | <i>Express</i>                                  |
|                          |                          | Packing Information: | <i>Others</i>                                   |
| <input type="checkbox"/> | Container Information    | Container Provider:  | <i>Client</i>                                   |
| <input type="checkbox"/> | Sampling Information     | Sampling Person:     | <i>PW</i>                                       |
|                          |                          | Sampling Company:    | <i>Client</i>                                   |
| <input type="checkbox"/> | Turn-Around-Time Option: |                      | <i>Rush 5 working day(s)</i>                    |
| <input type="checkbox"/> | QC Option:               |                      | <i>Army Corps. E.</i>                           |
| <input type="checkbox"/> | Disposal Option:         |                      | <i>Not specify</i>                              |
-

## Part 2: Sample Information

Seq. #	Sample ID (on COC)	Sample APCL Sub-ID	Sample ID Matrix	Cont- tainer	Preser- vative	Vol, ml Am. g	# of Replica	Condition G, L, B	Collected mmddyy	Hold ?	Composite Group	TAT Days
1	SLCGR-R4/8-G8 ✓	04-03147-7	S	P		250	1	G	052704	N	0	7 <input type="checkbox"/>
2	SLCGR-R4/8-G9	04-03147-8	S	P		250	1	G	052704	N	0	7 <input type="checkbox"/>
3	SLCGR-R3-G17 ✓	04-03147-1	S	P		250	1	G	052604	N	0	7 <input type="checkbox"/>
4	SLCGR-R3-G18 ✓	04-03147-2	S	P		250	1	G	052604	N	0	7 <input type="checkbox"/>
5	SLCGR-R3-G19 ✓	04-03147-3	S	P		250	1	G	052604	N	0	7 <input type="checkbox"/>
6	SLCGR-R3-G20 ✓	04-03147-4	S	P		250	1	G	052604	N	0	7 <input type="checkbox"/>
7	SLCGR-R3-G21 ✓	04-03147-5	S	P		250	1	G	052604	N	0	7 <input type="checkbox"/>
8	SLCGR-R3-G22 ✓	04-03147-6	S	P		250	1	G	052604	N	0	7 <input type="checkbox"/>

## Part 3: Analysis Information

Test Items:  200.7/6010B Lead, Pb, by ICP  
 ASTM-D2216 Moisture, percent in soil

Seq. #	Client's Sample ID (as given on COC)	Sample Sub-ID	APCL Sample ID	Matrix	PB	MOIST
1	SLCGR-R4/8-G8		04-03147-7	S	X	X <input type="checkbox"/>
2	SLCGR-R4/8-G9		04-03147-8	S	X	X <input type="checkbox"/>
3	SLCGR-R3-G17		04-03147-1	S	X	X <input type="checkbox"/>
4	SLCGR-R3-G18		04-03147-2	S	X	X <input type="checkbox"/>
5	SLCGR-R3-G19		04-03147-3	S	X	X <input type="checkbox"/>
6	SLCGR-R3-G20		04-03147-4	S	X	X <input type="checkbox"/>
7	SLCGR-R3-G21		04-03147-5	S	X	X <input type="checkbox"/>
8	SLCGR-R3-G22		04-03147-6	S	X	X <input type="checkbox"/>

Client's Requirement: ~~MS/MSD:~~

Login By JASON M. NARIO

Check By HS



**USEPA Contract Laboratory Program**  
**Generic Chain of Custody**

**Reference Case**  
 Client No: \_\_\_\_\_  
 SDG No: \_\_\_\_\_ **L**

Date Shipped: Carrier Name: FedEx Airbill: Shipped to: Applied Physics and Chemistry Laboratory 13760 Magnolia Ave. Chino CA 91710 (909) 590-1828	<b>Chain of Custody Record</b>		Sampler Signature:	<b>For Lab Use Only</b> Lab Contract No: _____ Unit Price: _____ Transfer To: _____ Lab Contract No: _____ Unit Price: _____	
	Relinquished By	(Date / Time)	Received By		(Date / Time)
	1		<i>[Signature]</i>		6/1/04 0930
	2				
	3				
4					

SAMPLE No.	MATRIX/SAMPLER	CONC/TYPE	ANALYSIS/TURNAROUND	TAG No/ PRESERVATIVE/ Bottles	STATION LOCATION / Sample number	SAMPLE COLLECT DATE/TIME	FOR LAB USE ONLY Sample Condition On Receipt
SLCGR-R4/8- <del>8</del> 9	Soil (0"-2")/ Pam Wehrmann	/C	Pb (21) (1)	<i>baggie</i>	SLCGR-R4/8- <del>8</del> 9	5/27/04 16:45	
SLCGR-R4/8- <del>9</del> 10	Soil (0"-2")/ Pam Wehrmann	/C	Pb (21) (1)		SLCGR-R4/8- <del>9</del> 10	5/27/04 15:05 primary / MS / MSD	
SLCGR-R4/8- <del>10</del> 11	Soil (0"-2")/ Pam Wehrmann	/C	Pb (21) (1)		SLCGR-R4/8- <del>10</del> 11	5/27/04 16:26 primary / Lab duplicate	
SLCGR-R4/8- <del>11</del> 12	Soil (0"-2")/ Pam Wehrmann	/C	Pb (21) (1)		SLCGR-R4/8- <del>11</del> 12	5/27/04 16:27	
SLCGR-R4/8- <del>12</del> 13	Soil (0"-2")/ Pam Wehrmann	/C	Pb (21) (1)		SLCGR-R4/8- <del>12</del> 13	5/27/04 15:59	
SLCGR-R4/8- <del>13</del> 14	Soil (0"-2")/ Pam Wehrmann	/C	Pb (21) (1)		SLCGR-R4/8- <del>13</del> 14	5/27/04 16:00	
SLCGR-R4/8- <del>14</del> 15	Soil (0"-2")/ Pam Wehrmann	/C	Pb (21) (1)		SLCGR-R4/8- <del>14</del> 15	5/27/04 14:47	
SLCGR-R4/8- <del>15</del> 16	Soil (0"-2")/ Pam Wehrmann	/C	Pb (21) (1)		SLCGR-R4/8- <del>15</del> 16	5/27/04 14:46	
SLCGR-R4/8- <del>16</del> 17	Soil (0"-2")/ Pam Wehrmann	/C	Pb (21) (1)		SLCGR-R4/8- <del>16</del> 17	5/27/04 14:35	
SLCGR-R4/8- <del>17</del> 18	Soil (0"-2")/ Pam Wehrmann	/C	Pb (21) (1)		SLCGR-R4/8- <del>17</del> 18	5/27/04 14:34	

**3146**

Shipment for Case Complete? <input type="checkbox"/> N	Sample(s) to be used for laboratory QC: SLCGR-AS-G7, SLCGR-AS-G8, SLCGR-R3-15, SLCGR-R3-16, SLCGR-R4/8-10, SLCGR-R4/8-11	Additional Sampler Signature(s):	Cooler Temperature Upon Receipt:	Chain of Custody Seal Number:
Analysis Key: Pb = Lead	SLCGR-R4/8-11 L = Low, M = Low/Medium, H = High	Type/Designate: Composite = C, Grab = G	Custody Seal intact? <input type="checkbox"/>	Shipment iced? <input type="checkbox"/>

**TR Number: Non-EPA-481234730-051804-0010**

**LABORATORY COPY**



**USEPA Contract Laboratory Program**  
**Generic Chain of Custody**

**Reference Case**  
 Client No: \_\_\_\_\_  
 SDG No: \_\_\_\_\_

**L**

Date Shipped: Carrier Name: FedEx Airbill: Shipped to: Applied Physics and Chemistry Laboratory 13760 Magnolia Ave. Chino CA 91710 (909) 590-1828	<b>Chain of Custody Record</b>		Sampler Signature:	
	Relinquished By	(Date / Time)	Received By	(Date / Time)
	1		<i>[Signature]</i>	5/1/04 0930
	2			
	3			
	4			
<b>For Lab Use Only</b>				
Lab Contract No: _____				
Unit Price: _____				
Transfer To: _____				
Lab Contract No: _____				
Unit Price: _____				

SAMPLE No.	MATRIX/SAMPLER	CONC/TYPE	ANALYSIS/TURNAROUND	TAG No/ PRESERVATIVE/ Bottles	STATION LOCATION / Sample number	SAMPLE COLLECT DATE/TIME	FOR LAB USE ONLY Sample Condition On Receipt
SLCGR-R4/8-19	Soil (0"-2")/ Pam Wehrmann	/C	Pb (21) (1)	<i>baggie</i>	SLCGR-R4/8-19	5/27/04 14:28	
SLCGR-R4/8-2	Soil (0"-2")/ Pam Wehrmann	/C	Pb (21) (1)		SLCGR-R4/8-2	5/27/04 16:46	
SLCGR-R4/8-20	Soil (0"-2")/ Pam Wehrmann	/C	Pb (21) (1)		SLCGR-R4/8-20	5/27/04 14:25	
SLCGR-R4/8-21	Soil (0"-2")/ Pam Wehrmann	/C	Pb (21) (1)		SLCGR-R4/8-21	5/27/04 16:26	field duplicate
SLCGR-R4/8-22	Soil (0"-2")/ Pam Wehrmann	/C	Pb (21) (1)		SLCGR-R4/8-22	5/27/04 14:25	field duplicate
SLCGR-R4/8-3	Soil (0"-2")/ Pam Wehrmann	/C	Pb (21) (1)		SLCGR-R4/8-3	5/27/04 16:15	
SLCGR-R4/8-4	Soil (0"-2")/ Pam Wehrmann	/C	Pb (21) (1)		SLCGR-R4/8-4	5/27/04 16:16	
SLCGR-R4/8-5	Soil (0"-2")/ Pam Wehrmann	/C	Pb (21) (1)		SLCGR-R4/8-5	5/27/04 15:44	
SLCGR-R4/8-6	Soil (0"-2")/ Pam Wehrmann	/C	Pb (21) (1)		SLCGR-R4/8-6	5/27/04 15:45	
SLCGR-R4/8-7	Soil (0"-2")/ Pam Wehrmann	/C	Pb (21) (1)		SLCGR-R4/8-7	5/27/04 15:24	

**3146**

Shipment for Case Complete? <input type="checkbox"/>	Sample(s) to be used for laboratory QC: SLCGR-AS-G7, SLCGR-AS-G8, SLCGR-R3-15, SLCGR-R3-16, SLCGR-R4/8-10, SLCGR-R4/8-11	Additional Sampler Signature(s):	Cooler Temperature Upon Receipt:	Chain of Custody Seal Number:
Analysis Key: Pb = Lead	SLCGR-R4/8-11 L = Low, M = Low/Medium, H = High	Type/Designate: Composite = C, Grab = G	Custody Seal Intact? <input type="checkbox"/>	Shipment Iced? <input type="checkbox"/>

TR Number: **Non-EPA-481234730-051804-0010**

**LABORATORY COPY**

# Sample Receiving Checklist

APCL ServiceID: **3146** Client Name/Project: USACE

### 1. Sample Arrival

Date/Time Received 6/1/04 0930 Date/Time Opened 6/1/04 0930 By (name): Jason N.  
Custody Transfer:  Client  Golden State  UPS  US Mail  FedEx  APCL Empl:

### 2. Chain-of-Custody (CoC)

With Samples?  Faxed?  Client has Copy?  Signed, dated? By: \_\_\_\_\_  
 Project ID?  Analyses Clear?  Hold Samples? #on Hold \_\_\_\_\_ # Received \_\_\_\_\_  
 CoC/Docs Zip-Locked under lid?  Compos. #: \_\_\_\_\_  #Samples OK? \_\_\_\_\_  
 Discrepancies?  Client notified?  Response (attach docs): \_\_\_\_\_

### 3. Shipping Container/Cooler

Cooler Used? # of \_\_\_\_\_ Cooled by:  Ice  Blue Ice  Dry Ice  None  
Temp °C \_\_\_\_\_  
(Cooler temperature measured from temp blank if present, otherwise measured from the cooler).  
Cooler Custody Seal?  Absent  Intact  Tampered?

### 4. Sample Preservation

pH <2  pH >12  
If Not, pH = \_\_\_\_\_ Preserved by:  Client  APCL  Third Party \_\_\_\_\_

### 5. Holding-time Requirements

pH 24hr  BACT 6/24hr  Cr<sup>VI</sup> 24hr  NO<sub>3</sub><sup>-</sup> 48hr  BOD 48hr  
 Cl<sub>2</sub> ASAP  Turbidity 48hr  DO ASAP  Fe(II) ASAP  
 HT Expired?  Client notified?

### 6. Sample Container Condition

Intact?  Broken?  Documented? Number: \_\_\_\_\_  
Type:  plastic  glass  Tube: brass/SS  Tedlar Bag  
 Quantity OK?  Leaking?  Anomaly?  
 Caps tight?  Air Bubbles?  Anomaly?  
Labels:  Unique ID?  Date/Time  Preserved?

### 7. Turn Around Time

RUSH TAT: \_\_\_\_\_  Std (7-10 days)  Not Marked

### 8. Sample Matrix

Drinking H<sub>2</sub>O  Other Liq  Soil  Wipe  Polymer  Air  Other: \_\_\_\_\_  
 Ground H<sub>2</sub>O  Sludge  Filter  Oil/Petro  Paint  W. Water  Extract  Unknown

### 9. Pre-Login Check List Completed & OK?

ALL OK? (if not, attach docs)  Client Contact? (Name: \_\_\_\_\_) Date/Time: \_\_\_\_\_  
Received/Checked by: \_\_\_\_\_ Printed: 1 Jun 2004 7:32 a.m.

\*HT: Samples must be analyzed for results to reflect total concentrations. Results generated outside required of holding times are considered minimal values and may be used to define waste as hazardous but not as non-hazardous.

## Sample Login: Check List

04-03146 (1451\_ 312) (5577646\_ 312)

06/01/04

### Part 1: General Information

---

<input type="checkbox"/>	Company Information	Name:	<i>U.S. Army Corps of Engineers</i>
		Address:	<i>1325 J Street ,Sacramento ,CA 95814-2922</i>
<input type="checkbox"/>	Project Information	Project Description:	
		Project #:	
<input type="checkbox"/>	Billing Information	P.O. #:	
		Bill Address:	<i>1325 J Street ,Sacramento ,CA 95814-2922</i>
		Lab Project ID:	
		Client Database #:	<i>6</i>
<input type="checkbox"/>	Receiving Information	Who Received Sample?	<i>Jason Nario</i>
		Receiving Date/Time:	<i>06/01/04 0930</i>
		CDC No.	
<input type="checkbox"/>	Shipping Information	Shipping Company	<i>Express</i>
		Packing Information:	<i>Others</i>
<input type="checkbox"/>	Container Information	Container Provider:	<i>Client</i>
<input type="checkbox"/>	Sampling Information	Sampling Person:	<i>PW</i>
		Sampling Company:	<i>Client</i>
<input type="checkbox"/>	Turn-Around-Time Option:		<i>Rush 5 working day(s)</i>
<input type="checkbox"/>	QC Option:		<i>Army Corps. E.</i>
<input type="checkbox"/>	Disposal Option:		<i>Not specify</i>

---

## Part 2: Sample Information

Seq. #	Sample ID (on COC)	Sample APCL Sub-ID Sample ID	Cont- Matrix	Preser- tainer	Vol, ml Am. g	# of Replica	Condition G, L, B	Collected mmddyy	Hold ?	Composite Group	TAT Days	
1	SLCGR-R4/8-G1	04-03146-1	S	P	250	1	G	052704	N	0	7	<input type="checkbox"/>
2	SLCGR-R4/8-G10	04-03146-8	S	P	250	1	G	052704	N	0	7	<input type="checkbox"/>
3	SLCGR-R4/8-G11	04-03146-9	S	P	250	1	G	052704	N	0	7	<input type="checkbox"/>
4	SLCGR-R4/8-G12	04-03146-10	S	P	250	1	G	052704	N	0	7	<input type="checkbox"/>
5	SLCGR-R4/8-G13	04-03146-11	S	P	250	1	G	052704	N	0	7	<input type="checkbox"/>
6	SLCGR-R4/8-G14	04-03146-12	S	P	250	1	G	052704	N	0	7	<input type="checkbox"/>
7	SLCGR-R4/8-G15	04-03146-13	S	P	250	1	G	052704	N	0	7	<input type="checkbox"/>
8	SLCGR-R4/8-G16	04-03146-14	S	P	250	1	G	052704	N	0	7	<input type="checkbox"/>
9	SLCGR-R4/8-G17	04-03146-15	S	P	250	1	G	052704	N	0	7	<input type="checkbox"/>
10	SLCGR-R4/8-G18	04-03146-16	S	P	250	1	G	052704	N	0	7	<input type="checkbox"/>
11	SLCGR-R4/8-G19	04-03146-17	S	P	250	1	G	052704	N	0	7	<input type="checkbox"/>
12	SLCGR-R4/8-G2	04-03146-2	S	P	250	1	G	052704	N	0	7	<input type="checkbox"/>
13	SLCGR-R4/8-G20	04-03146-18	S	P	250	1	G	052704	N	0	7	<input type="checkbox"/>
14	SLCGR-R4/8-G21	04-03146-19	S	P	250	1	G	052704	N	0	7	<input type="checkbox"/>
15	SLCGR-R4/8-G22	04-03146-20	S	P	250	1	G	052704	N	0	7	<input type="checkbox"/>
16	SLCGR-R4/8-G3	04-03146-3	S	P	250	1	G	052704	N	0	7	<input type="checkbox"/>
17	SLCGR-R4/8-G4	04-03146-4	S	P	250	1	G	052704	N	0	7	<input type="checkbox"/>
18	SLCGR-R4/8-G5	04-03146-5	S	P	250	1	G	052704	N	0	7	<input type="checkbox"/>
19	SLCGR-R4/8-G6	04-03146-6	S	P	250	1	G	052704	N	0	7	<input type="checkbox"/>
20	SLCGR-R4/8-G7	04-03146-7	S	P	250	1	G	052704	N	0	7	<input type="checkbox"/>

## Part 3: Analysis Information

- Test Items:  200.7/6010B Lead, Pb, by ICP  
 ASTM-D2216 Moisture, percent in soil

Seq. #	Client's Sample ID (as given on COC)	Sample Sub-ID	APCL Sample ID	Matrix	PB	MOIST	
1	SLCGR-R4/8-G1		04-03146-1	S	X	X	<input type="checkbox"/>
2	SLCGR-R4/8-G10		04-03146-8	S	X	X	<input type="checkbox"/>
3	SLCGR-R4/8-G11		04-03146-9	S	X	X	<input type="checkbox"/>
4	SLCGR-R4/8-G12		04-03146-10	S	X	X	<input type="checkbox"/>
5	SLCGR-R4/8-G13		04-03146-11	S	X	X	<input type="checkbox"/>
6	SLCGR-R4/8-G14		04-03146-12	S	X	X	<input type="checkbox"/>
7	SLCGR-R4/8-G15		04-03146-13	S	X	X	<input type="checkbox"/>
8	SLCGR-R4/8-G16		04-03146-14	S	X	X	<input type="checkbox"/>
9	SLCGR-R4/8-G17		04-03146-15	S	X	X	<input type="checkbox"/>
10	SLCGR-R4/8-G18		04-03146-16	S	X	X	<input type="checkbox"/>
11	SLCGR-R4/8-G19		04-03146-17	S	X	X	<input type="checkbox"/>
12	SLCGR-R4/8-G2		04-03146-2	S	X	X	<input type="checkbox"/>
13	SLCGR-R4/8-G20		04-03146-18	S	X	X	<input type="checkbox"/>

14	SLCGR-R4/8-G21	04-03146-19	S	X	X	<input type="checkbox"/>
15	SLCGR-R4/8-G22	04-03146-20	S	X	X	<input type="checkbox"/>
16	SLCGR-R4/8-G3	04-03146-3	S	X	X	<input type="checkbox"/>
17	SLCGR-R4/8-G4	04-03146-4	S	X	X	<input type="checkbox"/>
18	SLCGR-R4/8-G5	04-03146-5	S	X	X	<input type="checkbox"/>
19	SLCGR-R4/8-G6	04-03146-6	S	X	X	<input type="checkbox"/>
20	SLCGR-R4/8-G7	04-03146-7	S	X	X	<input type="checkbox"/>

Client's Requirement: MS/MSD (8) - JN 6/1/04

Login By JASON M. NARIO

Check By *[Signature]*

005453

# CHAIN OF CUSTODY RECORD

Page \_\_\_ of \_\_\_

**US ARMY CORPS OF ENGINEERS  
SACRAMENTO DISTRICT**  
Environmental Engineering Branch  
 SPK-ED-E  
1325 J Street  
Sacramento, California  
95814-2922

Project Name: *SLC AAB GR Soils Removal*  
Project Location: *Salt Lake City UT*  
Project Coordinator: *FILFEN McBRIDE*  
Phone: *916.557.7407* FAX: *916.557.7865*  
Sampler: *PAUL BRIZUELA* Phone: *916 275 1712*

Laboratory: *Applied Physics & CL*  
Address: *13760 Magnolia*  
*Chino CA 91710*  
Contact: *ERIC Wendland*  
Phone: *909.590.1828 x104*

SAMPLE IDENTIFICATION:		GRAB	COMP	DATE	TIME	6010 C										MS/MSD	TURN AROUND TIME (DAYS)	MATRIX CODE	NUMBER OF					PRESERVATIVE CODE
																			PLASTIC	GLASS	VOA	SLEEVE	ENCORE	
Field	Laboratory																							
<i>SLCGR-R3-G1-1.5</i>			X			X											1	S	1					
<i>SLCGR-R3-G5-1.5</i>			X			X											1	S	1					
<i>SLCGR-R3-G6-1.5</i>			X			X											1	S	1					
<i>SLCGR-R3-G7-1.5</i>			X			X											1	S	1					
<i>SLCGR-R3-G11-1.5</i>			X			X											1	S	1					
<i>SLCGR-R3-G15-1.5</i>			X			X											1	S	1					
<i>SLCGR-R3-G22-1.5</i>			X			X											1	S	1					

**4418**

COMMENTS/SPECIAL INSTRUCTIONS:  
*Homogenize and sieve samples, analyze for lead only*

CHECKED BY: \_\_\_\_\_  
PRESERVATIVE CODES:  
C = HCl    N = HNO<sub>3</sub>    S = H<sub>2</sub>SO<sub>4</sub>  
SAMPLE DISPOSAL:  
 Hold     Dispose     Return

RELINQUISHED BY	DATE/TIME	RECEIVED BY	DATE/TIME
<i>[Signature]</i>	<i>9/2/04 c. [Signature]</i>	<i>[Signature]</i>	<i>9/9/04 1530</i>

MATRIX CODES:  
W = Water    Sl = Sludge    SP = Solid Product  
S = Soil    A = Air    LP = Liquid Product  
Sd = Sediment  
SHIPPING:  
 Fed Ex     Courier     Hand Deliver  
Airbill Number: \_\_\_\_\_

# Sample Receiving Checklist

APCL ServiceID: **4412** Client Name/Project: USACE

### 1. Sample Arrival

Date/Time Received 9/9/04 1530 Date/Time Opened 9/9/04 1530 By (name): Jason  
Custody Transfer:  Client  Golden State  UPS  US Mail  FedEx  APCL Empl: R.S.

### 2. Chain-of-Custody (CoC)

With Samples?  Faxed?  Client has Copy?  Signed, dated? By: \_\_\_\_\_  
 Project ID?  Analyses Clear?  Hold Samples? # on Hold \_\_\_\_\_ # Received \_\_\_\_\_  
 CoC/Docs Zip-Locked under lid?  Compos. #: \_\_\_\_\_  #Samples OK? \_\_\_\_\_  
 Discrepancies?  Client notified?  Response (attach docs): \_\_\_\_\_

### 3. Shipping Container/Cooler

Cooler Used? # of \_\_\_\_\_ Cooled by:  Ice  Blue Ice  Dry Ice  None  
Temp °C \_\_\_\_\_  
(Cooler temperature measured from temp blank if present, otherwise measured from the cooler).  
Cooler Custody Seal?  Absent  Intact  Tampered?

### 4. Sample Preservation

pH <2  pH >12  
If Not, pH = \_\_\_\_\_ Preserved by:  Client  APCL  Third Party \_\_\_\_\_

### 5. Holding-time Requirements

pH 24hr  BACT 6/24hr  Cr<sup>VI</sup> 24hr  NO<sub>3</sub> 48hr  BOD 48hr  
 Cl<sub>2</sub> ASAP  Turbidity 48hr  DO ASAP  Fe(II) ASAP  
 HT Expired?  Client notified?

### 6. Sample Container Condition

Intact?  Broken?  Documented? Number: \_\_\_\_\_  
Type:  plastic  glass  Tube: brass/SS  Tedlar Bag  
 Quantity OK?  Leaking?  Anomaly?  
 Caps tight?  Air Bubbles?  Anomaly?  
Labels:  Unique ID?  Date/Time  Preserved?

### 7. Turn Around Time

RUSH TAT: 24hrs  Std (7-10 days)  Not Marked

### 8. Sample Matrix

Drinking H<sub>2</sub>O  Other Liq  Soil  Wipe  Polymer  Air  Other: \_\_\_\_\_  
 Ground H<sub>2</sub>O  Sludge  Filter  Oil/Petro  Paint  W. Water  Extract  Unknown

### 9. Pre-Login Check List Completed & OK?

ALL OK? (if not, attach docs)  Client Contact? (Name: \_\_\_\_\_) Date/Time: \_\_\_\_\_  
Received/Checked by: \_\_\_\_\_ Printed: 9 Sep 2004 7:23 a.m.

\*HT: Samples must be analyzed for results to reflect total concentrations. Results generated outside required of holding times are considered minimal values and may be used to define waste as hazardous but not as non-hazardous.

# Sample Login: Check List

04-04412 (1451\_ 333) (5577646\_ 333)

09/09/04

## Part 1: General Information

---

- |                          |                          |                      |   |
|--------------------------|--------------------------|----------------------|---|
| <input type="checkbox"/> | Company Information      | Name:                | <i>U.S. Army Corps of Engineers</i>             |
|                          |                          | Address:             | <i>1325 J Street ,Sacramento ,CA 95814-2922</i> |
| <input type="checkbox"/> | Project Information      | Project Description: | <i>SLC AAB GR Soil Removal</i>                  |
|                          |                          | Project #:           |   |
| <input type="checkbox"/> | Billing Information      | P.O. #:              |   |
|                          |                          | Bill Address:        | <i>1325 J Street ,Sacramento ,CA 95814-2922</i> |
|                          |                          | Lab Project ID:      |   |
|                          |                          | Client Database #:   | <i>13</i>                                       |
| <input type="checkbox"/> | Receiving Information    | Who Received Sample? | <i>Jason Nario</i>                              |
|                          |                          | Receiving Date/Time: | <i>09/09/04 1530</i>                            |
|                          |                          | COC No.              | <i>005453</i>                                   |
| <input type="checkbox"/> | Shipping Information     | Shipping Company     | <i>APCL pick up</i>                             |
|                          |                          | Packing Information: | <i>Others</i>                                   |
| <input type="checkbox"/> | Container Information    | Container Provider:  | <i>Client</i>                                   |
| <input type="checkbox"/> | Sampling Information     | Sampling Person:     | <i>PB</i>                                       |
|                          |                          | Sampling Company:    | <i>Client</i>                                   |
| <input type="checkbox"/> | Turn-Around-Time Option: |                      | <i>Rush 24 hour(s)</i>                          |
| <input type="checkbox"/> | QC Option:               |                      | <i>Army Corps. E.</i>                           |
| <input type="checkbox"/> | Disposal Option:         |                      | <i>Not specify</i>                              |
-

## Part 2: Sample Information

Seq. #	Sample ID (on GOC)	Sample Sub-ID	APGL Sample ID	Matrix	Cont- tainer	Preser- vative	Vol, ml Am. g	# of Replica	Condition G, L, B	Collected mmddyy	Hold ?	Composite Group	TAT Days	
1	SLCCR-R3-G1-1.5 /		04-04412-1	S	P		500	1	G	090304	N	0	0	<input type="checkbox"/>
2	SLGCR-R3-C5-1.5 /		04-04412-2	S	P		500	1	C	090304	N	0	0	<input type="checkbox"/>
3	SLGGR-R3-G6-1.5 /		04-04412-3	S	P		500	1	G	090304	N	0	0	<input type="checkbox"/>
4	SLCCR-R3-C7-1.5 /		04-04412-4	S	P		500	1	C	090304	N	0	0	<input type="checkbox"/>
5	SLGGR-R3-G11-1.5 /		04-04412-5	S	P		500	1	G	090304	N	0	0	<input type="checkbox"/>
6	SLGGR-R3-C15-1.5 /		04-04412-6	S	P		500	1	G	090304	N	0	0	<input type="checkbox"/>
7	SLGGR-R3-G22-1.5 /		04-04412-7	S	P		500	1	G	090304	N	0	0	<input type="checkbox"/>

## Part 3: Analysis Information

- Test Items:  200.7/6010B Lead, Pb, by ICP  
 ASTM-D2216 Moisture, percent in soil

Seq. #	Client's Sample ID (as given on GOC)	Sample Sub-ID	APCL Sample ID	Matrix	PB	MOIST	
1	SLGGR-R3-G1-1.5		04-04412-1	S	X	X	<input type="checkbox"/>
2	SLCCR-R3-G5-1.5		04-04412-2	S	X	X	<input type="checkbox"/>
3	SLGGR-R3-G6-1.5		04-04412-3	S	X	X	<input type="checkbox"/>
4	SLCGR-R3-C7-1.5		04-04412-4	S	X	X	<input type="checkbox"/>
5	SLGGR-R3-G11-1.5		04-04412-5	S	X	X	<input type="checkbox"/>
6	SLCCR-R3-C15-1.5		04-04412-6	S	X	X	<input type="checkbox"/>
7	SLGGR-R3-G22-1.5		04-04412-7	S	X	X	<input type="checkbox"/>

- Client's Requirement: **HOMOGENIZE AND DRY EACH SAMPLE IN ITS ENTIRETY, RECORDING THE PERCENT MOISTURE.**
- PASS ALL SAMPLE THROUGH A #8 SIEVE. 90% OF THE SAM MUST PASS THROUGH. IF IT DOESN'T, SAMPLE MUST BE GR UNTIL 90% PASSES THROUGH THE MESH**
- ANALYZE BY "6010C"**

Login By JASON M. NARIO

Check By *bx*

005447

**CHAIN OF CUSTODY RECORD**

Page \_\_\_ of \_\_\_

<b>US ARMY CORPS OF ENGINEERS SACRAMENTO DISTRICT</b> Environmental Engineering Branch  SPK-ED-E 1325 J Street Sacramento, California 95814-2922	Project Name: <i>SLC AAB GR Soils Removal</i>	Laboratory: <i>Applied Physics</i> <span style="float: right;">CL</span>
	Project Location: <i>Salt Lake City, Utah</i>	Address: <i>13760 Magnolia</i>
	Project Coordinator: <i>Eileen McBride</i>	<i>Chino CA 91710</i>
	Phone: <i>916.557.7401</i> FAX: <i>916.557.7665</i>	Contact: <i>Eric Wendland</i>
	Sampler: <i>P. BRIZUELA</i>	Phone: <i>916.275.1712</i>

ANALYSIS REQUESTED →						MS/MSD	TURN AROUND TIME (DAYS)	MATRIX CODE	NUMBER OF					PRESERVATIVE CODE			
Field	Laboratory	GRAB	COMP	DATE	TIME				PLASTIC	GLASS	VOA	SLEEVE	ENCORE				
<i>SLCGR-23.67-3.0</i>				<i>9/14</i>	<i>10:10</i>	<i>X</i>		<i>1</i>	<i>1</i>								

4487

COMMENTS/SPECIAL INSTRUCTIONS: <i>Contact Tim Chapman for testing</i> <i>homogenize sleeve, 6010 c</i>				<i>916.803.2227</i>	CHECKED BY:	PRESERVATIVE CODES: C = HCl    N = HNO <sub>3</sub> S = H <sub>2</sub> SO <sub>4</sub>	
RELINQUISHED BY				DATE/TIME	RECEIVED BY	DATE/TIME	MATRIX CODES: W = Water    SI = Sludge    SP = Solid Product S = Soil    A = Air    LP = Liquid Product Sd = Sediment
SHIPPING: <input type="checkbox"/> Fed Ex <input type="checkbox"/> Courier <input type="checkbox"/> Hand Deliver				Airbill Number:			

# Sample Receiving Checklist

APCL ServiceID: **4497** Client Name/Project: USACE

### 1. Sample Arrival

Date/Time Received 9/15/04 0930 Date/Time Opened 9/15/04 0930 By (name): Jagon N  
Custody Transfer:  Client  Golden State  UPS  US Mail  FedEx  APCL Empl: \_\_\_\_\_

### 2. Chain-of-Custody (CoC)

With Samples?  Faxed?  Client has Copy?  Signed, dated? By: \_\_\_\_\_  
 Project ID?  Analyses Clear?  Hold Samples? #on Hold \_\_\_\_\_ # Received \_\_\_\_\_  
 CoC/Docs Zip-Locked under lid?  Compos.#: \_\_\_\_\_  #Samples OK? \_\_\_\_\_  
 Discrepancies?  Client notified?  Response (attach docs): \_\_\_\_\_

### 3. Shipping Container/Cooler

Cooler Used? # of \_\_\_\_\_ Cooled by:  Ice  Blue Ice  Dry Ice  None  
Temp °C \_\_\_\_\_  
(Cooler temperature measured from temp blank if present, otherwise measured from the cooler).  
Cooler Custody Seal?  Absent  Intact  Tampered?

### 4. Sample Preservation

pH <2  pH >12  
If Not, pH = \_\_\_\_\_ Preserved by:  Client  APCL  Third Party \_\_\_\_\_

### 5. Holding-time Requirements

pH 24hr  BACT 6/24hr  Cr<sup>VI</sup> 24hr  NO<sub>3</sub><sup>-</sup> 48hr  BOD 48hr  
 Cl<sub>2</sub> ASAP  Turbidity 48hr  DO ASAP  Fe(II) ASAP  
 HT Expired?  Client notified?

### 6. Sample Container Condition

Intact?  Broken?  Documented? Number: \_\_\_\_\_  
Type:  plastic  glass  Tube: brass/SS  Tedlar Bag  
 Quantity OK?  Leaking?  Anomaly?  
 Caps tight?  Air Bubbles?  Anomaly?  
Labels:  Unique ID?  Date/Time  Preserved?

### 7. Turn Around Time

RUSH TAT: 24hrs  Std (7-10 days)  Not Marked

### 8. Sample Matrix

Drinking H<sub>2</sub>O  Other Liq  Soil  Wipe  Polymer  Air  Other: \_\_\_\_\_  
 Ground H<sub>2</sub>O  Sludge  Filter  Oil/Petro  Paint  W. Water  Extract  Unknown

### 9. Pre-Login Check List Completed & OK?

ALL OK? (if not, attach docs)  Client Contact? (Name: \_\_\_\_\_) Date/Time: \_\_\_\_\_  
Received/Checked by: \_\_\_\_\_ Printed: 15 Sep 2004 7:12 a.m.

\* HT: Samples must be analyzed for results to reflect total concentrations. Results generated outside required of holding times are considered minimal values and may be used to define waste as hazardous but not as non-hazardous.



## Part 2: Sample Information

Seq. #	Sample ID (on COC)	Sample Sub-ID	APCL Sample ID	Matrix	Cont- tainer	Preser- vative	Vol, ml Am. g	# of Replica	Condition G, L, B	Collected mmddyy	Hold ?	Composite Group	TAT Days
1	SLCGR-R3-G7-3.0	04-04497-1	S	P			500	1	G	091404	N	0	0 <input type="checkbox"/>

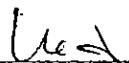
## Part 3: Analysis Information

Test Items:  200.7/6010B Lead, Pb, by ICP  
 ASTM-D2216 Moisture, percent in soil

Seq. #	Client's Sample ID (as given on COC)	Sample Sub-ID	APCL Sample ID	Matrix	PB	MOIST
1	SLCGR-R3-G7-3.0		04-04497-1	S	X	X <input type="checkbox"/>

- Client's Requirement: **HOMOGENIZE AND DRY EACH SAMPLE IN ITS ENTIRETY, RECORDING THE PERCENT MOISTURE.**
- PASS ALL SAMPLE THROUGH A #8 SIEVE. 90% OF THE SAM MUST PASS THROUGH. IF IT DOESN'T, SAMPLE MUST BE GR UNTIL 90% PASSES THROUGH THE MESH**
- ANALYZE BY "6010C"**

Login By JASON M. NARIO

Check By 

## Waste Disposal Characterization Samples



SOP Volume: Client Services  
Section: 1.1.2  
Page: 1 of 1  
Effective Date: 10-May-99  
Revision: 1 Number 1 of 3  
Filename: F:\QC\Forms\QC\Cooler.wpd



# COOLER RECEIPT CHECKLIST

Login#: 174467 Date Received: 9-7-04 Number of Coolers: 2 Fed Ex  
Client: EMUSACE Project: SLCAABGR box

- A. Preliminary Examination Phase  
Date Opened: 9-7-04 By (print): Troy Windsor (sign) Troy Windsor
- Did cooler come with a shipping slip (airbill, etc.)?  YES  NO  
If YES, enter carrier name and airbill number: Fed Ex 847094854749
  - Were custody seals on outside of cooler?  YES  NO  
How many and where? \_\_\_\_\_ Seal date: \_\_\_\_\_ Seal name: \_\_\_\_\_
  - Were custody seals unbroken and intact at the date and time of arrival?  YES  NO N/A
  - Were custody papers dry and intact when received?  YES  NO
  - Were custody papers filled out properly (ink, signed, etc.)?  YES  NO
  - Did you sign the custody papers in the appropriate place?  YES  NO
  - Was project identifiable from custody papers?  YES  NO  
If YES, enter project name at the top of this form.
  - If required, was sufficient ice used? Samples should be 2-6 degrees C.  YES  NO  
Type of ice: None Temperature: Ambient

- B. Login Phase  
Date Logged In: 9-7-04 By (print): Troy Windsor (sign) Troy Windsor
- Describe type of packing in cooler: In Fed Ex box
  - Did all bottles arrive unbroken?  YES  NO
  - Were labels in good condition and complete (ID, date, time, signature, etc.)?  YES  NO
  - Did bottle labels agree with custody papers?  YES  NO
  - Were appropriate containers used for the tests indicated?  YES  NO
  - Were correct preservatives added to samples?  YES  NO N/A
  - Was sufficient amount of sample sent for tests indicated?  YES  NO
  - Were bubbles absent in VOA samples? If NO, list sample Ids below  YES  NO N/A
  - Was the client contacted concerning this sample delivery?  YES  NO  
If YES, give details below.  
Who was called? \_\_\_\_\_ By whom? \_\_\_\_\_ Date: \_\_\_\_\_

Additional Comments:  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

005451

174475

# CHAIN OF CUSTODY RECORD

Page \_\_\_ of \_\_\_

<b>US ARMY CORPS OF ENGINEERS</b> <b>SACRAMENTO DISTRICT</b> Environmental Engineering Branch  SPK-ED-E 1325 J Street Sacramento, California 95814-2922	Project Name: <u>SLCAABGR Soil Removal</u>	Laboratory: <u>Curtis &amp; Tompkins</u>
	Project Location: <u>Salt Lake City, Utah</u>	Address: <u>2323 5th Street</u>
	Project Coordinator: <u>Eileen McBride</u>	<u>Berkeley CA, 94710</u>
	Phone: <u>916.557.7407</u> FAX: <u>916.557.7865</u>	Contact: <u>PAT FLYNN</u>
	Sampler: <u>Paul Brienza</u>	Phone: <u>916.275.1712</u>

ANALYSIS REQUESTED →					TCLP Metals	MS/MSD	TURN AROUND TIME (DAYS)	MATRIX CODE	NUMBER OF					PRESERVATIVE CODE	
SAMPLE IDENTIFICATION		GRAB	COMP	DATE					TIME	PLASTIC	GLASS	VOA	SLEEVE		ENCORE
Field	Laboratory														
-1	SLCAABGR-EM2			9/4	3:00pm	X		1 S 1							
-2	SLCAABGR-EM3			9/4	3:10pm	X		1 S 1							
-3	SLCAABGR-EM4			9/4	3:20pm	X		1 S 1							
-4	SLCAABGR-EM5			9/4	3:30pm	X		1 S 1							

COMMENTS/SPECIAL INSTRUCTIONS: Please Remorganize sludge, TCLP metals, 24 TAT 48 per PVF JEW 9-7-04

CHECKED BY: \_\_\_\_\_ PRESERVATIVE CODES: C = HCl N = HNO<sub>3</sub> S = H<sub>2</sub>SO<sub>4</sub>

SAMPLE DISPOSAL:  Hold  Dispose  Return

RELINQUISHED BY	DATE/TIME	RECEIVED BY	DATE/TIME	MATRIX CODES:
<u>P. Brienza</u>	<u>9/1/04 3:00pm</u>	<u>Jerry E. [Signature]</u>	<u>9-7-04 / 1000</u>	W = Water SI = Sludge SP = Solid Product S = Soil A = Air LP = Liquid Product Sd = Sediment
				SHIPPING: <input type="checkbox"/> Fed Ex <input type="checkbox"/> Courier <input type="checkbox"/> Hand Deliver Airbill Number:

SOP Volume: Client Services  
Section: 1.1.2  
Page: 1 of 1  
Effective Date: 10-May-99  
Revision: 1 Number 1 of 3  
Filename: F:\QC\Forms\QC\Cooler.wpd



# COOLER RECEIPT CHECKLIST

Login#: 174475 Date Received: 9-7-04 Number of Coolers: 1 Fed Ex  
Client: EMASSIST Project: SLCAABGR box

**A. Preliminary Examination Phase**

Date Opened: 9-7-04 By (print): Troy Windsor (sign) Troy Windsor

1. Did cooler come with a shipping slip (airbill, etc.)?  YES NO

If YES, enter carrier name and airbill number: Fed Ex 8470 94854738

2. Were custody seals on outside of cooler?  YES  NO

How many and where? \_\_\_\_\_ Seal date: \_\_\_\_\_ Seal name: \_\_\_\_\_ N/A

3. Were custody seals unbroken and intact at the date and time of arrival?  YES NO

4. Were custody papers dry and intact when received?  YES NO

5. Were custody papers filled out properly (ink, signed, etc.)?  YES NO

6. Did you sign the custody papers in the appropriate place?  YES NO

7. Was project identifiable from custody papers?  YES NO

If YES, enter project name at the top of this form.

8. If required, was sufficient ice used? Samples should be 2-6 degrees C.  YES NO

Type of ice: None Temperature: Ambient

**B. Login Phase**

Date Logged In: 9-7-04 By (print): Troy Windsor (sign) Troy Windsor

1. Describe type of packing in cooler: In ziploc bags

2. Did all bottles arrive unbroken?  YES NO

3. Were labels in good condition and complete (ID, date, time, signature, etc.)?  YES NO

4. Did bottle labels agree with custody papers?  YES NO

5. Were appropriate containers used for the tests indicated?  YES NO

6. Were correct preservatives added to samples?  YES NO N/A

7. Was sufficient amount of sample sent for tests indicated?  YES NO

8. Were bubbles absent in VOA samples? If NO, list sample Ids below  YES NO N/A

9. Was the client contacted concerning this sample delivery?  YES NO

If YES, give details below.

Who was called? \_\_\_\_\_ By whom? \_\_\_\_\_ Date: \_\_\_\_\_

Additional Comments:

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# COOLER RECEIPT CHECKLIST

Login#: 174612 Date Received: 9-14-04 Number of Coolers: 0 Fed Ex box  
Client: EM Assist Project: SLC AAB Gummy Range

## A. Preliminary Examination Phase

Date Opened: 9-14-04 By (print): Tray Windsor (sign) [Signature]

1. Did cooler come with a shipping slip (airbill, etc.)?  YES NO

If YES, enter carrier name and airbill number: Fed Ex 847889687976

2. Were custody seals on outside of cooler?  YES NO

How many and where? \_\_\_\_\_ Seal date: \_\_\_\_\_ Seal name: \_\_\_\_\_

3. Were custody seals unbroken and intact at the date and time of arrival?  YES NO

4. Were custody papers dry and intact when received?  YES NO

5. Were custody papers filled out properly (ink, signed, etc.)?  YES NO ?

6. Did you sign the custody papers in the appropriate place?  YES NO

7. Was project identifiable from custody papers?  YES NO

If YES, enter project name at the top of this form.

8. If required, was sufficient ice used? Samples should be 2-6 degrees C.  YES NO

Type of ice: None Temperature: Ambient

## B. Login Phase

Date Logged In: 9-14-04 By (print): Tray Windsor (sign) [Signature]

1. Describe type of packing in cooler: sample in ziploc bags

2. Did all bottles arrive unbroken?  YES NO

3. Were labels in good condition and complete (ID, date, time, signature, etc.)?  YES NO

4. Did bottle labels agree with custody papers?  YES NO

5. Were appropriate containers used for the tests indicated?  YES NO

6. Were correct preservatives added to samples?  YES NO N/A

7. Was sufficient amount of sample sent for tests indicated?  YES NO

8. Were bubbles absent in VOA samples? If NO, list sample Ids below  YES NO N/A

9. Was the client contacted concerning this sample delivery?  YES NO

If YES, give details below.

Who was called? \_\_\_\_\_ By whom? \_\_\_\_\_ Date: \_\_\_\_\_

## Additional Comments:

A5 - Typed, not signed



SOP Volume: Client Services  
Section: 1.1.2  
Page: 1 of 1  
Effective Date: 10-May-99  
Revision: 1 Number 1 of 3  
Filename: F:\QC\Forms\QC\Cooler.wpd



# COOLER RECEIPT CHECKLIST

Login#: 174649 Date Received: 9-15-04 Number of Coolers: 1 *Fed Ex box*  
Client: EM Assist Project: SLCAABGR

- A. Preliminary Examination Phase  
Date Opened: 9-15-04 By (print): S. Stanley (sign) *[Signature]*
- Did cooler come with a shipping slip (airbill, etc.)?  YES  NO  
If YES, enter carrier name and airbill number: Fed Ex 847889720718
  - Were custody seals on outside of cooler?  YES  NO  
How many and where? \_\_\_\_\_ Seal date: \_\_\_\_\_ Seal name: N/A
  - Were custody seals unbroken and intact at the date and time of arrival?  YES  NO
  - Were custody papers dry and intact when received?  YES  NO
  - Were custody papers filled out properly (ink, signed, etc.)?  YES  NO
  - Did you sign the custody papers in the appropriate place?  YES  NO
  - Was project identifiable from custody papers?  YES  NO  
If YES, enter project name at the top of this form.
  - If required, was sufficient ice used? Samples should be 2-6 degrees C.  YES  NO  
Type of ice: None Temperature: Ambient

- B. Login Phase  
Date Logged In: 9-15-04 By (print): Tony Windsor (sign) *[Signature]*
- Describe type of packing in cooler: In ziploc bags in Fed Ex box
  - Did all bottles arrive unbroken?  YES  NO
  - Were labels in good condition and complete (ID, date, time, signature, etc.)?  YES  NO
  - Did bottle labels agree with custody papers?  YES  NO
  - Were appropriate containers used for the tests indicated?  YES  NO
  - Were correct preservatives added to samples?  YES  NO N/A
  - Was sufficient amount of sample sent for tests indicated?  YES  NO
  - Were bubbles absent in VOA samples? If NO, list sample Ids below  YES  NO N/A
  - Was the client contacted concerning this sample delivery?  YES  NO  
If YES, give details below.  
Who was called? \_\_\_\_\_ By whom? \_\_\_\_\_ Date: \_\_\_\_\_

Additional Comments:  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

005448

Applied Physics 909.540.1828  
 13760 Magnolia  
 Oxnard, CA 91770 Page \_\_\_ of \_\_\_

**CHAIN OF CUSTODY RECORD**

<b>US ARMY CORPS OF ENGINEERS          SACRAMENTO DISTRICT</b> Environmental Engineering Branch  SPK-ED-E 1325 J Street Sacramento, California 95814-2922	Project Name: <i>WNDZ-BS/SLCAABGR</i>	Laboratory: <i>Sewer &amp; Transit</i>
	Project Location: <i>Wendover, Utah</i>	Address: <i>880 Riverside Parkway West Sacramento CA 95605</i>
	Project Coordinator: <i>Eileen McBride</i>	Contact: <i>Eileen McBride</i>
	Phone: <i>916.557.7107</i> FAX: <i>916.557.7805</i>	Phone: <i>916.773.5600</i>
	Sampler: <i>Paul Brizuela</i>	Phone: <i>916.175.1772</i>

SAMPLE IDENTIFICATION					TCLP	MS/MSD	TURN AROUND TIME (DAYS)	MATRIX CODE	NUMBER OF					PRESERVATIVE CODE
Field	Laboratory	GRAB	COMP	DATE					TIME	PLASTIC	GLASS	VOA	SLEEVE	
<i>WNDZ-BS-2006</i>				<i>9/15</i>	<i>4:16pm</i>	<i>X</i>		<i>S</i>	<i>1</i>					
<i>SLCAA BGR-EMB</i>				<i>9/15</i>	<i>11:00am</i>	<i>X</i>		<i>S</i>	<i>1</i>					

**4521**

COMMENTS/SPECIAL INSTRUCTIONS: *Screen with a #8 sieve. Homogenize what clears the sieve. Test only what clears the sieve. RUSH TAT*

CALL Tim Chapman if any Q's 916.803.2227

CHECKED BY: \_\_\_\_\_

PRESERVATIVE CODES:  
 C = HCl    N = HNO<sub>3</sub>    S = H<sub>2</sub>SO<sub>4</sub>

SAMPLE DISPOSAL:  
 Hold     Dispose     Return

RELINQUISHED BY	DATE/TIME	RECEIVED BY	DATE/TIME	MATRIX CODES: W = Water    SI = Sludge    SP = Solid Product S = Soil    A = Air    LP = Liquid Product Sd = Sediment
		<i>[Signature]</i>	<i>09/16/07 0800</i>	SHIPPING: <input type="checkbox"/> Fed Ex <input type="checkbox"/> Courier <input type="checkbox"/> Hand Deliver Airbill Number: _____

# Sample Receiving Checklist

APCL ServiceID: **4521** Client Name/Project: USACE

### 1. Sample Arrival

Date/Time Received 9/16/04 0800 Date/Time Opened 9/16/04 0800 By (name) Jason N.  
Custody Transfer:  Client  Golden State  UPS  US Mail  FedEx  APCL Empl: \_\_\_\_\_

### 2. Chain-of-Custody (CoC)

With Samples?  Faxed?  Client has Copy?  Signed, dated? By: \_\_\_\_\_  
 Project ID?  Analyses Clear?  Hold Samples? #on Hold \_\_\_\_\_ # Received \_\_\_\_\_  
 CoC/Docs Zip-Locked under lid?  Compos. #: \_\_\_\_\_  #Samples OK? \_\_\_\_\_  
 Discrepancies?  Client notified?  Response (attach docs): \_\_\_\_\_

### 3. Shipping Container/Cooler

Cooler Used? # of \_\_\_\_\_ Cooled by:  Ice  Blue Ice  Dry Ice  None  
Temp °C \_\_\_\_\_  
(Cooler temperature measured from temp blank if present, otherwise measured from the cooler).  
Cooler Custody Seal?  Absent  Intact  Tampered?

### 4. Sample Preservation

pH < 2  pH > 12  
If Not, pH = \_\_\_\_\_ Preserved by:  Client  APCL  Third Party \_\_\_\_\_

### 5. Holding-time Requirements

pH 24hr  BACT 6/24hr  Cr<sup>VI</sup> 24hr  NO<sub>3</sub> 48hr  BOD 48hr  
 Cl<sub>2</sub> ASAP  Turbidity 48hr  DO ASAP  Fe(II) ASAP  
 HT Expired?  Client notified?

### 6. Sample Container Condition

Intact?  Broken?  Documented? Number: \_\_\_\_\_  
Type:  plastic  glass  Tube: brass/SS  Tedlar Bag  
 Quantity OK?  Leaking?  Anomaly?  
 Caps tight?  Air Bubbles?  Anomaly?  
Labels:  Unique ID?  Date/Time  Preserved?

### 7. Turn Around Time

RUSH TAT 24 hrs  Std (7-10 days)  Not Marked

### 8. Sample Matrix

Drinking H<sub>2</sub>O  Other Liq  Soil  Wipe  Polymer  Air  Other: \_\_\_\_\_  
 Ground H<sub>2</sub>O  Sludge  Filter  Oil/Petro  Paint  W. Water  Extract  Unknown

### 9. Pre-Login Check List Completed & OK?

ALL OK? (if not, attach docs)  Client Contact? (Name: \_\_\_\_\_) Date/Time: \_\_\_\_\_  
Received/Checked by: W Printed: 16 Sep 2004 7:07 a.m.

\* HT: Samples must be analyzed for results to reflect total concentrations. Results generated outside required of holding times are considered minimal values and may be used to define waste as hazardous but not as non-hazardous.

# Sample Login: Check List

04-04521 (1451\_ 338) (5577646\_ 338)

09/16/04

## Part 1: General Information

---

<input type="checkbox"/>	Company Information	Name:	<i>U.S. Army Corps of Engineers</i>
		Address:	<i>1325 J Street ,Sacramento ,CA 95814-2922</i>
<input type="checkbox"/>	Project Information	Project Description:	<i>SLCAABGR</i>
		Project #:	
<input type="checkbox"/>	Billing Information	P.O. #:	
		Bill Address:	<i>1325 J Street ,Sacramento ,CA 95814-2922</i>
		Lab Project ID:	
		Client Database #:	<i>13</i>
<input type="checkbox"/>	Receiving Information	Who Received Sample?	<i>Jason Nario</i>
		Receiving Date/Time:	<i>09/16/04 0800</i>
		COC No.	<i>005448</i>
<input type="checkbox"/>	Shipping Information	Shipping Company	<i>Express</i>
		Packing Information:	<i>Others</i>
<input type="checkbox"/>	Container Information	Container Provider:	<i>Client</i>
<input type="checkbox"/>	Sampling Information	Sampling Person:	<i>PB</i>
		Sampling Company:	<i>Client</i>
<input type="checkbox"/>	Turn-Around-Time Option:		<i>Rush 24 hour(s)</i>
<input type="checkbox"/>	QC Option:		<i>Army Corps. E.</i>
<input type="checkbox"/>	Disposal Option:		<i>Not specify</i>

---

## Part 2: Sample Information

Seq. #	Sample ID (on COC)	Sample Sub-ID	APCL Sample ID	Matrix	Cont- tainer	Preser- vative	Vol, ml Am. g	# of Replica	Condition G, L, B	Collected mmddyy	Hold ?	Composite Group	TAT Days
1	WNDZ-BS-2006 /		04-04521-2	S	P		500	1	G	091504 ✓	N	0	0 <input type="checkbox"/>
2	SLCAABGR-EM8 /		04-04521-1	S	P		500	1	G	091504	N	0	0 <input type="checkbox"/>

## Part 3: Analysis Information

Test Items:  6010B TCLP metal, EPA Primary List  
 ASTM-D2216 Moisture, percent in soil

Seq. #	Client's Sample ID (as given on COC)	Sample Sub-ID	APCL Sample ID	Matrix	TCLP TCLP	moist
1	WNDZ-BS-2006		04-04521-2	S	X	X <input type="checkbox"/>
2	SLCAABGR-EM8		04-04521-1	S	X	X <input type="checkbox"/>

- Client's Requirement: **SCREEN WITH A #8 SIEVE**  
 **HOMOGENIZE WHAT CLEARS THE SIEVE**  
 **TEST ONLY WHAT CLEARS THE SIEVE**

Login By JASON M. NARIO

Check By JK



## Soil Samples

(Collected after excavation of area in front of earthen berm)



**LABORATORIES, INC.**  
 1835 W. 205th Street  
 Torrance, CA 90501  
 Tel: (310) 618-8889  
 Fax: (310) 618-0818

Date: 05-25-2006  
 EMAX Batch No.: 06E201

Attn: Pamela Wehrmann

USACE  
 1325 J Street  
 Sacramento CA 95814-2922

Subject: Laboratory Report  
 Project: SLCAABGR

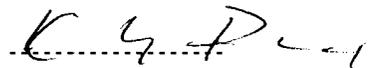
-----  
 Enclosed is the Laboratory report for samples received on 05/23/06.  
 The data reported include :

Sample ID	Control #	Col Date	Matrix	Analysis
SLCGR-R3-G37	E201-01	05/22/06	SOIL	LEAD
SLCGR-R3-G38	E201-02	05/22/06	SOIL	LEAD
SLCGR-R3-G39	E201-03	05/22/06	SOIL	LEAD
SLCGR-R3-G40	E201-04	05/22/06	SOIL	LEAD
SLCGR-R3-G41	E201-05	05/22/06	SOIL	LEAD
SLCGR-R3-G42	E201-06	05/22/06	SOIL	LEAD
SLCGR-R3-G43	E201-07	05/22/06	SOIL	LEAD
SLCGR-R3-G44	E201-08	05/22/06	SOIL	LEAD
SLCGR-R3-G45	E201-09	05/22/06	SOIL	LEAD
SLCGR-R3-G46	E201-10	05/22/06	SOIL	LEAD
SLCGR-R3-G47	E201-11	05/22/06	SOIL	LEAD
SLCGR-R3-G48	E201-12	05/22/06	SOIL	LEAD
SLCGR-R3-G49	E201-13	05/22/06	SOIL	LEAD
SLCGR-R3-G50	E201-14	05/22/06	SOIL	LEAD
SLCGR-R3-G51	E201-15	05/22/06	SOIL	LEAD
SLCGR-R3-G52	E201-16	05/22/06	SOIL	LEAD
SLCGR-R3-G40MS	E201-04M	05/22/06	SOIL	LEAD
SLCGR-R3-G40MSD	E201-04S	05/22/06	SOIL	LEAD

The results are summarized on the following pages.

Please feel free to call if you have any questions concerning these results.

Sincerely yours,

  
 -----  
 Kam Y. Pang, Ph.D.  
 Laboratory Director

CHAIN OF CUSTODY RECORD

06E201

<b>Project: SLC Army Air Base Gunnery Range</b> Location: Salt Lake City, UT Project POC: Pam Wehrmann Sampler(s): McBride/Wehrmann Phone: 916-557-6662 (wk) / 916-557-5307 (fax)		<b>Laboratory: EMAX</b> Address: 1835 205th Street Torrance, CA 90501 Phone: 310/618-8889 Lab POC: Richard Beauvil		<b>US Army Corps of Engineers</b> Sacramento District Environmental Engineering, SPK-ED-E 1325 J Street Sacramento, CA 95814-2922		 US Army Corps of Engineers			
<b>Relinquished By:</b> <i>Pamela Wehrmann</i> FedEx 8457 9147 3203		<b>Date:</b> 5/22/06 5-23-06	<b>Time:</b> 14:58 0900	<b>Received By:</b> <i>[Signature]</i>		<b>Date:</b> 5/23/06	<b>Time:</b> 0900		
Sample Information				Analysis Requested			Containers/Preservation		
Field Sample ID	Date	Time	TAT						
1 SLCGR-R3-G37	5/22/2006	14:06	24 hr	X				X	X
2 SLCGR-R3-G38	5/22/2006	14:01	24 hr	X				X	X
3 SLCGR-R3-G39	5/22/2006	13:54	24 hr	X				X	X
4 SLCGR-R3-G40	5/22/2006	13:48	X 24 hr	X				X	X
5 SLCGR-R3-G41	5/22/2006	12:52	24 hr	X				X	X
6 SLCGR-R3-G42	5/22/2006	12:39	24 hr	X				X	X
7 SLCGR-R3-G43	5/22/2006	12:36	24 hr	X				X	X
8 SLCGR-R3-G44	5/22/2006	12:25	24 hr	X				X	X
9 SLCGR-R3-G45	5/22/2006	12:23	24 hr	X				X	X
10 SLCGR-R3-G46	5/22/2006	12:18	24 hr	X				X	X
11 SLCGR-R3-G47	5/22/2006	12:16	24 hr	X				X	X
12 SLCGR-R3-G48	5/22/2006	12:14	24 hr	X				X	X
13 SLCGR-R3-G49	5/22/2006	12:11	24 hr	X				X	X
14 SLCGR-R3-G50	5/22/2006	12:03	24 hr	X				X	X
15 SLCGR-R3-G51	5/22/2006	12:03	24 hr	X				X	X
16 SLCGR-R3-G52	5/22/2006	12:26	24 hr	X				X	X

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T-RT-BOX

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**Appendix C**  
**Analytical Data**

## Primary Samples

# Applied P & CH Laboratories

13760 Magnolia Ave. Chino CA 91710

Tel: (909) 590-1828 Fax: (909) 590-1498

# APCL Analytical Report

Submitted to:  
U.S. Army Corps of Engineers  
Attention: Pamela Wehrman  
1325 J Street  
Sacramento CA 95814-2922  
Tel: (916) 557-7646 Fax: (916) 557-5307

Service ID #: 801-043144  
Collected by: PW  
Collected on: 05/24-27/04  
Sample Description: Soil  
Project Description:  
Received: 06/01/04  
Extracted: N/A  
Tested: 06/01-09/04  
Reported: 06/10/04

## Analysis of Soil Samples

Component Analyzed	Method	Unit	PQL	Analysis Result			
				SLCGR-AS-G1 04-03144-1	SLCGR-AS-G2 04-03144-2	SLCGR-AS-G3 04-03144-3	SLCGR-AS-G4 04-03144-4
<b>MOISTURE</b>	ASTM-D2216	%Moisture	0.5	15.2	12.8	14.3	16.7
Dilution Factor				1	1	1	1
<b>LEAD</b> <sup>(a)</sup>	6010B <sup>(b)</sup>	mg/kg	0.2	38.2	87.4	27.2	75.0

Component Analyzed	Method	Unit	PQL	Analysis Result			
				SLCGR-AS-G5 04-03144-5	SLCGR-AS-G6 04-03144-6	SLCGR-AS-G7 04-03144-7	SLCGR-AS-G8 04-03144-8
<b>MOISTURE</b>	ASTM-D2216	%Moisture	0.5	10	13.3	7.6	8.0
Dilution Factor				1	1	1	1
<b>LEAD</b> <sup>(a)</sup>	6010B <sup>(b)</sup>	mg/kg	0.2	98.8	77.9	83.7	61.6

Component Analyzed	Method	Unit	PQL	Analysis Result			
				SLCGR-R2-G1 04-03144-9	SLCGR-R2-G10 04-03144-10	SLCGR-R2-G11 04-03144-11	SLCGR-R2-G12 04-03144-12
<b>MOISTURE</b>	ASTM-D2216	%Moisture	0.5	8.2	9.6	6.6	16.2
Dilution Factor				1	1	1	1
<b>LEAD</b> <sup>(a)</sup>	6010B <sup>(b)</sup>	mg/kg	0.2	27.7	50.0	93.9	46.3

Component Analyzed	Method	Unit	PQL	Analysis Result			
				SLCGR-R2-G13 04-03144-13	SLCGR-R2-G14 04-03144-14	SLCGR-R2-G15 04-03144-15	SLCGR-R2-G16 04-03144-16
<b>MOISTURE</b>	ASTM-D2216	%Moisture	0.5	10.4	7.7	7.5	7.5
Dilution Factor				1	1	1	1
<b>LEAD</b> <sup>(a)</sup>	6010B <sup>(b)</sup>	mg/kg	0.2	43.7	38.5	58.8	52.8

# APCL Analytical Report

Component Analyzed	Method	Unit	PQL	Analysis Result			
				SLCGR-R2-G2	SLCGR-R2-G3	SLCGR-R2-G4	SLCGR-R2-G5
				04-03144-17	04-03144-18	04-03144-19	04-03144-20
<b>MOISTURE</b>	ASTM-D2216	%Moisture	0.5	19.0	9.8	10.9	7.3
Dilution Factor				1	1	1	1
<b>LEAD <sup>(a)</sup></b>	6010B <sup>(b)</sup>	mg/kg	0.2	27.2	29.1	26.5	37.1

PQL: Practical Quantitation Limit. MDL: Method Detection Limit. CRDL: Contract Required Detection Limit

N.D.: Not Detected or less than the practical quantitation limit.

"-": Analysis is not required.

J: Reported between PQL and MDL.

Listed Dilution Factors (DF) are relative to the method default DF. All unlisted DFs are 1.0

<sup>(a)</sup> Per Client's request, samples were dried and sieved through # 8 sieve before analysis.

<sup>(b)</sup> Both calibration and QC parameters were modified per 6010C.

Respectfully submitted,



Dominic Lau

Laboratory Director

Applied P & CH Laboratories

# Applied P & CH Laboratories

13760 Magnolia Ave. Chino CA 91710

Tel: (909) 590-1828 Fax: (909) 590-1498

# APCL Analytical Report

Submitted to:  
U.S. Army Corps of Engineers  
Attention: Pamela Wehrman  
1325 J Street  
Sacramento CA 95814-2922  
Tel: (916)557-7646 Fax: (916)557-5307

Service ID #: 801-043145  
Collected by: PW  
Collected on: 05/25-26/04  
Sample Description: Soil  
Project Description:  
Received: 06/01/04  
Extracted: N/A  
Tested: 06/01-09/04  
Reported: 06/10/04

## Analysis of Soil Samples

Component Analyzed	Method	Unit	PQL	Analysis Result			
				SLCGR-R2-G6 04-03145-1	SLCGR-R2-G7 04-03145-2	SLCGR-R2-G8 04-03145-3	SLCGR-R2-G9 04-03145-4
MOISTURE	ASTM-D2216	%Moisture	0.5	8.9	7.2	9.2	7.4
Dilution Factor				1	1	1	1
LEAD <sup>(a)</sup>	6010B <sup>(b)</sup>	mg/kg	0.5	51.9	60.8	93.4	82.2

Component Analyzed	Method	Unit	PQL	Analysis Result			
				SLCGR-R3-G1 04-03145-5	SLCGR-R3-G2 04-03145-6	SLCGR-R3-G3 04-03145-7	SLCGR-R3-G4 04-03145-8
MOISTURE,	ASTM-D2216	%Moisture	0.5	6.7	7.4	5.4	8.2
Dilution Factor				5	1	1	1
LEAD <sup>(a)</sup>	6010B <sup>(b)</sup>	mg/kg	0.5	458	145	134	78.3

Component Analyzed	Method	Unit	PQL	Analysis Result			
				SLCGR-R3-G5 04-03145-9	SLCGR-R3-G6 04-03145-10	SLCGR-R3-G7 04-03145-11	SLCGR-R3-G8 04-03145-12
MOISTURE,	ASTM-D2216	%Moisture	0.5	6.6	8.6	10.9	10.0
Dilution Factor				5	10	5	1
LEAD <sup>(a)</sup>	6010B <sup>(b)</sup>	mg/kg	0.5	823	1,090	432	68.6

Component Analyzed	Method	Unit	PQL	Analysis Result			
				SLCGR-R3-G9 04-03145-13	SLCGR-R3-G10 04-03145-14	SLCGR-R3-G11 04-03145-15	SLCGR-R3-G12 04-03145-16
MOISTURE,	ASTM-D2216	%Moisture	0.5	8.9	7.2	8.6	5.5
Dilution Factor				1	5	5	1
LEAD <sup>(a)</sup>	6010B <sup>(b)</sup>	mg/kg	0.5	186	394	408	105

Applied P & CH Laboratories

13760 Magnolia Ave. Chino CA 91710

Tel: (909) 590-1828 Fax: (909) 590-1498

# APCL Analytical Report

Component Analyzed	Method	Unit	PQL	Analysis Result			
				SLCGR-R3-G13	SLCGR-R3-G14	SLCGR-R3-G15	SLCGR-R3-G16
				04-03145-17	04-03145-18	04-03145-19	04-03145-20
<b>MOISTURE,</b>	ASTM-D2216	%Moisture	0.5	7.5	6.5	8.1	7.8
Dilution Factor				1	5	5	10
<b>LEAD <sup>(a)</sup></b>	6010B <sup>(b)</sup>	mg/kg	0.5	165	368	772	733

PQL: Practical Quantitation Limit. MDL: Method Detection Limit. CRDL: Contract Required Detection Limit

N.D.: Not Detected or less than the practical quantitation limit.

"-": Analysis is not required.

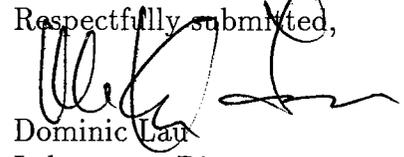
J: Reported between PQL and MDL.

Listed Dilution Factors (DF) are relative to the method default DF. All unlisted DFs are 1.0

<sup>(a)</sup> Per Client's request, samples were dried and sieved through # 8 seive before analysis.

<sup>(b)</sup> Both Calibration and QC parameters were modified per 6010C.

Respectfully submitted,



Dominic Lau

Laboratory Director

Applied P & CH Laboratories

Applied P & CH Laboratories

13760 Magnolia Ave. Chino CA 91710

Tel: (909) 590-1828 Fax: (909) 590-1498

# APCL Analytical Report

Submitted to:  
U.S. Army Corps of Engineers  
Attention: Pamela Wehrman  
1325 J Street  
Sacramento CA 95814-2922  
Tel: (916)557-7646 Fax: (916)557-5307

Service ID #: 801-043147  
Collected by: PW  
Collected on: 05/26-27/04  
Sample Description: Soil  
Project Description:  
Received: 06/01/04  
Extracted: N/A  
Tested: 06/01-09/04  
Reported: 06/10/04

## Analysis of Soil Samples

Component Analyzed	Method	Unit	PQL	Analysis Result			
				SLCGR-R3-G17 04-03147-1	SLCGR-R3-G18 04-03147-2	SLCGR-R3-G19 04-03147-3	SLCGR-R3-G20 04-03147-4
<b>MOISTURE</b>	ASTM-D2216	%Moisture	0.5	7.1	7.6	8.8	10.2
Dilution Factor				1	1	1	1
<b>LEAD <sup>(a)</sup></b>	6010B <sup>(b)</sup>	mg/kg	0.5	59.2	37.5	239	74.2

Component Analyzed	Method	Unit	PQL	Analysis Result			
				SLCGR-R3-G21 04-03147-5	SLCGR-R3-G22 04-03147-6	SLCGR-R4/8-G8 04-03147-7	SLCGR-R4/8-G9 04-03147-8
<b>MOISTURE</b>	ASTM-D2216	%Moisture	0.5	8.0	8.7	4.9	7.2
Dilution Factor				1	5	1	1
<b>LEAD <sup>(a)</sup></b>	6010B <sup>(b)</sup>	mg/kg	0.5	74.7	1,230	156	186

PQL: Practical Quantitation Limit. MDL: Method Detection Limit. CRDL: Contract Required Detection Limit

N.D.: Not Detected or less than the practical quantitation limit.

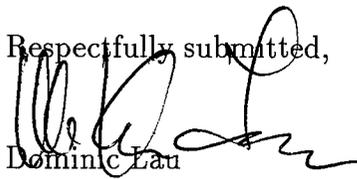
"-": Analysis is not required.

J: Reported between PQL and MDL.

Listed Dilution Factors (DF) are relative to the method default DF. All unlisted DFs are 1.0

<sup>(a)</sup> Per Client's request, samples were dried and sieved through # 8 sieve before analysis.

<sup>(b)</sup> Both calibration and QC parameters were modified per 6010C.

Respectfully submitted,  
  
Dominic Lau  
Laboratory Director  
Applied P & CH Laboratories

# Applied P & CH Laboratories

13760 Magnolia Ave. Chino CA 91710

Tel: (909) 590-1828 Fax: (909) 590-1498

# APCL Analytical Report

Submitted to:  
U.S. Army Corps of Engineers  
Attention: Pamela Wehrman  
1325 J Street  
Sacramento CA 95814-2922  
Tel: (916)557-7646 Fax: (916)557-5307

Service ID #: 801-043146  
Collected by: PW  
Collected on: 05/27/04  
Sample Description: Soil  
Project Description:  
Received: 06/01/04  
Extracted: N/A  
Tested: 06/01-10/04  
Reported: 06/10/04

## Analysis of Soil Samples

Component Analyzed	Method	Unit	PQL	Analysis Result			
				SLCGR-R4/8-G1	SLCGR-R4/8-G2	SLCGR-R4/8-G3	SLCGR-R4/8-G4
				04-03146-1	04-03146-2	04-03146-3	04-03146-4
<b>MOISTURE</b>	ASTM-D2216	%Moisture	0.5	7.5	7.3	6.9	5.6
Dilution Factor				1	1	1	1
<b>LEAD</b> <sup>(a)</sup>	6010B <sup>(b)</sup>	mg/kg	0.5	67.2	78.8	80.1	87.0

Component Analyzed	Method	Unit	PQL	Analysis Result			
				SLCGR-R4/8-G5	SLCGR-R4/8-G6	SLCGR-R4/8-G7	SLCGR-R4/8-G10
				04-03146-5	04-03146-6	04-03146-7	04-03146-8
<b>MOISTURE</b>	ASTM-D2216	%Moisture	0.5	5.1	4.7	5.5	6.7
Dilution Factor				1	1	1	1
<b>LEAD</b> <sup>(a)</sup>	6010B <sup>(b)</sup>	mg/kg	0.5	96.6	108	160	159

Component Analyzed	Method	Unit	PQL	Analysis Result			
				SLCGR-R4/8-G11	SLCGR-R4/8-G12	SLCGR-R4/8-G13	SLCGR-R4/8-G14
				04-03146-9	04-03146-10	04-03146-11	04-03146-12
<b>MOISTURE</b>	ASTM-D2216	%Moisture	0.5	6.2	6.4	6.3	6.8
Dilution Factor				1	1	1	1
<b>LEAD</b> <sup>(a)</sup>	6010B <sup>(b)</sup>	mg/kg	0.5	60.5	81.5	67.2	81.6

Component Analyzed	Method	Unit	PQL	Analysis Result			
				SLCGR-R4/8-G15	SLCGR-R4/8-G16	SLCGR-R4/8-G17	SLCGR-R4/8-G18
				04-03146-13	04-03146-14	04-03146-15	04-03146-16
<b>MOISTURE</b>	ASTM-D2216	%Moisture	0.5	7.0	7.7	10.1	5.7
Dilution Factor				1	1	1	1
<b>LEAD</b> <sup>(a)</sup>	6010B <sup>(b)</sup>	mg/kg	0.5	92.6	162	195	232

# APCL Analytical Report

Component Analyzed	Method	Unit	PQL	Analysis Result			
				SLCGR-R4/8-G19	SLCGR-R4/8-G20	SLCGR-R4/8-G21	SLCGR-R4/8-G22
				04-03146-17	04-03146-18	04-03146-19	04-03146-20
<b>MOISTURE</b>	ASTM-D2216	%Moisture	0.5	7.9	7.9	6.0	8.6
Dilution Factor				1	1	1	1
<b>LEAD <sup>(a)</sup></b>	6010B <sup>(b)</sup>	mg/kg	0.5	140	185	62.0	193

PQL: Practical Quantitation Limit. MDL: Method Detection Limit. CRDL: Contract Required Detection Limit

N.D.: Not Detected or less than the practical quantitation limit. "-": Analysis is not required.

J: Reported between PQL and MDL.

Listed Dilution Factors (DF) are relative to the method default DF. All unlisted DFs are 1.0

<sup>(a)</sup> Per Client's request, samples were dried and sieved through # 8 sieve before analysis.

<sup>(b)</sup> Both Calibration and QC parameters were modified per 6010C.

Respectfully submitted,



Dominic Lau

Laboratory Director

Applied P & CH Laboratories

Applied P & CH Laboratories

13760 Magnolia Ave. Chino CA 91710  
 Tel: (909) 590-1828 Fax: (909) 590-1498

# APCL Analytical Report

Submitted to:  
 U.S. Army Corps of Engineers  
 Attention: Pamela Wehrman  
 1325 J Street  
 Sacramento CA 95814-2922  
 Tel: (916)557-7646 Fax: (916)557-5307

Service ID #: 801-043424 Received: 06/01-23/04  
 Collected by: EM/PW Extracted: N/A  
 Collected on: 05/26-06/18/04 Tested: 06/23-25/04  
 Reported: 06/29/04  
 Sample Description: Soil  
 Project Description:

## Analysis of Soil Samples

Component Analyzed	Method	Unit	PQL	Analysis Result		
				SLCGR-R3-G22 04-03424-1	SLCGR-R3-G23 04-03424-2	SLCGR-R3-G24 04-03424-3
<b>MOISTURE</b>	ASTM-D2216	%Moisture	0.5	8.7 <sup>(a)</sup>	5.7	3.4
Dilution Factor				0.962	0.881	0.81
<b>LEAD <sup>(c)</sup></b>	6010B <sup>(d)</sup>	mg/kg	0.5	554 <sup>(b)</sup>	76.3	118

Component Analyzed	Method	Unit	PQL	Analysis Result		
				SLCGR-R3-G25 04-03424-4	SLCGR-R3-G26 04-03424-5	SLCGR-R3-G27 04-03424-6
<b>MOISTURE</b>	ASTM-D2216	%Moisture	0.5	6.7	5.8	3.9
Dilution Factor				1.02	0.877	0.851
<b>LEAD <sup>(c)</sup></b>	6010B <sup>(d)</sup>	mg/kg	0.5	44.1	68.9	123

Component Analyzed	Method	Unit	PQL	Analysis Result		
				SLCGR-R3-G28 04-03424-7	SLCGR-R3-G29 04-03424-8	SLCGR-R3-G30 04-03424-9
<b>MOISTURE</b>	ASTM-D2216	%Moisture	0.5	3.5	3.8	2.9
Dilution Factor				0.909	0.995	0.905
<b>LEAD <sup>(c)</sup></b>	6010B <sup>(d)</sup>	mg/kg	0.5	395	330	344

Component Analyzed	Method	Unit	PQL	Analysis Result		
				SLCGR-R3-G31 04-03424-10	SLCGR-R3-G32 04-03424-11	SLCGR-R3-G33 04-03424-12
<b>MOISTURE</b>	ASTM-D2216	%Moisture	0.5	3.1	2.8	2.8
Dilution Factor				0.83	0.877	0.803
<b>LEAD <sup>(c)</sup></b>	6010B <sup>(d)</sup>	mg/kg	0.5	119	148	392

Component Analyzed	Method	Unit	PQL	Analysis Result	
				SLCGR-R3-G34 04-03424-13	SLCGR-R3-G35 04-03424-14
<b>MOISTURE</b>	ASTM-D2216	%Moisture	0.5	3.6	4.9
Dilution Factor				0.905	0.889
<b>LEAD <sup>(c)</sup></b>	6010B <sup>(d)</sup>	mg/kg	0.5	141	199

Applied P & CH Laboratories

13760 Magnolia Ave. Chino CA 91710

Tel: (909) 590-1828 Fax: (909) 590-1498

# APCL Analytical Report

Component Analyzed	Method	Unit	PQL	Analysis Result	
				SLCGR-R3-G36 04-03424-15	SLCGR-R3-G31/32 04-03424-16
<b>MOISTURE</b>	ASTM-D2216	%Moisture	0.5	3.4	2.5
Dilution Factor				0.873	0.913
<b>LEAD</b> <sup>(c)</sup>	6010B <sup>(d)</sup>	mg/kg	0.5	78.4	108

PQL: Practical Quantitation Limit. MDL: Method Detection Limit. CRDL: Contract Required Detection Limit

N.D.: Not Detected or less than the practical quantitation limit. "-": Analysis is not required.

J: Reported between PQL and MDL.

Listed Dilution Factors (DF) are relative to the method default DF. All unlisted DFs are 1.0

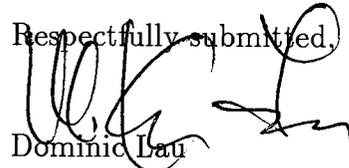
<sup>(a)</sup> Result from 04-3147.

<sup>(b)</sup> Additional analysis for 04-3147 requested on 06/16/04.

<sup>(c)</sup> Samples were dried and sieved through # 8 sieve before analysis.

<sup>(d)</sup> Both Calibration and QC parameters were modified per 6010C.

Respectfully submitted,



Dominic Lau  
Laboratory Director  
Applied P & CH Laboratories

**Applied P & CH Laboratories**

13760 Magnolia Ave. Chino CA 91710  
 Tel: (909) 590-1828 Fax: (909) 590-1498

**APCL Analytical Report**

Submitted to:  
 U.S. Army Corps of Engineers  
 Attention: Pamela Wehrman  
 1325 J Street  
 Sacramento CA 95814-2922  
 Tel: (916)557-7646 Fax: (916)557-5307

Service ID #: 801-044412 Received: 09/09/04  
 Collected by: PB Extracted: N/A  
 Collected on: 09/03/04 Tested: 09/09-10/04  
 Reported: 09/10/04  
 Sample Description: Soil  
 Project Description: SLC AAB GR Soil Removal

**Analysis of Soil Samples**

Component Analyzed	Method	Unit	PQL	MDL	Analysis Result		
					SLCGR-R3-G1-1.5 04-04412-1	SLCGR-R3-G5-1.5 04-04412-2	SLCGR-R3-G6-1.5 04-04412-3
<b>MOISTURE, PERCENT</b>	ASTM-D2216	%Moisture	0.5	0.042	8.1	9.8	10.9
Dilution Factor					0.957	0.962	0.99
<b>LEAD (a)</b>	SW6010B (b)	mg/kg	20	0.043	56.2	233	318

Component Analyzed	Method	Unit	PQL	MDL	Analysis Result	
					SLCGR-R3-G7-1.5 04-04412-4	SLCGR-R3-G11-1.5 04-04412-5
<b>MOISTURE, PERCENT</b>	ASTM-D2216	%Moisture	0.5	0.042	11.4	10.2
Dilution Factor					4.83	0.976
<b>LEAD (a)</b>	SW6010B (b)	mg/kg	20	0.043	617	229

Component Analyzed	Method	Unit	PQL	MDL	Analysis Result	
					SLCGR-R3-G15-1.5 04-04412-6	SLCGR-R3-G22-1.5 04-04412-7
<b>MOISTURE, PERCENT</b>	ASTM-D2216	%Moisture	0.5	0.042	10.1	13.5
Dilution Factor					0.957	0.995
<b>LEAD (a)</b>	SW6010B (b)	mg/kg	20	0.043	384	33.2

PQL: Practical Quantitation Limit. MDL: Method Detection Limit. CRDL: Contract Required Detection Limit  
 N.D.: Not Detected or less than the practical quantitation limit. " ": Analysis is not required.

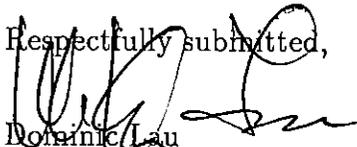
J: Reported between PQL and MDL.

† All results are reported on dry basis for soil samples.

Listed Dilution Factors (DF) are relative to the method default DF. All unlisted DFs are 1.0

(a) Per Client's request, samples were dried and sieved through # 8 Sieve before analysis.

(b) Both Calibration and QC parameters were modified per 6010C.

Respectfully submitted,  
  
 Dominic Lau  
 Laboratory Director  
 Applied P & CH Laboratories

Applied P & CH Laboratories

13760 Magnolia Ave. Chino CA 91710

Tel: (909) 590-1828 Fax: (909) 590-1498

**APCL Analytical Report**

Component Analyzed	Method	Unit	PQL	MDL	Analysis Result	
					SLCGR-R3-G6-1.5D 01-04412-8	SLCGR-R3-G7-1.5D 04-04412-9
<b>MOISTURE, PERCENT</b>	ASTM-D2216	%Moisture	0.5	0.042	10.9 (c)	11.4 (c)
Dilution Factor					0.99 (d)	0.952 (d)
<b>LEAD (a)</b>	SW6010B (b)	mg/kg	20	0.043	300	286

PQL: Practical Quantitation Limit. MDL: Method Detection Limit. CRDL: Contract Required Detection Limit

N.D.: Not Detected or less than the practical quantitation limit.

"-": Analysis is not required.

J: Reported between PQL and MDL.

† All results are reported on dry basis for soil samples.

Listed Dilution Factors (DF) are relative to the method default DF. All unlisted DFs are 1.0

(a) Per Client's request, samples were dried and sieved through # 8 Sieve before analysis.

(b) Both Calibration and QC parameters were modified per 6010C.

(c) Results from 4412-03; 4412-04.

(d) Additional analysis requested on 09/13/04.

Respectfully submitted,



Dominic Lau

Laboratory Director

Applied P &amp; CH Laboratories

# Applied P & CH Laboratories

13760 Magnolia Ave. Chino CA 91710

Tel: (909) 590-1828 Fax: (909) 590-1498

# APCL Analytical Report

Submitted to:  
U.S. Army Corps of Engineers  
Attention: Pamela Wehrman  
1325 J Street  
Sacramento CA 95814-2922  
Tel: (916)557-7646 Fax: (916)557-5307

Service ID #: 801-044497  
Collected by: PB  
Collected on: 09/14/04  
Received: 09/15/04  
Extracted: N/A  
Tested: 09/15-16/04  
Reported: 09/16/04

Sample Description: Soil  
Project Description: SLC AAB GR Soils Removal

## Analysis of Soil Samples

Component Analyzed	Method	Unit	PQL	MDL	Analysis Result
					SLCGR-R3-G7-3.0 04-04497-1
<b>MOISTURE, PERCENT</b>	ASTM-D2216	%Moisture	0.5	0.042	11.0
Dilution Factor					0.98
<b>LEAD <sup>(a)</sup></b>	SW6010B <sup>(b)</sup>	mg/kg	20	0.043	32.7

PQL: Practical Quantitation Limit. MDL: Method Detection Limit. CRDL: Contract Required Detection Limit

N.D.: Not Detected or less than the practical quantitation limit.

"-": Analysis is not required.

J: Reported between PQL and MDL.

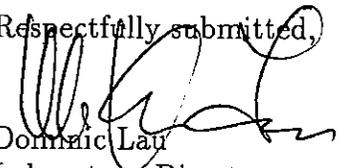
† All results are reported on dry basis for soil samples.

Listed Dilution Factors (DF) are relative to the method default DF. All unlisted DFs are 1.0

<sup>(a)</sup> Per Client's request, sample was dried and sieved through # 8 Sieve before analysis.

<sup>(b)</sup> Both calibration and QC parameters were modified per 6010C.

Respectfully submitted,

  
Dominic Lau

Laboratory Director

Applied P & CH Laboratories

## Waste Disposal Characterization Samples

TCLP Metals			
Lab #:	174467	Project#:	SLCAABGR
Client:	EM Assist CESP-K-PM-H	Location:	Salt Lake City UT
Field ID:	SLCAABGR-EM1	Sampled:	09/03/04
Matrix:	TCLP Leachate	Received:	09/07/04
Units:	ug/L	Analyzed:	09/09/04

Type: SAMPLE Lab ID: 174467-001

Analyte	Result	RL	Diln Fac	Batch#	Prepared	Prep	Analysis
Arsenic	ND	50	10.00	94418	09/08/04	EPA 3010	EPA 6010B
Barium	550 J	2,000	10.00	94418	09/08/04	EPA 3010	EPA 6010B
Cadmium	ND	50	10.00	94418	09/08/04	EPA 3010	EPA 6010B
Chromium	ND	100	10.00	94418	09/08/04	EPA 3010	EPA 6010B
Lead	ND	30	10.00	94418	09/08/04	EPA 3010	EPA 6010B
Mercury	ND	1.0	1.000	94470	09/09/04	METHOD	EPA 7470A
Selenium	ND	50	10.00	94418	09/08/04	EPA 3010	EPA 6010B
Silver	ND	50	10.00	94418	09/08/04	EPA 3010	EPA 6010B

Type: BLANK Prepared: 09/08/04  
 Lab ID: QC263891 Prep: EPA 3010  
 Diln Fac: 10.00 Analysis: EPA 6010B  
 Batch#: 94418

Analyte	Result	RL
Arsenic	ND	50
Barium	ND	2,000
Cadmium	ND	50
Chromium	ND	100
Lead	ND	30
Selenium	ND	50
Silver	ND	50

Type: BLANK Prepared: 09/09/04  
 Lab ID: QC264095 Prep: METHOD  
 Diln Fac: 1.000 Analysis: EPA 7470A  
 Batch#: 94470

Analyte	Result	RL
Mercury	ND	1.0

J= Estimated value  
 ND= Not Detected  
 RL= Reporting Limit  
 Page 1 of 1



TCLP Metals			
Lab #:	174612	Project#:	STANDARD
Client:	EM Assist CESPk-PM-H	Location:	SLC AAB Gunnery Range
Field ID:	SLCAABGR-EM6	Sampled:	09/13/04
Matrix:	TCLP Leachate	Received:	09/14/04
Units:	ug/L	Prepared:	09/15/04
Diln Fac:	1.000	Analyzed:	09/15/04

Type: SAMPLE Lab ID: 174612-001

Analyte	Result	RL	Batch#	Prep	Analysis
Arsenic	ND	500	94623	EPA 3010	EPA 6010B
Barium	680	200	94623	EPA 3010	EPA 6010B
Cadmium	2.9 J	5.0	94623	EPA 3010	EPA 6010B
Chromium	4.3 J	10	94623	EPA 3010	EPA 6010B
Lead	1,200	300	94623	EPA 3010	EPA 6010B
Mercury	ND	1.0	94615	METHOD	EPA 7470A
Selenium	ND	500	94623	EPA 3010	EPA 6010B
Silver	ND	5.0	94623	EPA 3010	EPA 6010B

Type: BLANK Prep: METHOD  
 Lab ID: QC264723 Analysis: EPA 7470A  
 Batch#: 94615

Analyte	Result	RL
Mercury	ND	1.0

Type: BLANK Prep: EPA 3010  
 Lab ID: QC264744 Analysis: EPA 6010B  
 Batch#: 94623

Analyte	Result	RL
Arsenic	ND	500
Barium	45 J	200
Cadmium	ND	5.0
Chromium	6.0 J	10
Lead	ND	300
Selenium	ND	500
Silver	ND	5.0

J= Estimated value  
 ND= Not Detected  
 RL= Reporting Limit  
 Page 1 of 1

TCLP Metals			
Lab #:	174649	Project#:	SLCAABGR
Client:	EM Assist CESP-K-PM-H	Location:	Salt Lake City UT
Field ID:	SLCAABGR-EM7	Sampled:	09/14/04
Matrix:	TCLP Leachate	Received:	09/15/04
Units:	ug/L	Prepared:	09/16/04
Diln Fac:	1.000	Analyzed:	09/16/04

Type: SAMPLE Lab ID: 174649-001

Analyte	Result	RL	Batch#	Prep	Analysis
Arsenic	ND	500	94654	EPA 3010	EPA 6010B
Barium	570	200	94654	EPA 3010	EPA 6010B
Cadmium	ND	5.0	94654	EPA 3010	EPA 6010B
Chromium	ND	10	94654	EPA 3010	EPA 6010B
Lead	ND	300	94654	EPA 3010	EPA 6010B
Mercury	ND	1.0	94663	METHOD	EPA 7470A
Selenium	ND	500	94654	EPA 3010	EPA 6010B
Silver	ND	5.0	94654	EPA 3010	EPA 6010B

Type: BLANK Lab ID: QC264853 Batch#: 94654  
 Prep: EPA 3010 Analysis: EPA 6010B

Analyte	Result	RL
Arsenic	ND	500
Barium	41 J	200
Cadmium	ND	5.0
Chromium	ND	10
Lead	ND	300
Selenium	ND	500
Silver	ND	5.0

J= Estimated value  
 ND= Not Detected  
 RL= Reporting Limit  
 Page 1 of 2

Applied P & CH Laboratories

13760 Magnolia Ave. Chino CA 91710

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# APCL Analytical Report

Submitted to:  
U.S. Army Corps of Engineers  
Attention: Pamela Wehrman  
1325 J Street  
Sacramento CA 95814-2922  
Tel: (916)557-7646 Fax: (916)557-5307

Service ID #: 801-044521 Received: 09/16/04  
Collected by: PB Extracted: 09/16-17/04  
Collected on: 09/15/04 Tested: 09/17/04  
Reported: 09/17/04  
Sample Description: Soil  
Project Description: SLCAABGR

## Analysis of Soil Samples <sup>(a)</sup>

Component Analyzed	Method	Unit	PQL	MDL	Analysis Result	
					SLCAABGR-EM8	WNDZ-BS-2006
					04-04521-1	04-04521-2
<b>TCLP METAL</b>						
Dilution Factor					2	2
ARSENIC	6010B	µg/L	5	1.2	55.2	30.9
BARIUM	6010B	µg/L	10	1.3	429	546
CADMIUM	6010B	µg/L	2	0.24	1.2J	<4
CHROMIUM	6010B	µg/L	5	2.1	<10	6.1J
LEAD	6010B	µg/L	5	1.0	42.6	309
Dilution Factor					1	1
MERCURY	7470A	µg/L	0.5	0.025	0.039J	0.040J
Dilution Factor					2	2
SELENIUM	6010B	µg/L	10	3.3	<20	<20
SILVER	6010B	µg/L	10	0.66	<20	<20

PQL: Practical Quantitation Limit. MDL: Method Detection Limit. CRDL: Contract Required Detection Limit

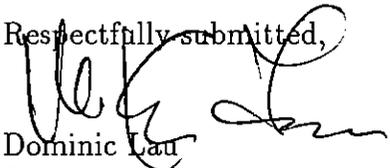
N.D.: Not Detected or less than the practical quantitation limit.

"-": Analysis is not required.

J: Reported between PQL and MDL.

Listed Dilution Factors (DF) are relative to the method default DF. All unlisted DFs are 1.0

<sup>(a)</sup> Samples were sieved through # 8 Sieved and homogenized prior to TCLP leaching.

Respectfully submitted,  
  
Dominic Gau  
Laboratory Director  
Applied P & CH Laboratories

# Applied P & CH Laboratories

13760 Magnolia Ave. Chino CA 91710

Tel: (909) 590-1828 Fax: (909) 590-1498

# APCL Analytical Report

Submitted to:  
EM-Assist  
Attention: Kelly Harrison  
90 Blue Ravine Road Ste 180  
Folsom CA 95630  
Tel: (916)355-8444 Fax: (916)355-8445

Service ID #: 801-061765  
Collected by: Sam Staffan  
Collected on: 03/13/06  
Sample Description: Soil  
Project Description: SLCAAB Gunnery Range  
Received: 03/15/06  
Extracted: 03/22-23/06  
Tested: 03/15-23/06  
Reported: 03/27/06

## Analysis of Soil Samples

Component Analyzed	Method	Unit	PQL	Analysis Result	
				SLCAABGR-WS-0306	06-01765-1
Moisture	ASTM-D2216	%Moisture	0.5	14.8	
Dilution Factor				0.995	
Lead <sup>(a)</sup>	6010B <sup>(b)</sup>	mg/kg	0.3	139	
Dilution Factor				2	
TCLP Lead	6010B	µg/L	5	16.5	

PQL: Practical Quantitation Limit. MDL: Method Detection Limit. CRDL: Contract Required Detection Limit

N.D.: Not Detected or less than the practical quantitation limit. "-": Analysis is not required.

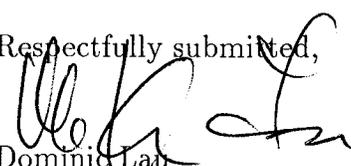
J: Reported between PQL and MDL.

Listed Dilution Factors (DF) are relative to the method default DF. All unlisted DFs are 1.0

<sup>(a)</sup> Per Client's request, sample was dried and sieved through # 8 sieve before analysis.

<sup>(b)</sup> Both Calibration and QC parameters were modified per 6010C.

Respectfully submitted,

  
Dominic Lau

Laboratory Director

Applied P & CH Laboratories

## Soil Samples

(Collected after excavation of area in front of earthen berm)

## CASE NARRATIVE

**CLIENT:** USACE  
**PROJECT:** SLCAABGR  
**SDG:** 06E201

### METHOD 3050B/6010B LEAD BY TRACE ICP

Sixteen (16) soil samples were received on 05/23/06 for Lead analysis by Method 3050B/6010B in accordance with "Test Methods for Evaluating Solid Waste, Physical/Chemical Methods", SW846, 3<sup>rd</sup> edition.

**1. Holding Time**

Analysis met holding time criteria.

**2. Method Blank**

Method blank was free of contamination at half of the reporting limit.

**3. Lab Control Sample/Lab Control Sample Duplicate**

Lab control results were within QC limit.

**4. Serial Dilution / Post-Analytical Spike**

Sample E201-04 was analyzed for serial dilution and post-analytical spike. All QC requirements were met.

**5. Matrix Spike/Matrix Spike Duplicate**

Sample E201-04 was spiked. All recoveries were within QC limit.

**6. Sample Analysis**

Samples were analyzed according to the prescribed QC procedures. All criteria were met.

LAB CHRONICLE  
LEAD BY TRACE ICP

Client : USACE  
Project : SLCAABGR

SDG NO. : 06E201  
Instrument ID : T-131

SOIL									
Client Sample ID	Laboratory Sample ID	Dilution Factor	% Moist	Analysis DateTime	Extraction DateTime	Sample Data FN	Calibration Data FN	Prep. Batch	Notes
MBLK1S	IPE038SB	1	NA	05/24/0611:58	05/23/0610:10	I31E031018	I31E031016	IPE038S	Method Blank
LCS1S	IPE038SL	1	NA	05/24/0612:02	05/23/0610:10	I31E031019	I31E031016	IPE038S	Lab Control Sample (LCS)
LCD1S	IPE038SC	1	NA	05/24/0612:07	05/23/0610:10	I31E031020	I31E031016	IPE038S	LCS Duplicate
SLCGR-R3-G37	E201-01	1	7.5	05/24/0612:13	05/23/0610:10	I31E031021	I31E031016	IPE038S	Field Sample
SLCGR-R3-G38	E201-02	1	6.3	05/24/0612:18	05/23/0610:10	I31E031022	I31E031016	IPE038S	Field Sample
SLCGR-R3-G39	E201-03	1	11.2	05/24/0612:22	05/23/0610:10	I31E031023	I31E031016	IPE038S	Field Sample
SLCGR-R3-G40	E201-04	1	6.9	05/24/0612:27	05/23/0610:10	I31E031024	I31E031016	IPE038S	Field Sample
SLCGR-R3-G40AS	E201-04A	1	6.9	05/24/0612:32	05/23/0610:10	I31E031025	I31E031016	IPE038S	Analytical Spike Sample
SLCGR-R3-G40MS	E201-04M	1	6.9	05/24/0612:36	05/23/0610:10	I31E031026	I31E031016	IPE038S	Matrix Spike Sample (MS)
SLCGR-R3-G40MSD	E201-04S	1	6.9	05/24/0612:41	05/23/0610:10	I31E031027	I31E031016	IPE038S	MS Duplicate (MSD)
SLCGR-R3-G40DL	E201-04J	5	6.9	05/24/0612:58	05/23/0610:10	I31E031030	I31E031028	IPE038S	Diluted Sample
SLCGR-R3-G41	E201-05	1	15.1	05/24/0613:03	05/23/0610:10	I31E031031	I31E031028	IPE038S	Field Sample
SLCGR-R3-G42	E201-06	1	10.7	05/24/0613:11	05/23/0610:10	I31E031032	I31E031028	IPE038S	Field Sample
SLCGR-R3-G43	E201-07	1	7.0	05/24/0613:16	05/23/0610:10	I31E031033	I31E031028	IPE038S	Field Sample
SLCGR-R3-G44	E201-08	1	13.6	05/24/0613:20	05/23/0610:10	I31E031034	I31E031028	IPE038S	Field Sample
SLCGR-R3-G45	E201-09	1	13.3	05/24/0613:25	05/23/0610:10	I31E031035	I31E031028	IPE038S	Field Sample
SLCGR-R3-G46	E201-10	1	12.0	05/24/0613:30	05/23/0610:10	I31E031036	I31E031028	IPE038S	Field Sample
SLCGR-R3-G47	E201-11	1	11.6	05/24/0613:34	05/23/0610:10	I31E031037	I31E031028	IPE038S	Field Sample
SLCGR-R3-G48	E201-12	1	9.6	05/24/0613:39	05/23/0610:10	I31E031038	I31E031028	IPE038S	Field Sample
SLCGR-R3-G49	E201-13	1	8.5	05/24/0613:43	05/23/0610:10	I31E031039	I31E031028	IPE038S	Field Sample
SLCGR-R3-G50	E201-14	1	4.7	05/24/0614:01	05/23/0610:10	I31E031042	I31E031040	IPE038S	Field Sample
SLCGR-R3-G51	E201-15	1	4.4	05/24/0614:05	05/23/0610:10	I31E031043	I31E031040	IPE038S	Field Sample
SLCGR-R3-G52	E201-16	1	14.4	05/24/0614:10	05/23/0610:10	I31E031044	I31E031040	IPE038S	Field Sample

FN - Filename  
% Moist - Percent Moisture

METHOD 3050B/6010B  
LEAD BY TRACE ICP

Client : USACE  
Project : SLCAABGR  
Batch No. : 06E201

Matrix : SOIL  
Instrument ID : T-131

SAMPLE ID	EMAX SAMPLE ID	RESULTS (mg/kg)	RL		MDL (mg/kg)	Analysis DATETIME	Extraction DATETIME	LFID	CAL REF	PREP BATCH	Collection DATETIME	Received DATETIME	
			DLF	MOIST (mg/kg)									
MBLK1S	IPE038SB	ND	1	NA	10	.2	05/24/0611:58	05/23/0610:10	I31E031018	I31E031016	IPE038S	NA	05/23/06
LCS1S	IPE038SL	97.4	1	NA	10	.2	05/24/0612:02	05/23/0610:10	I31E031019	I31E031016	IPE038S	NA	05/23/06
LCD1S	IPE038SC	101	1	NA	10	.2	05/24/0612:07	05/23/0610:10	I31E031020	I31E031016	IPE038S	NA	05/23/06
SLCGR-R3-G37	E201-01	49	1	7.5	10.8	.216	05/24/0612:13	05/23/0610:10	I31E031021	I31E031016	IPE038S	05/22/06	05/23/06
SLCGR-R3-G38	E201-02	16.6	1	6.3	10.7	.213	05/24/0612:18	05/23/0610:10	I31E031022	I31E031016	IPE038S	05/22/06	05/23/06
SLCGR-R3-G39	E201-03	249	1	11.2	11.3	.225	05/24/0612:22	05/23/0610:10	I31E031023	I31E031016	IPE038S	05/22/06	05/23/06
SLCGR-R3-G40	E201-04	91.2	1	6.9	10.7	.215	05/24/0612:27	05/23/0610:10	I31E031024	I31E031016	IPE038S	05/22/06	05/23/06
SLCGR-R3-G40AS	E201-04A	189	1	6.9	10.7	.215	05/24/0612:32	05/23/0610:10	I31E031025	I31E031016	IPE038S	05/22/06	05/23/06
SLCGR-R3-G40MS	E201-04M	186	1	6.9	10.7	.215	05/24/0612:36	05/23/0610:10	I31E031026	I31E031016	IPE038S	05/22/06	05/23/06
SLCGR-R3-G40MSD	E201-04S	184	1	6.9	10.7	.215	05/24/0612:41	05/23/0610:10	I31E031027	I31E031016	IPE038S	05/22/06	05/23/06
SLCGR-R3-G40DL	E201-04J	102	5	6.9	53.7	1.07	05/24/0612:58	05/23/0610:10	I31E031030	I31E031028	IPE038S	05/22/06	05/23/06
SLCGR-R3-G41	E201-05	14.5	1	15.1	11.8	.236	05/24/0613:03	05/23/0610:10	I31E031031	I31E031028	IPE038S	05/22/06	05/23/06
SLCGR-R3-G42	E201-06	12.2	1	10.7	11.2	.224	05/24/0613:11	05/23/0610:10	I31E031032	I31E031028	IPE038S	05/22/06	05/23/06
SLCGR-R3-G43	E201-07	21.9	1	7.0	10.8	.215	05/24/0613:16	05/23/0610:10	I31E031033	I31E031028	IPE038S	05/22/06	05/23/06
SLCGR-R3-G44	E201-08	15.6	1	13.6	11.6	.231	05/24/0613:20	05/23/0610:10	I31E031034	I31E031028	IPE038S	05/22/06	05/23/06
SLCGR-R3-G45	E201-09	12.9	1	13.3	11.5	.231	05/24/0613:25	05/23/0610:10	I31E031035	I31E031028	IPE038S	05/22/06	05/23/06
SLCGR-R3-G46	E201-10	17.5	1	12.0	11.4	.227	05/24/0613:30	05/23/0610:10	I31E031036	I31E031028	IPE038S	05/22/06	05/23/06
SLCGR-R3-G47	E201-11	17	1	11.6	11.3	.226	05/24/0613:34	05/23/0610:10	I31E031037	I31E031028	IPE038S	05/22/06	05/23/06
SLCGR-R3-G48	E201-12	16	1	9.6	11.1	.221	05/24/0613:39	05/23/0610:10	I31E031038	I31E031028	IPE038S	05/22/06	05/23/06
SLCGR-R3-G49	E201-13	26.1	1	8.5	10.9	.219	05/24/0613:43	05/23/0610:10	I31E031039	I31E031028	IPE038S	05/22/06	05/23/06
SLCGR-R3-G50	E201-14	51.5	1	4.7	10.5	.21	05/24/0614:01	05/23/0610:10	I31E031042	I31E031040	IPE038S	05/22/06	05/23/06
SLCGR-R3-G51	E201-15	52.2	1	4.4	10.5	.209	05/24/0614:05	05/23/0610:10	I31E031043	I31E031040	IPE038S	05/22/06	05/23/06
SLCGR-R3-G52	E201-16	14.9	1	14.4	11.7	.234	05/24/0614:10	05/23/0610:10	I31E031044	I31E031040	IPE038S	05/22/06	05/23/06

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EMAX QUALITY CONTROL DATA  
MS/MSD ANALYSIS

CLIENT: USACE  
PROJECT: SLCAABGR  
SDG NO.: 06E201  
METHOD: METHOD 3050B/6010B

MATRIX: SOIL % MOISTURE: 6.9  
DILT N FACTR: 1 1 1  
SAMPLE ID: SLCGR-R3-G40  
CONTROL NO.: E201-04 E201-04M E201-04S  
LAB FILE ID: I31E031024 I31E031026 I31E031027  
DATIME EXTRACTD: 05/23/0610:10 05/23/0610:10 05/23/0610:10 DATE COLLECTED: 05/22/06  
DATIME ANALYZD: 05/24/0612:27 05/24/0612:36 05/24/0612:41 DATE RECEIVED: 05/23/06  
PREP. BATCH: IPE038S IPE038S IPE038S  
CALIB. REF: I31E031016 I31E031016 I31E031016

ACCESSION:

PARAMETER	SMPL RSLT mg/kg	SPIKE AMT mg/kg	MS RSLT mg/kg	MS % REC	SPIKE AMT mg/kg	MSD RSLT mg/kg	MSD % REC	RPD %	QC LIMIT %	MAX RPD %
Lead	91.2	107	186	88	107	184	87	1	75-125	20

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EMAX QUALITY CONTROL DATA  
 SERIAL DILUTION ANALYSIS

CLIENT: USACE  
 PROJECT: SLCAABGR  
 BATCH NO.: 06E201  
 METHOD: METHOD 3050B/6010B

MATRIX: SOIL % MOISTURE: 6.9  
 DILUTION FACTOR: 1 5  
 SAMPLE ID: SLCGR-R3-G40 SLCGR-R3-G40DL  
 EMAX SAMP ID: E201-04 E201-04J  
 LAB FILE ID: I31E031024 I31E031030  
 DATE EXTRACTED: 05/23/0610:10 05/23/0610:10 DATE COLLECTED: 05/22/06  
 DATE ANALYZED: 05/24/0612:27 05/24/0612:58 DATE RECEIVED: 05/23/06  
 PREP. BATCH: IPE038S IPE038S  
 CALIB. REF: I31E031016 I31E031028

ACCESSION:

PARAMETER	SMPL RSLT (mg/kg)	SERIAL DIL RSLT (mg/kg)	DIF RSLT %	QC LIMIT (%)
Lead	91.2	102	12*	10

06031

EMAX QUALITY CONTROL DATA  
ANALYTICAL SPIKE ANALYSIS

CLIENT: USACE  
PROJECT: SLCAABGR  
SDG NO.: 06E201  
METHOD: METHOD 3050B/6010B

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MATRIX: SOIL % MOISTURE: 6.9  
DILTN FACTR: 1 1  
SAMPLE ID: SLCGR-R3-G40  
CONTROL NO.: E201-04 E201-04A  
LAB FILE ID: I31E031024 I31E031025  
DATE TIME EXTRACTD: 05/23/0610:10 05/23/0610:10 DATE COLLECTED: 05/22/06  
DATE TIME ANALYZD: 05/24/0612:27 05/24/0612:32 DATE RECEIVED: 05/23/06  
PREP. BATCH: IPE038S IPE038S  
CALIB. REF: I31E031016 I31E031016

ACCESSION:

PARAMETER	SMPL RSLT (mg/kg)	SPIKE AMT (mg/kg)	AS RSLT (mg/kg)	AS % REC	QC LIMIT (%)
Lead	91.2	107	189	91	75-125

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## **Appendix D**

### **Chemical Data Quality Assessment Report**

# **Chemical Data Quality Assessment Report**

## **Salt Lake City Army Air Base Gunnery Range**

### **1.0 INTRODUCTION**

This Chemical Data Quality Assessment Report (CDQAR) presents the evaluation of the quality of the analytical results from soil samples collected by the U.S. Army Corps of Engineers (USACE), Sacramento District, Environmental Engineering Branch personnel on May 24-28, 2004. Based on the preliminary lab results a second sample collection event was held on June 17-18, 2004 to collect additional samples on Range 3 grids. Samples were composited and a representative soil sample was submitted to the Applied P & Ch Laboratory (APCL) in Chino, California for analysis of total lead (Pb) by analytical method SW6010C. APCL maintains current certification with the State of Utah and has been reviewed for compliance to the DoD Quality Systems Manual for Environmental Laboratories.

Due to a miscommunication between the office staff and the field staff, remediated soil from site Grid 7 was spread out and compacted in the area to the front of the berm from where it was removed. To correct the error additional soil removal and sampling was conducted in June 2006. Sixteen additional samples were collected, the sub-samples were composited, and a representative soil sample was submitted to the EMAX Laboratories, Inc. (EMAX) in Torrance, California for analysis of total lead (Pb) by analytical method SW6010C. EMAX maintains current certification with the State of Utah and has been reviewed for compliance to the DoD Quality Systems Manual for Environmental Laboratories.

All data were evaluated against the requirements documented in the *Salt Lake City Army Base Gunnery Range Quality Assurance Project Plan (QAPP)*, USACE, final, May 2004 and addendums.

## 2.0 SAMPLE ID AND SAMPLE DELIVERY GROUPS (SDG) - 2004 DATA

<i>SDG</i>	<i>APCL Sample ID</i>	<i>USACE Sample ID</i>	<i>SDG</i>	<i>APCL Sample ID</i>	<i>USACE Sample ID</i>
04-3144	04-03144-1	SLCGR-AS-G1	04-3146	04-03146-1	SLCGR-R4/8-G1
	04-03144-2	SLCGR-AS-G2		04-03146-2	SLCGR-R4/8-G2
	04-03144-3	SLCGR-AS-G3		04-03146-3	SLCGR-R4/8-G3
	04-03144-4	SLCGR-AS-G4		04-03146-4	SLCGR-R4/8-G4
	04-03144-5	SLCGR-AS-G5		04-03146-5	SLCGR-R4/8-G5
	04-03144-6	SLCGR-AS-G6		04-03146-6	SLCGR-R4/8-G6
	04-03144-7	SLCGR-AS-G7		04-03146-7	SLCGR-R4/8-G7
	04-03144-8	SLCGR-AS-G8		04-03146-8	SLCGR-R4/8-G10
	04-03144-9	SLCGR-R2-G1		04-03146-9	SLCGR-R4/8-G11
	04-03144-10	SLCGR-R2-G10		04-03146-10	SLCGR-R4/8-G12
	04-03144-11	SLCGR-R2-G11		04-03146-11	SLCGR-R4/8-G13
	04-03144-12	SLCGR-R2-G12		04-03146-12	SLCGR-R4/8-G14
	04-03144-13	SLCGR-R2-G13		04-03146-13	SLCGR-R4/8-G15
	04-03144-14	SLCGR-R2-G14		04-03146-14	SLCGR-R4/8-G16
	04-03144-15	SLCGR-R2-G15		04-03146-15	SLCGR-R4/8-G17
	04-03144-16	SLCGR-R2-G16		04-03146-16	SLCGR-R4/8-G18
	04-03144-17	SLCGR-R2-G2		04-03146-17	SLCGR-R4/8-G19
	04-03144-18	SLCGR-R2-G3		04-03146-18	SLCGR-R4/8-G20
	04-03144-19	SLCGR-R2-G4		04-03146-19	SLCGR-R4/8-G21
	04-03144-20	SLCGR-R2-G5		04-03146-20	SLCGR-R4/8-G22
04-3145	04-03145-1	SLCGR-R2-G6	04-3147	04-03147-7	SLCGR-R4/8-G8
	04-03145-2	SLCGR-R2-G7		04-03147-8	SLCGR-R4/8-G9
	04-03145-3	SLCGR-R2-G8		04-03147-1	SLCGR-R3-G17
	04-03145-4	SLCGR-R2-G9		04-03147-2	SLCGR-R3-G18
	04-03145-5	SLCGR-R3-G1		04-03147-3	SLCGR-R3-G19
	04-03145-6	SLCGR-R3-G2		04-03147-4	SLCGR-R3-G20
	04-03145-7	SLCGR-R3-G3		04-03147-5	SLCGR-R3-G21
	04-03145-8	SLCGR-R3-G4		04-03147-6	SLCGR-R3-G22
	04-03145-9	SLCGR-R3-G5			
	04-03145-10	SLCGR-R3-G6	04-3424	04-03424-1	SLCGR-R3-G22
	04-03145-11	SLCGR-R3-G7		04-03424-2	SLCGR-R3-G23
	04-03145-12	SLCGR-R3-G8		04-03424-3	SLCGR-R3-G24
	04-03145-13	SLCGR-R3-G9		04-03424-4	SLCGR-R3-G25
	04-03145-14	SLCGR-R3-G10		04-03424-5	SLCGR-R3-G26
	04-03145-15	SLCGR-R3-G11		04-03424-6	SLCGR-R3-G27
	04-03145-16	SLCGR-R3-G12		04-03424-7	SLCGR-R3-G28
	04-03145-17	SLCGR-R3-G13		04-03424-8	SLCGR-R3-G29
	04-03145-18	SLCGR-R3-G14		04-03424-9	SLCGR-R3-G30

<i>SDG</i>	<i>APCL Sample ID</i>	<i>USACE Sample ID</i>	<i>SDG</i>	<i>APCL Sample ID</i>	<i>USACE Sample ID</i>
	04-03145-19	SLCGR-R3-G15		04-03424-10	SLCGR-R3-G31
	04-03145-20	SLCGR-R3-G16		04-03424-11	SLCGR-R3-G32
				04-03424-12	SLCGR-R3-G33
				04-03424-13	SLCGR-R3-G34
				04-03424-14	SLCGR-R3-G35
				04-03424-15	SLCGR-R3-G36
				04-03424-16	SLCGR-R3-G31/32

### **3.0 SAMPLE ID AND SAMPLE DELIVERY GROUP (SDG) - 2006 DATA**

<i>SDG</i>	<i>EMAX Sample ID</i>	<i>USACE Sample ID</i>	<i>EMAX Sample ID</i>	<i>USACE Sample ID</i>
06E201	E201-01	SLCGR-R3-G37	E201-09	SLCGR-R3-G45
	E201-02	SLCGR-R3-G38	E201-10	SLCGR-R3-G46
	E201-03	SLCGR-R3-G39	E201-11	SLCGR-R3-G47
	E201-04	SLCGR-R3-G40	E201-12	SLCGR-R3-G48
	E201-05	SLCGR-R3-G41	E201-13	SLCGR-R3-G49
	E201-06	SLCGR-R3-G42	E201-14	SLCGR-R3-G50
	E201-07	SLCGR-R3-G43	E201-15	SLCGR-R3-G51
	E201-08	SLCGR-R3-G44	E201-16	SLCGR-R3-G52

### **4.0 DATA EVALUATION BY METHOD AND ANALYTICAL LABORATORY**

The following sections provide an assessment of method data quality, by analytical method. All of the project data collected was independently reviewed to EPA level III guidelines with an additional 10% of the data reviewed to EPA level IV guidelines, that is, review of all the raw data. The data validation was performed using a combination of Sacramento District Automated Data Review (ADR) process and manual review from a qualified chemist.

### **5.0 TOTAL LEAD (PB) BY METHOD SW6010C – APCL DATA 2004**

Soil samples, including QC samples, were collected for the determination of total lead by Inductively Coupled Plasma Spectroscopy (ICP) Method SW6010C.

## Preservation and Holding Time

All samples were collected in the proper containers and analyzed within the method prescribed holding time of 180 days from date of collection. The lab sample delivery groups, collection dates and analysis dates can be found in the table below.

<i>APCL SDG #</i>	<i>COLLECTION DATE</i>	<i>LAB RECEIPT DATE</i>	<i>PREP DATE</i>	<i>ANALYSIS DATE</i>
04-3144	05/24/2004 05/25/2004	06/01/2004	06/09/2004	06/09/2004
04-3145	05/25/2004 05/26/2004	06/01/2004	06/09/2004	06/09/2004
04-3146	05/27/2004	06/01/2004	06/09/2004	06/10/2004
04-3147	05/26/2004 05/27/2004	06/01/2004	06/09/2004	06/09/2004
04-3432	06/17/2004 06/18/2004	06/23/2004	06/25/2004	06/25/2004

## Method Blanks (MB)

MBs were analyzed with each preparation batch of 20 or fewer samples. All MBs were free of any detectable lead indicating that the analytical process did not introduce any target analytes.

## Interference Check Samples (ICS)

Interference check samples (ICS) were analyzed at the beginning and end of each analytical sequence to verify the laboratory's interelement and background correction factors. The recoveries for all ICS AB spike standard analytes were within the 80-120 percent method requirement.

## Serial Dilutions (SD)

The serial dilution of samples quantitated by ICP determines whether or not significant physical or chemical interferences exist due to sample matrix. Serial dilutions were performed and the calculable result was slightly higher than the 10% acceptance criteria. A post digestion spike was performed on the serial dilution sample.

### **Post Digestion Spikes (PDS)**

Post-digestion spikes represent samples in which target analytes are added to the sample after completion of the digestion procedures and are typically analyzed when the MS/MSD criteria are not met. The post digestion spike was performed on the serial dilution sample. The data were reviewed and all recoveries were within acceptance criteria.

### **Field Duplicate Precision**

Field duplicate samples were collected and analyzed as an indication of overall precision. Five field duplicate samples were collected for the initial sampling event in May 2004. All of the RPD values were significantly below the acceptance criteria of RPD <50% indicating excellent precision was demonstrated for the sampling method. It was the decision of the project chemist to not collect additional field duplicate data for the second sample set collected in June 2004 as the precision had already been demonstrated and the sampling personnel remained the same. Field duplicate sample results can be found in the table below.

<i>Grid No.</i>	<i>Result (mg/kg)</i>	<i>Sample Identification Notes</i>	<i>Field Dup. RPD</i>
G15	58.8	Primary sample Range 2	
G16	52.8	Duplicate of G15	10.8%
G15	772	Primary sample Range 3	
G16	733	Duplicate of G15	5.2%
G11	60.5	Primary sample Range 4-8	
G21	62.0	Duplicate of G11	2.4%
G20	185	Primary sample Range 4-8	
G22	193	Duplicate of G20	4.2%
G7	83.7	Ambient primary sample	
G8	61.6	Duplicate of G7	30.4%

### **Laboratory Control Spike Samples (LCS /LCSD)**

Laboratory control spikes were analyzed with each analytical batch to provide information on the accuracy of the analytical method and on the laboratory performance. All spiked analytes were recovered within the acceptable recovery limits and the analytical precision data between spiked pairs were within the acceptance criterion.

### **Laboratory Duplicate Precision**

Duplicate sample analyses are performed to demonstrate acceptable method precision by the laboratory at the time of analysis. Duplicate precision RPDs were within acceptance criteria.

### **Matrix Spike Samples (MS) / Matrix Spike Duplicate (MSD)**

One sample was designated for MS/MSD analysis to determine precision and accuracy of the analytical method on various matrices and to demonstrate acceptable recovery by the laboratory at the time of sample analysis. All MS/MSD recoveries and RPD values were within acceptance criteria.

### **Instrument Calibration (IC)**

Initial calibration and continuing calibration data were reviewed to ensure that the instrument is capable of producing acceptable qualitative and quantitative data. All calibration data were within acceptance criteria.

## **6.0 TOTAL LEAD (PB) BY METHOD SW6010C – EMAX DATA 2006**

Sixteen soil samples, including QC samples, were collected for the determination of total lead by Inductively Coupled Plasma Spectroscopy (ICP) Method SW6010C during the June 2006 sampling event.

### **Preservation and Holding Time**

All samples were collected in the proper containers and analyzed within the method prescribed holding time of 180 days from date of collection. The lab sample delivery group, collection date, preparation date, and analysis date can be found in the table below.

<i>EMAX SDG #</i>	<i>COLLECTION DATE</i>	<i>LAB RECEIPT DATE</i>	<i>PREP DATE</i>	<i>ANALYSIS DATE</i>
06E201	5/22/2006	5/23/2006	5/23/2006	5/24/2006

### **Method Blanks (MB)**

A MB was analyzed with the preparation batch. The blank was free of detectable lead below ½ the laboratory reporting limit (RL) indicating that the analytical process did not introduce any detectable amount of target analyte.

### **Interference Check Samples (ICS)**

Interference check samples (ICS) were analyzed at the beginning and end of each analytical sequence to verify the laboratory's interelement and background correction factors. The recoveries for all ICS AB analytes were within the 80-120 percent method requirement.

### **Serial Dilutions (SD)**

The serial dilution of samples quantitated by ICP determines whether or not significant physical or chemical interferences exist due to sample matrix. Serial dilution was performed on sample SLCGR-R3-G40 and the calculable result was within method required QC acceptance criteria. A post digestion spike was performed on the serial dilution sample.

### **Post Digestion Spikes PDS)**

Post-digestion spikes represent samples in which target analytes are added to the sample after completion of the digestion procedures and are typically analyzed when the MS/MSD criteria are not met. The post digestion spike was performed on the serial dilution sample. The data were reviewed and all recoveries were within acceptance criteria.

### **Field Duplicate Precision**

Two field duplicate samples were collected and analyzed as an indication of overall precision. All of the RPD values were significantly below the acceptance criteria of RPD <50% indicating excellent precision was demonstrated for the sampling method. Field duplicate sample results can be found in the table below.

<i>Grid No.</i>	<i>Result (mg/kg)</i>	<i>Sample Identification Notes</i>	<i>Field Dup. RPD</i>
G50	51.5	Primary sample	
G51	52.2	Duplicate of G50	1.35 %

<i>Grid No.</i>	<i>Result (mg/kg)</i>	<i>Sample Identification Notes</i>	<i>Field Dup. RPD</i>
G44	15.6	Primary sample	
G52	14.9	Duplicate of G44	4.59 %

### **Laboratory Control Spike Samples (LCS /LCSD)**

Laboratory control spikes were analyzed with the analytical batch to provide information on the accuracy of the analytical method and on the laboratory performance. All spiked analytes were recovered within the acceptable recovery limits and the analytical precision data between spiked pairs were within the acceptance criterion.

### **Laboratory Duplicate Precision**

Duplicate sample analyses are performed to demonstrate acceptable method precision by the laboratory at the time of analysis. Duplicate precision RPDs were within acceptance criteria.

### **Matrix Spike Samples (MS) / Matrix Spike Duplicate (MSD)**

One site sample, SLCGR-R3-G40, was designated for MS/MSD analysis to determine precision and accuracy of the analytical method on the matrix matrices and to demonstrate acceptable recovery by the laboratory at the time of sample analysis. The MS/MSD recoveries and RPD values were within acceptance criteria.

### **Instrument Calibration (IC)**

Initial calibration and continuing calibration data were reviewed to ensure that the instrument is capable of producing acceptable qualitative and quantitative data. All calibration data were within acceptance criteria.

## **7.0 OVERALL ASSESSMENT AND COMPLETENESS**

All lead data collected for the SLCAABGR project met the both the requirements of the method and the project QAPP. All data are considered usable for its intended purpose. No QC deficiencies were noted in any of the data sets which resulted in qualified data. Analytical and technical completeness goals were met.

## 8.0 REFERENCES

The following references were used in assessing the quality and usability of this data.

U.S. Army Corps of Engineers, May 2004, *Final Site Inspection Work Plan –Salt Lake City Army Air Base Gunnery Range, Salt Lake County, Utah.*

Applied P & Ch Laboratory. Sample Delivery Groups 04-3144, 04-3145, 04-3146, 04-3147 and 04-3432.

Department of Defense Environmental Data Quality Workgroup, June 2002. *Quality Systems Manual for Environmental Laboratories, Final Version 2.*

U.S. Environmental Protection Agency, July 2002. *Contract Laboratory Program National Functional Guidelines for Inorganic Data Review.*

U.S. Environmental Protection Agency, December 1996. *Test Methods for Evaluating Solid Waste Physical/Chemical Methods (SW846) Third Edition including updates.*

## **Appendix E**

### **Manifests and Bills of Lading**

## Road Base Purchase

# Big Cottonwood

SAND & GRAVEL

## INVOICE

P.O. BOX 71514  
SALT LAKE CITY, UTAH 84171  
ORDER DEPARTMENT AND DISPATCH (801) 942-4499  
OFFICE AND ADMINISTRATION (801) 943-6003

CUSTOMER NO.	DATE	INVOICE NO.	PAGE
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0126      09/19/2004      812      1

EM  
90 BLUE RAVINE RD  
FOLSOM, CA 95630

**PAID**  
*11.15.04*

DATE	JOB NUMBER - JOB LOCATION - ADDRESS				PRICE	PER UNIT	TAX	TOTAL
	TICKET NO.	QUANTITY	UNIT	DESCRIPTION				
	000002	7800	SO	I-80				
09/09	001-24909	22.00	TN	ROAD BASE	4.000		5.81	93.81
09/09	001-24910	19.00	TN	ROAD BASE	4.000		5.02	81.02
09/09	001-24911	21.00	TN	ROAD BASE	4.000		5.54	89.54
09/09	001-24913	19.00	TN	ROAD BASE	4.000		5.02	81.02
09/09	001-24914	22.00	TN	ROAD BASE	4.000		5.81	93.81
09/09	001-24916	21.00	TN	ROAD BASE	4.000		5.54	89.54
				JOB TOTAL LINE				528.74

**AMOUNT DUE** ▶ 528.74



937 West 1700 South  
 SALT LAKE CITY, UT 84104  
 (801)973-4626 FAX (801) 973-0063

**Invoice**

Date	Invoice #
9/10/2004	9824

Bill To

EM. Assisi  
 90 Blue Ravine Road Suite 180  
 Fullerton, CA 95630

P.O. No.	Terms	Due Date
	10th of the month	10/10/2004

Ticket #	Loads/Yards	Item	Job Address	Rate	Amount
76130	12	ROADBASE	7900 W. I-80	4.00	48.00T
76137	12	ROADBASE		4.00	48.00T
76138	12	ROADBASE		4.00	48.00T
76136	12	ROADBASE		4.00	48.00T
76124	12	ROADBASE		4.00	48.00T
31995	1	9 Clean End/Side		55.00	55.00
31994	1	9 Clean End/Side		55.00	55.00
31997	1	9 Clean End/Side		55.00	55.00
76140	12	ROADBASE		4.00	48.00T
76141	12	ROADBASE		4.00	48.00T
31998	1	9 Clean End/Side		55.00	55.00
76142	12	ROADBASE		4.00	48.00T
76056	12	ROADBASE		4.00	48.00T
76064	12	ROADBASE		4.00	48.00T
76063	12	ROADBASE		4.00	48.00T

<b>Subtotal</b>	\$748.00
<b>Sales Tax (6.6%)</b>	\$34.85
<b>Total</b>	\$782.85

# Concrete Recycling

*Attn: Kelly*

**BLAND RECYCLING & ROCK**

4689 W. HELENIC LANE  
WEST JORDAN, UT 84088

**Invoice**

**PAID**  
*10.8.04*

Date  
9/20/2004

Invoice #  
9036

Bill To  
EM-ASSIST  
90 BLUE RAVINE ROAD  
#180  
FOI.SOM, CA 95630

P.O. No.                      Terms                      Project  
  
NET 15

Quantity	Description	Rate	Amount
25	5 AXLE DUMP ( LOCATION 1 )	55.00	1,375.00
	UTAH STATE SALES TAX	6.60%	0.00

**Total**                      \$1,375.00

VA:12

9.7.04  
- busy signal

VA:12



**Location #1**

6451 West 2100 South  
West Valley City, UT  
978-0352

**OFFICE:**

4689 W. Helenic Ln.  
West Jordan, UT 84088  
280-3578  
FAX: 280-3581

**Location #1**

6451 West 2100 South  
West Valley City, UT  
978-0352

**OFFICE:**

4689 W. Helenic Ln.  
West Jordan, UT 84088  
280-3578  
FAX: 280-3581

Serving Utah Since 1940

On Acct.

Serving Utah Since 1940

(R Smith)  
ethn const  
Customer  
(01)  
Load Description  
355  
License or Truck No.  
7800W N OF I-80  
Date  
9/9/04  
Load Size  
5X  
Price  
\$155  
Time  
8:11  
Origination of Load or Work Order No.

(R Smith)  
ethn const  
Customer  
(01)  
Load Description  
355  
License or Truck No.  
7800W N OF I-80  
Date  
9/9/04  
Load Size  
5X  
Price  
\$155  
Time  
9:07  
Origination of Load or Work Order No.

The land disposal restrictions program requires that waste generators and depositors comply with waste regulations. Proper use will insure that our facility will remain in compliance with these regulations. This notification and certification is required by you for wastes which are deposited at our facility. Operating our facility in compliance is our highest priority. We believe that is why you have honored us with your business.. After careful review of the regulations, we have determined that we must have this documentation (or a manifest) on all applicable loads prior to acceptance of the waste at our facility. We cannot make any exceptions to this policy. Therefore, you are urged to inspect and know what each and every load contains before entering this facility and that none of the following materials are contained in the load:

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I certify that I have personally examined and am familiar with this load being deposited and it contains No Hazardous or Unacceptable Waste Material. I am aware of the unacceptable waste materials list and if any of these materials are found in this load, I agree to pick them up immediately or pay all costs to have Bland Recycling L.L.C. dispose of them in a legal manner.

Sham Hall  
Signed: Authorized signature of depositor  
Date  
9.9.04

Incoming

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Sham Hall  
Signed: Authorized signature of depositor  
Date

Incoming

VA:12



**Location #1**

6451 West 2100 South  
West Valley City, UT  
978-0352

**OFFICE:**

4689 W. Helenic Ln.  
West Jordan, UT 84088  
280-3578  
FAX: 280-3581

Serving Utah Since 1940

(P. Smith)  
em-assist  
Customer  
(UN)  
Load Description  
447  
License or Truck No.  
7800W N. OF 180  
Origination of Load or Work Order No.

9/9/04  
Date  
6X \$135  
Load Size Price  
8.47  
Time

The land disposal restrictions program requires that waste generators and depositors comply with waste regulations. Proper use will insure that our facility will remain in compliance with these regulations. This notification and certification is required by you for wastes which are deposited at our facility. Operating our facility in compliance is our highest priority. We believe that is why you have honored us with your business.. After careful review of the regulations, we have determined that we must have this documentation (or a manifest) on all applicable loads prior to acceptance of the waste at our facility. We cannot make any exceptions to this policy. Therefore, you are urged to inspect and know what each and every load contains before entering this facility and that none of the following materials are contained in the load:

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Signed: [Signature] Authorized signature of depositor Date

Incoming

VA:12

CONCRETE DISPOSAL



**Location #1**

6451 West 2100 South  
West Valley City, UT  
978-0352

**OFFICE:**

4689 W. Helenic Ln.  
West Jordan, UT 84088  
280-3578  
FAX: 280-3581

Serving Utah Since 1940

(P. Smith)  
e-n const.  
Customer  
(OH)  
Load Description  
447  
License or Truck No.  
7800W N. OF 180  
Origination of Load or Work Order No.

SEPT. 9/04  
Date  
5X \$135  
Load Size Price  
7.91  
Time

The land disposal restrictions program requires that waste generators and depositors comply with waste regulations. Proper use will insure that our facility will remain in compliance with these regulations. This notification and certification is required by you for wastes which are deposited at our facility. Operating our facility in compliance is our highest priority. We believe that is why you have honored us with your business.. After careful review of the regulations, we have determined that we must have this documentation (or a manifest) on all applicable loads prior to acceptance of the waste at our facility. We cannot make any exceptions to this policy. Therefore, you are urged to inspect and know what each and every load contains before entering this facility and that none of the following materials are contained in the load:

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Signed: [Signature] Authorized signature of depositor Date 9.9.04

Incoming

VA-12



**Location #1**

6451 West 2100 South  
West Valley City, UT  
978-0352

**OFFICE:**

4689 W. Helenic Ln.  
West Jordan, UT 84088  
280-3578  
FAX: 280-3581

Serving Utah Since 1940

(K Smith)  
 Customer: EMC/EXIST  
 Date: 9/10/04  
 Load Description: (M)  
 Load Size: 5X Price: \$175  
 License or Truck No.: 407 Time: 2:30  
 Origination of Load or Work Order No.: 7800W I 80

The land disposal restrictions program requires that waste generators and depositors comply with waste regulations. Proper use will insure that our facility will remain in compliance with these regulations. This notification and certification is required by you for wastes which are deposited at our facility. Operating our facility in compliance is our highest priority. We believe that is why you have honored us with your business.. After careful review of the regulations, we have determined that we must have this documentation (or a manifest) on all applicable loads prior to acceptance of the waste at our facility. We cannot make any exceptions to this policy. Therefore, you are urged to inspect and know what each and every load contains before entering this facility and that none of the following materials are contained in the load:

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Signed: S. West Date: 10-9-04

Incoming

VA-12



**Location #1**

6451 West 2100 South  
West Valley City, UT  
978-0352

**OFFICE:**

4689 W. Helenic Ln.  
West Jordan, UT 84088  
280-3578  
FAX: 280-3581

Serving Utah Since 1940

(K Smith)  
 Customer: EMC/EXIST  
 Date: 9/10/04  
 Load Description: (M)  
 Load Size: 5X Price: \$175  
 License or Truck No.: 407 Time: 1:27  
 Origination of Load or Work Order No.: 7800W I 80

The land disposal restrictions program requires that waste generators and depositors comply with waste regulations. Proper use will insure that our facility will remain in compliance with these regulations. This notification and certification is required by you for wastes which are deposited at our facility. Operating our facility in compliance is our highest priority. We believe that is why you have honored us with your business.. After careful review of the regulations, we have determined that we must have this documentation (or a manifest) on all applicable loads prior to acceptance of the waste at our facility. We cannot make any exceptions to this policy. Therefore, you are urged to inspect and know what each and every load contains before entering this facility and that none of the following materials are contained in the load:

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Signed: S. West Date: 9.10.04

Incoming

VA:12



**Location #1**

6451 West 2100 South  
West Valley City, UT  
978-0352

**OFFICE:**

4689 W. Helenic Ln.  
West Jordan, UT 84088  
280-3578  
FAX: 280-3581

Serving Utah Since 1940

(P. Smith)  
EM ASSIST

Customer	Date
EM ASSIST	SEPT. 10 04
Load Description	Load Size Price
417	12:30
License or Truck No.	Time
200W-180	
Origination of Load or Work Order No.	

The land disposal restrictions program requires that waste generators and depositors comply with waste regulations. Proper use will insure that our facility will remain in compliance with these regulations. This notification and certification is required by you for wastes which are deposited at our facility. Operating our facility in compliance is our highest priority. We believe that is why you have honored us with your business.. After careful review of the regulations, we have determined that we must have this documentation (or a manifest) on all applicable loads prior to acceptance of the waste at our facility. We cannot make any exceptions to this policy. Therefore, you are urged to inspect and know what each and every load contains before entering this facility and that none of the following materials are contained in the load:

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Signed: [Signature] Date: 9 10 04

Incoming

VA:12



**Location #1**

6451 West 2100 South  
West Valley City, UT  
978-0352

**OFFICE:**

4689 W. Helenic Ln.  
West Jordan, UT 84088  
280-3578  
FAX: 280-3581

Serving Utah Since 1940

(P. Smith)  
EM ASSIST

Customer	Date
EM ASSIST	9/10/04
Load Description	Load Size Price
417	11:22
License or Truck No.	Time
200W-180	
Origination of Load or Work Order No.	

The land disposal restrictions program requires that waste generators and depositors comply with waste regulations. Proper use will insure that our facility will remain in compliance with these regulations. This notification and certification is required by you for wastes which are deposited at our facility. Operating our facility in compliance is our highest priority. We believe that is why you have honored us with your business.. After careful review of the regulations, we have determined that we must have this documentation (or a manifest) on all applicable loads prior to acceptance of the waste at our facility. We cannot make any exceptions to this policy. Therefore, you are urged to inspect and know what each and every load contains before entering this facility and that none of the following materials are contained in the load:

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Signed: [Signature] Date: 9 10 04

Incoming

VA-12



**Location #1**

6451 West 2100 South  
West Valley City, UT  
978-0352

**OFFICE:**

4689 W. Helenic Ln.  
West Jordan, UT 84088  
280-3578  
FAX: 280-3581

Serving Utah Since 1940

(R SMITH)

EM-COIST

Customer	Date
(OH)	9/10/04
Load Description	Load Size Price
407	5X \$155
License or Truck No.	Time
780W-TSU	11:28
Origination of Load or Work Order No.	

The land disposal restrictions program requires that waste generators and depositors comply with waste regulations. Proper use will insure that our facility will remain in compliance with these regulations. This notification and certification is required by you for wastes which are deposited at our facility. Operating our facility in compliance is our highest priority. We believe that is why you have honored us with your business.. After careful review of the regulations, we have determined that we must have this documentation (or a manifest) on all applicable loads prior to acceptance of the waste at our facility. We cannot make any exceptions to this policy. Therefore, you are urged to inspect and know what each and every load contains before entering this facility and that none of the following materials are contained in the load:

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Signed: Shawn Whitehead Date: 9-10-04

Incoming

VA-12



**Location #1**

6451 West 2100 South  
West Valley City, UT  
978-0352

**OFFICE:**

4689 W. Helenic Ln.  
West Jordan, UT 84088  
280-3578  
FAX: 280-3581

Serving Utah Since 1940

(R. SMITH)

EM-COIST

Customer	Date
(OH)	9/10/04
Load Description	Load Size Price
407	5X \$155
License or Truck No.	Time
780W-TSU	9:22
Origination of Load or Work Order No.	

The land disposal restrictions program requires that waste generators and depositors comply with waste regulations. Proper use will insure that our facility will remain in compliance with these regulations. This notification and certification is required by you for wastes which are deposited at our facility. Operating our facility in compliance is our highest priority. We believe that is why you have honored us with your business.. After careful review of the regulations, we have determined that we must have this documentation (or a manifest) on all applicable loads prior to acceptance of the waste at our facility. We cannot make any exceptions to this policy. Therefore, you are urged to inspect and know what each and every load contains before entering this facility and that none of the following materials are contained in the load:

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Signed: Shawn Whitehead Date: 9-10-04

Incoming

VA:12



**Location #1**

6451 West 2100 South  
West Valley City, UT  
978-0352

**OFFICE:**

4689 W. Helenic Ln.  
West Jordan, UT 84088  
280-3578  
FAX: 280-3581

Serving Utah Since 1940

*(R Smith)*

*EM-ASSIST*  
Customer

*(ch)*  
Load Description

*40T*  
License or Truck No.

*7800W T-80*  
Origination of Load or Work Order No.

*7/10/04*  
Date

*5X \$155*  
Load Size Price

*8:00*  
Time

The land disposal restrictions program requires that waste generators and depositors comply with waste regulations. Proper use will insure that our facility will remain in compliance with these regulations. This notification and certification is required by you for wastes which are deposited at our facility. Operating our facility in compliance is our highest priority. We believe that is why you have honored us with your business. After careful review of the regulations, we have determined that we must have this documentation (or a manifest) on all applicable loads prior to acceptance of the waste at our facility. We cannot make any exceptions to this policy. Therefore, you are urged to inspect and know what each and every load contains before entering this facility and that none of the following materials are contained in the load:

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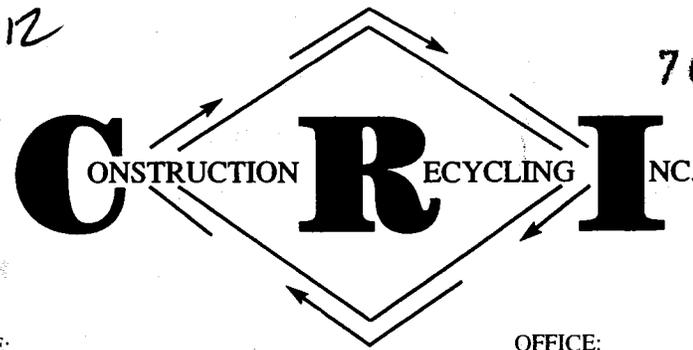
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*Shawn [Signature]*  
Signed: Authorized signature of depositor

*9/10/04*  
Date

Incoming

VA:12



76064

SITE:  
620 SOUTH DELONG ST.  
SALT LAKE CITY, UT

OFFICE:  
937 WEST 1760 SOUTH  
SALT LAKE CITY, UT 84104  
801-973-4626

P.O. #

TRUCK # / LICENSE #  
*Smith 349*

JOB NAME & LOCATION *7800 W T-80*

CUSTOMER:

DATE: *9.10.04*

*EM Assist*

MATERIAL:	PRICE PER YARD	TOTAL YARDS LOADED
1" - 1 1/2" GRAVEL		
3" GRAVEL		
COBBLEROCK		
SAND		
ROAD BASE	<i>\$4.00</i>	<i>12 yards</i>
TERMS: NET 10TH OF MONTH CUSTOMER AGREES TO PAY 1.5% PER MONTH (18% ANNUAL) INTEREST ON ALL AMOUNTS WHICH BECOME PAST DUE 30 DAYS OR MORE ALONG WITH ANY NECESSARY COLLECTION COSTS INCLUDING REASONABLE ATTORNEY FEES.  SALES TAX APPLIES YES ___ NO ___ x <i>Walt Claver</i> AUTHORIZED SIGNATURE		TIME:  CUSTOMER ASSUMES ALL LIABILITY FOR SELF AND VEHICLE ONCE ON CRI PROPERTY

VA-12



**Location #1**

6451 West 2100 South  
West Valley City, UT  
978-0352

**OFFICE:**

4689 W. Helenic Ln.  
West Jordan, UT 84088  
280-3578  
FAX: 280-3581

Serving Utah Since 1940

(P. Smith)

em assist

Customer

CM

Load Description

297

License or Truck No.

7800W T80

Origination of Load or Work Order No.

9/10/04

Date

EX \$155

Load Size

Price

222

Time

The land disposal restrictions program requires that waste generators and depositors comply with waste regulations. Proper use will insure that our facility will remain in compliance with these regulations. This notification and certification is required by you for wastes which are deposited at our facility. Operating our facility in compliance is our highest priority. We believe that is why you have honored us with your business.. After careful review of the regulations, we have determined that we must have this documentation (or a manifest) on all applicable loads prior to acceptance of the waste at our facility. We cannot make any exceptions to this policy. Therefore, you are urged to inspect and know what each and every load contains before entering this facility and that none of the following materials are contained in the load:

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*Dale Glaser*

Signed: Authorized signature of depositor

Date

Incoming

VA-12



**Location #1**

6451 West 2100 South  
West Valley City, UT  
978-0352

**OFFICE:**

4689 W. Helenic Ln.  
West Jordan, UT 84088  
280-3578  
FAX: 280-3581

Serving Utah Since 1940

(P. Smith)

em assist

Customer

CM

Load Description

249

License or Truck No.

7800W I 80

Origination of Load or Work Order No.

9/10/04

Date

EX \$155

Load Size

Price

2:15

Time

The land disposal restrictions program requires that waste generators and depositors comply with waste regulations. Proper use will insure that our facility will remain in compliance with these regulations. This notification and certification is required by you for wastes which are deposited at our facility. Operating our facility in compliance is our highest priority. We believe that is why you have honored us with your business.. After careful review of the regulations, we have determined that we must have this documentation (or a manifest) on all applicable loads prior to acceptance of the waste at our facility. We cannot make any exceptions to this policy. Therefore, you are urged to inspect and know what each and every load contains before entering this facility and that none of the following materials are contained in the load:

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*Dale Glaser*

Signed: Authorized signature of depositor

Date

9-10-04

Incoming

VA:12



**Location #1**

6451 West 2100 South  
West Valley City, UT  
978-0352

**OFFICE:**

4689 W. Helenic Ln.  
West Jordan, UT 84088  
280-3578  
FAX: 280-3581

Serving Utah Since 1940

*(P. Smith)*  
*CM - assist*

Customer  
*(11)*  
Load Description  
*249*  
License or Truck No.

Date  
*9/10/04*  
Load Size  
*EX* Price  
*11.13*  
Time

*7800 W 150*  
Origination of Load or Work Order No.

The land disposal restrictions program requires that waste generators and depositors comply with waste regulations. Proper use will insure that our facility will remain in compliance with these regulations. This notification and certification is required by you for wastes which are deposited at our facility. Operating our facility in compliance is our highest priority. We believe that is why you have honored us with your business.. After careful review of the regulations, we have determined that we must have this documentation (or a manifest) on all applicable loads prior to acceptance of the waste at our facility. We cannot make any exceptions to this policy. Therefore, you are urged to inspect and know what each and every load contains before entering this facility and that none of the following materials are contained in the load:

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- Containers with any liquids
- Industrial Waste

I certify that I have personally examined and am familiar with this load being deposited and it contains No Hazardous or Unacceptable Waste Material. I am aware of the unacceptable waste materials list and if any of these materials are found in this load, I agree to pick them up immediately or pay all costs to have Bland Recycling L.L.C. dispose of them in a legal manner.

*Wade Glover*  
Signed: Authorized signature of depositor Date *9-10-04*

VA:12



**Location #1**

6451 West 2100 South  
West Valley City, UT  
978-0352

**OFFICE:**

4689 W. Helenic Ln.  
West Jordan, UT 84088  
280-3578  
FAX: 280-3581

Serving Utah Since 1940

*(P. Smith)*  
*CM - assist*

Customer  
*(11)*  
Load Description  
*249*  
License or Truck No.

Date  
*9/10/04*  
Load Size  
*EX* Price  
*11.13*  
Time

*7800 W 150*  
Origination of Load or Work Order No.

The land disposal restrictions program requires that waste generators and depositors comply with waste regulations. Proper use will insure that our facility will remain in compliance with these regulations. This notification and certification is required by you for wastes which are deposited at our facility. Operating our facility in compliance is our highest priority. We believe that is why you have honored us with your business.. After careful review of the regulations, we have determined that we must have this documentation (or a manifest) on all applicable loads prior to acceptance of the waste at our facility. We cannot make any exceptions to this policy. Therefore, you are urged to inspect and know what each and every load contains before entering this facility and that none of the following materials are contained in the load:

- Refuse (Household garbage or putrefied waste)
- Liquids (of any kind)
- Hazardous Waste (dry or liquid - of any kind)
- Containers with any liquids
- Industrial Waste

I certify that I have personally examined and am familiar with this load being deposited and it contains No Hazardous or Unacceptable Waste Material. I am aware of the unacceptable waste materials list and if any of these materials are found in this load, I agree to pick them up immediately or pay all costs to have Bland Recycling L.L.C. dispose of them in a legal manner.

*Wade Glover*  
Signed: Authorized signature of depositor Date *9-10-04*

VA:12



**Location #1**

6451 West 2100 South  
West Valley City, UT  
978-0352

**OFFICE:**

4689 W. Helenic Ln.  
West Jordan, UT 84088  
280-3578  
FAX: 280-3581

Serving Utah Since 1940

(P Smith)

EM-ASIST

Customer

COM

Load Description

399

License or Truck No.

1725 6th hr

Origination of Load or Work Order No.

Sept 10/04

Date

5X 1/42

Load Size

Price

1.15

Time

The land disposal restrictions program requires that waste generators and depositors comply with waste regulations. Proper use will insure that our facility will remain in compliance with these regulations. This notification and certification is required by you for wastes which are deposited at our facility. Operating our facility in compliance is our highest priority. We believe that is why you have honored us with your business.. After careful review of the regulations, we have determined that we must have this documentation (or a manifest) on all applicable loads prior to acceptance of the waste at our facility. We cannot make any exceptions to this policy. Therefore, you are urged to inspect and know what each and every load contains before entering this facility and that none of the following materials are contained in the load:

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- Hazardous Waste (dry or liquid - of any kind)
- Containers with any liquids
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*Debi Glover*

Signed: Authorized signature of depositor

Date

Incoming

VA:12



**Location #1**

6451 West 2100 South  
West Valley City, UT  
978-0352

**OFFICE:**

4689 W. Helenic Ln.  
West Jordan, UT 84088  
280-3578  
FAX: 280-3581

Serving Utah Since 1940

(P Smith)

EM-ASIST

Customer

COM

Load Description

399

License or Truck No.

7500W F 30

Origination of Load or Work Order No.

9/10/04

Date

5X 1/42

Load Size

Price

1.12

Time

The land disposal restrictions program requires that waste generators and depositors comply with waste regulations. Proper use will insure that our facility will remain in compliance with these regulations. This notification and certification is required by you for wastes which are deposited at our facility. Operating our facility in compliance is our highest priority. We believe that is why you have honored us with your business.. After careful review of the regulations, we have determined that we must have this documentation (or a manifest) on all applicable loads prior to acceptance of the waste at our facility. We cannot make any exceptions to this policy. Therefore, you are urged to inspect and know what each and every load contains before entering this facility and that none of the following materials are contained in the load:

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*Debi Glover*

Signed: Authorized signature of depositor

Date

Incoming

VA:12



**Location #1**

6451 West 2100 South  
West Valley City, UT  
978-0352

**OFFICE:**

4689 W. Helenic Ln.  
West Jordan, UT 84088  
280-3578  
FAX: 280-3581

Serving Utah Since 1940

*Remitt*  
*EM assist*

Customer: EM Date: 9/10/14

Load Description: EM Load Size: BOX Price: \$125

License or Truck No.: 241 Time: 9:08

Origination of Load or Work Order No.: 7800W I-80

The land disposal restrictions program requires that waste generators and depositors comply with waste regulations. Proper use will insure that our facility will remain in compliance with these regulations. This notification and certification is required by you for wastes which are deposited at our facility. Operating our facility in compliance is our highest priority. We believe that is why you have honored us with your business.. After careful review of the regulations, we have determined that we must have this documentation (or a manifest) on all applicable loads prior to acceptance of the waste at our facility. We cannot make any exceptions to this policy. Therefore, you are urged to inspect and know what each and every load contains before entering this facility and that none of the following materials are contained in the load:

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- Hazardous Waste (dry or liquid - of any kind)
- Containers with any liquids
- Industrial Waste

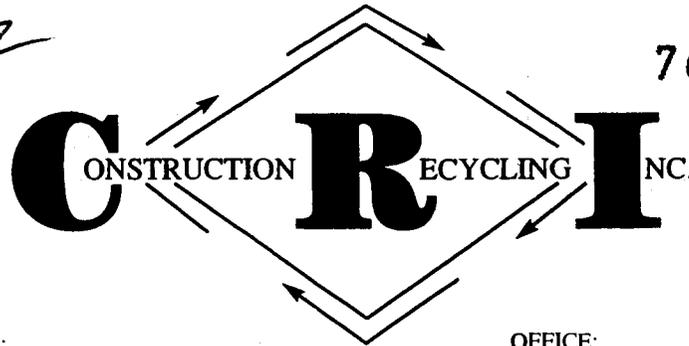
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Signed: W. de Groot Date: 9-10-14

Incoming

VA:12

7606



SITE:  
620 SOUTH DELONG ST.  
SALT LAKE CITY, UT

OFFICE:  
937 WEST 1760 SOUTH  
SALT LAKE CITY, UT 84104  
801-973-4626

P.O. #

TRUCK # / LICENSE # 437

JOB NAME & LOCATION 7800W I-80

CUSTOMER:

DATE: 9.10.14

EM Assist

MATERIAL:	PRICE PER YARD	TOTAL YARDS LOADED
1" - 1 1/2" GRAVEL		
3" GRAVEL		
COBBLEROCK		
SAND		
ROAD BASE	<u>\$4.00</u>	<u>12 yds.</u>

TERMS: NET 10TH OF MONTH  
CUSTOMER AGREES TO PAY 1.5% PER MONTH (18% ANNUAL) INTEREST ON ALL AMOUNTS WHICH BECOME PAST DUE 30 DAYS OR MORE ALONG WITH ANY NECESSARY COLLECTION COSTS INCLUDING REASONABLE ATTORNEY FEES.

TIME:

CUSTOMER ASSUMES ALL LIABILITY FOR SELF AND VEHICLE ONCE ON CRI PROPERTY

SALES TAX APPLIES YES NO

Cliff S.  
AUTHORIZED SIGNATURE

VA:12



**Location #1**

6451 West 2100 South  
West Valley City, UT  
978-0352

**OFFICE:**

4689 W. Helenic Ln.  
West Jordan, UT 84088  
280-3578  
FAX: 280-3581

Serving Utah Since 1940

(R Smith)

Customer

9/10/04  
Date

Load Description

2 1/2  
Load Size Price

License or Truck No.

Time

7800W I 80

Origination of Load or Work Order No.

The land disposal restrictions program requires that waste generators and depositors comply with waste regulations. Proper use will insure that our facility will remain in compliance with these regulations. This notification and certification is required by you for wastes which are deposited at our facility. Operating our facility in compliance is our highest priority. We believe that is why you have honored us with your business.. After careful review of the regulations, we have determined that we must have this documentation (or a manifest) on all applicable loads prior to acceptance of the waste at our facility. We cannot make any exceptions to this policy. Therefore, you are urged to inspect and know what each and every load contains before entering this facility and that none of the following materials are contained in the load:

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Signed: Authorized signature of depositor

9-10-04  
Date

Incoming

VA:12



**Location #1**

6451 West 2100 South  
West Valley City, UT  
978-0352

**OFFICE:**

4689 W. Helenic Ln.  
West Jordan, UT 84088  
280-3578  
FAX: 280-3581

Serving Utah Since 1940

(R Smith)

Customer

9/10/04  
Date

Load Description

2 1/2  
Load Size Price

License or Truck No.

Time

7800W I 80

Origination of Load or Work Order No.

The land disposal restrictions program requires that waste generators and depositors comply with waste regulations. Proper use will insure that our facility will remain in compliance with these regulations. This notification and certification is required by you for wastes which are deposited at our facility. Operating our facility in compliance is our highest priority. We believe that is why you have honored us with your business.. After careful review of the regulations, we have determined that we must have this documentation (or a manifest) on all applicable loads prior to acceptance of the waste at our facility. We cannot make any exceptions to this policy. Therefore, you are urged to inspect and know what each and every load contains before entering this facility and that none of the following materials are contained in the load:

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Signed: Authorized signature of depositor

9-10-04  
Date

Incoming



VA-12



**Location #1**

6451 West 2100 South  
West Valley City, UT  
978-0352

**OFFICE:**

4689 W. Helenic Ln.  
West Jordan, UT 84088  
280-3578  
FAX: 280-3581

Serving Utah Since 1940

*(K. Smith)*  
*CM-ASSIST.*

Customer	Date	
<i>(CM)</i>	<i>9/10/04</i>	
Load Description	Load Size	Price
<i>AST</i>	<i>5X</i>	<i>11.95</i>
License or Truck No.	Time	
<i>7500W-150</i>	<i>11:45</i>	
Origination of Load or Work Order No.		

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*(Signature)* *9-10-04*  
 Signed: Authorized signature of depositor Date

Incoming

VA-12



**Location #1**

6451 West 2100 South  
West Valley City, UT  
978-0352

**OFFICE:**

4689 W. Helenic Ln.  
West Jordan, UT 84088  
280-3578  
FAX: 280-3581

Serving Utah Since 1940

*(K. Smith)*  
*CM-ASSIST.*

Customer	Date	
<i>(CM)</i>	<i>9/10/04</i>	
Load Description	Load Size	Price
<i>AST</i>	<i>5X</i>	<i>11.95</i>
License or Truck No.	Time	
<i>7500W-150</i>	<i>11:45</i>	
Origination of Load or Work Order No.		

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*(Signature)* *9-10-04*  
 Signed: Authorized signature of depositor Date

Incoming

VA:12



**Location #1**

6451 West 2100 South  
West Valley City, UT  
978-0352

**OFFICE:**

4689 W. Helenic Ln.  
West Jordan, UT 84088  
280-3578  
FAX: 280-3581

Serving Utah Since 1940

(P. Smith)

CON ASSIST

Customer

CON

Load Description

457

License or Truck No.

7800W-180

Origination of Load or Work Order No.

9/10/04

Date

5X

\$135

Load Size

Price

803

Time

The land disposal restrictions program requires that waste generators and depositors comply with waste regulations. Proper use will insure that our facility will remain in compliance with these regulations. This notification and certification is required by you for wastes which are deposited at our facility. Operating our facility in compliance is our highest priority. We believe that is why you have honored us with your business. After careful review of the regulations, we have determined that we must have this documentation (or a manifest) on all applicable loads prior to acceptance of the waste at our facility. We cannot make any exceptions to this policy. Therefore, you are urged to inspect and know what each and every load contains before entering this facility and that none of the following materials are contained in the load:

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*[Signature]*

Signed: Authorized signature of depositor

9-10-04

Date

## Soil Disposal

(Soil from excavation of grids)

**E.T. Technologies, Inc.**

environmental services

**FACSIMILE COVER PAGE****DATE: October 7, 2004****PAGES TO FOLLOW: 1****TO: Paul Brizuela****COMPANY: EM Assist****FAX NO: (916) 355-8445****FROM: Ted H. Sonnenburg, P.E.  
Vice President  
E.T. Technologies, Inc.  
FAX NUMBER: (801) 973-4245****RE: Manifest Info (12272)****MESSAGE:**

Paul,

Here is the info we discussed. These figures should be accurate but are double-checked when the billing invoice is sent. Feel free to contact me at 801-973-2065 if you need anything else or have any questions. Thank you.

-Ted

*The information contained in this facsimile transmission is intended to be sent only to the stated recipient or the intended recipient's agent. You are hereby notified that any dissemination, distribution or copying of the information contained in this facsimile transmission is prohibited. You are further asked to notify us of the error as soon as possible at the telephone number below. Thank you for your cooperation.*

**IF YOU DO NOT RECEIVE ALL OF THESE PAGES, PLEASE CALL AS SOON AS POSSIBLE AT (801) 973-2065. THANK YOU.**

US Army Corp

Date	Manifest	Waste Code	Description	Waight	Amount	
10/1/2004	133700	12272	Lead Contaminated Soil	37960	\$576.09	37960
10/1/2004	133699	12272	Lead Contaminated Soil	31100	\$471.16	31100
10/1/2004	133698	12272	Lead Contaminated Soil	47540	\$720.23	47540
10/1/2004	133697	12272	Lead Contaminated Soil	39120	\$592.67	39120
10/1/2004	133696	12272	Lead Contaminated Soil	28340	\$429.35	28340
10/1/2004	133695	12272	Lead Contaminated Soil	29280	\$443.59	29280
10/1/2004	133694	12272	Lead Contaminated Soil	37280	\$564.79	37280
10/1/2004	133693	12272	Lead Contaminated Soil	44040	\$667.21	44040
10/1/2004	133692	12272	Lead Contaminated Soil	36400	\$551.46	36400
10/1/2004	133691	12272	Lead Contaminated Soil	47100	\$713.58	47100

# of Loads: 10

Total \$: \$5,729.11

Total Pounds: 378,160.00



# E.T. TECHNOLOGIES INC.

No 133691

## NON-HAZARDOUS WASTE MANIFEST

E.T. TECHNOLOGIES INC.  
SOILS REGENERATION SITE  
SALT LAKE VALLEY LANDFILL  
6030 W. 1300 SOUTH (801) 973-2065  
SALT LAKE CITY, UTAH 84104

1. DATE SHIPPED 10 / 1 / 04 2. DATE RECEIVED 10 / 1 / 04

3. WASTE GENERATOR(S) INFORMATION:  
GENERATOR 1 US Army Corp of Engineers ADDRESS 700 North 8800 West Frontage Rd.  
CITY Salt Lake City STATE UTAH ZIP CODE 84104 PHONE 916-803-2287  
GENERATOR 2 \_\_\_\_\_ ADDRESS \_\_\_\_\_  
CITY \_\_\_\_\_ STATE \_\_\_\_\_ ZIP CODE \_\_\_\_\_ PHONE \_\_\_\_\_  
GENERATOR 3 \_\_\_\_\_ ADDRESS \_\_\_\_\_  
CITY \_\_\_\_\_ STATE \_\_\_\_\_ ZIP CODE \_\_\_\_\_ PHONE \_\_\_\_\_

4. TRANSPORTATION CERTIFICATION: I certify that the waste load(s) listed below (Section 5) were collected from the Waste Generators listed in Section 3 of this document. No other substance or waste from any other sources are included in this shipment. To the best of my knowledge, the information given in this Manifest is a true and accurate description of the waste material. I further acknowledge receipt of the shipment from the Waste Generators located in Section 3 above.

TRANSPORTER COMPANY NAME Ralph Smith Trucking  
DRIVER NAME (Please Print) Clifford S  
DRIVER SIGNATURE Clifford S Seely DATE 10-1-04

5. SHIPPING DESCRIPTION

CONTAINER CODES: A = SLUMP TRUCK B = RAM C = TANKER D = BARRELS E = DUMP F = OTHER  
WASTE TYPE CODES: G = KITCHEN SLUMP H = SHOP SLUMP I = YARD SLUMP J = SEPTIC / SEWAGE K = SOIL L = OTHER

DESCRIPTION OF WASTE MATERIALS	WASTE CODE/ PROFILE NUMBER	CONTAINER	WASTE TYPE	TOTAL QUANTITY	
<u>NON HAZARDOUS, NON TOXIC SOIL</u>	<u>Per Dawn Re</u>	<u>ED</u>	<u>K</u>	<u>25</u> <u>EST YARDS</u>	Lbs. Gals.
	<u>TK-11272</u>				Lbs. Gals.
					Lbs. Gals.

Additional Descriptions or Special Handling Instructions:

6. GENERATOR'S CERTIFICATION:  
I hereby declare that the contents of this consignment are fully and accurately described above by proper shipping name and are classified, packed, marked, and labeled, and are in all respects in proper condition for transport by highway according to applicable Federal, State and Local governmental regulations. I further certify that the waste materials described above are not a hazardous waste as defined by the Utah Hazardous Waste Management Regulations and 40 C.F.R. Part 260 & 261, as amended from time to time, and I acknowledge that said waste is designated for disposal and/or re-use at the Soils Regeneration Site operated by E.T. Technologies, Inc. I agree to pay for all disposal/processing fees and special handling charges as established by the Salt Lake Valley Solid Waste Management Council.  
I further agree to pay a late charge of 1.5 % per month (18% per annum) for all past due accounts (30 days after date of invoice) and reasonable attorney/collection fees for delinquent accounts.  
GENERATOR 1 — Certified By: Paul Brown Title Site Supervisor Company EM-Asst  
GENERATOR 2 — Certified By: \_\_\_\_\_ Title \_\_\_\_\_ Company \_\_\_\_\_  
GENERATOR 3 — Certified By: \_\_\_\_\_ Title \_\_\_\_\_ Company \_\_\_\_\_

— THIS PORTION FOR OFFICE USE ONLY —

Signature of E.T. Representative: \_\_\_\_\_ Date: 10/1/04

Gross Weight	Tare Weight	Net Weight	Class	Price/Ton	Price
1) <u>84900</u>	<u>37800</u>	<u>47100</u>	<u>75</u>	<u>30.30</u>	<u>1413.56</u>
2)					
3)					
TICKET # <u>E-1/300708</u>	DISPOSAL AREA <u>9J</u>	SCALEHOUSE INITIALS	TRUCK # <u>437</u>	PH <u>N/A</u>	<u>0/0</u>



# E.T. TECHNOLOGIES INC.

No 33692

E.T. TECHNOLOGIES INC.  
SOILS REGENERATION SITE  
SALT LAKE VALLEY LANDFILL  
6030 W. 1300 SOUTH (801) 973-2065  
SALT LAKE CITY, UTAH 84104

## NON-HAZARDOUS WASTE MANIFEST

1. DATE SHIPPED 10 / 1 / 04 2. DATE RECEIVED 10 / 1 / 04

3. WASTE GENERATOR(S) INFORMATION:  
GENERATOR 1 ACOE ADDRESS 700 North 8800 west  
CITY Salt Lake City STATE Utah ZIP CODE 84104 PHONE 916-803-2221  
GENERATOR 2 \_\_\_\_\_ ADDRESS \_\_\_\_\_  
CITY \_\_\_\_\_ STATE \_\_\_\_\_ ZIP CODE \_\_\_\_\_ PHONE \_\_\_\_\_  
GENERATOR 3 \_\_\_\_\_ ADDRESS \_\_\_\_\_  
CITY \_\_\_\_\_ STATE \_\_\_\_\_ ZIP CODE \_\_\_\_\_ PHONE \_\_\_\_\_

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TRANSPORTER COMPANY NAME Ralph Smith Trucking  
DRIVER NAME (Please Print) Dwight R Boswell  
DRIVER SIGNATURE Dwight Ray Boswell DATE \_\_\_\_\_

5. SHIPPING DESCRIPTION

CONTAINER CODES: A = SUMP TRUCK B = RAM C = TANKER D = BARRELS E = DUMP F = OTHER  
WASTE TYPE CODES: G = KITCHEN SUMP H = SHOP SUMP I = YARD SUMP J = SEPTIC / SEWAGE K = SOIL L = OTHER

DESCRIPTION OF WASTE MATERIALS	WASTE CODE/ PROFILE NUMBER	CONTAINER	WASTE TYPE	TOTAL QUANTITY
<del>NON-HAZARDOUS</del> , NON-D.O.T Regulated	<del>Part-Dum</del>	<del>E</del>	<del>K</del>	<del>EST YARDS</del>
Soil	MS-11272			36400

Additional Descriptions or Special Handling Instructions:

6. GENERATOR'S CERTIFICATION:  
I hereby declare that the contents of this consignment are fully and accurately described above by proper shipping name and are classified, packed, marked, and labeled, and are in all respects in proper condition for transport by highway according to applicable Federal, State and Local governmental regulations. I further certify that the waste materials described above are not a hazardous waste as defined by the Utah Hazardous Waste Management Regulations and 40 C.F.R. Part 260 & 261, as amended from time to time, and I acknowledge that said waste is designated for disposal and/or re-use at the Soils Regeneration Site operated by E.T. Technologies, Inc. I agree to pay for all disposal/processing fees and special handling charges as established by the Salt Lake Valley Solid Waste Management Council.  
I further agree to pay a late charge of 1.5 % per month (18% per annum) for all past due accounts (30 days after date of invoice) and reasonable attorney/collection fees for delinquent accounts.  
GENERATOR 1 - Certified By: Paul Brizuela Title Site Supervisor Company TM-Assist  
GENERATOR 2 - Certified By: \_\_\_\_\_ Title \_\_\_\_\_ Company \_\_\_\_\_  
GENERATOR 3 - Certified By: \_\_\_\_\_ Title \_\_\_\_\_ Company \_\_\_\_\_

— THIS PORTION FOR OFFICE USE ONLY —

Signature of E.T. Representative: [Signature] Date: 10/1/04

Gross Weight	Tare Weight	Net Weight	Class	Price/Ton	Price
1) <u>74,900</u>	<u>38,500</u>	<u>36,400</u>	<u>MS</u>	<u>30.30</u>	<u>551.46</u>
2)					
3)					

TICKET # <u>C-3 300712</u>	DISPOSAL AREA <u>9-J</u>	SCALEHOUSE INITIALS	TRUCK # <u>423</u>	PH <u>N/A</u>	TLV <u>98</u>
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# E.T. TECHNOLOGIES INC.

No 133693

## NON-HAZARDOUS WASTE MANIFEST

E.T. TECHNOLOGIES INC.  
SOILS REGENERATION SITE  
SALT LAKE VALLEY LANDFILL  
6030 W. 1300 SOUTH (801) 973-2065  
SALT LAKE CITY, UTAH 84104

1. DATE SHIPPED 10, 1, 04 2. DATE RECEIVED 10, 1, 04

3. WASTE GENERATOR(S) INFORMATION:  
GENERATOR 1 ACOE ADDRESS 700 North 8800 West Frontage Rd  
CITY Salt Lake City STATE Utah ZIP CODE 84104 PHONE 816-803-2221  
GENERATOR 2 \_\_\_\_\_ ADDRESS \_\_\_\_\_  
CITY \_\_\_\_\_ STATE \_\_\_\_\_ ZIP CODE \_\_\_\_\_ PHONE \_\_\_\_\_  
GENERATOR 3 \_\_\_\_\_ ADDRESS \_\_\_\_\_  
CITY \_\_\_\_\_ STATE \_\_\_\_\_ ZIP CODE \_\_\_\_\_ PHONE \_\_\_\_\_

4. TRANSPORTATION CERTIFICATION: I certify that the waste load(s) listed below (Section 5) were collected from the Waste Generators listed in Section 3 of this document. No other substance or waste from any other sources are included in this shipment. To the best of my knowledge, the information given in this Manifest is a true and accurate description of the waste material. I further acknowledge receipt of the shipment from the Waste Generators located in Section 3 above.

TRANSPORTER COMPANY NAME Ralph Smith Trucking  
DRIVER NAME (Please Print) Billy Boswell  
DRIVER SIGNATURE Billy Boswell DATE \_\_\_\_\_

5. SHIPPING DESCRIPTION

CONTAINER CODES: A = SUMP TRUCK B = RAM C = TANKER D = BARRELS E = DUMP F = OTHER  
WASTE TYPE CODES: G = KITCHEN SUMP H = SHOP SUMP I = YARD SUMP J = SEPTIC / SEWAGE K = SOIL L = OTHER

DESCRIPTION OF WASTE MATERIALS	WASTE CODE/ PROFILE NUMBER	CONTAINER	WASTE TYPE	TOTAL QUANTITY	Lbs. Gals.
<u>NON-HAZARDOUS, NON D.O.T REGULATED</u>	<u>Per Tenn Dev</u>	<u>E</u>	<u>K</u>	<u>25 EST YARDS</u>	
<u>SOIL</u>	<u>HS-11272</u>				

Additional Descriptions or Special Handling Instructions:

6. GENERATOR'S CERTIFICATION:  
I hereby declare that the contents of this consignment are fully and accurately described above by proper shipping name and are classified, packed, marked, and labeled, and are in all respects in proper condition for transport by highway according to applicable Federal, State and Local governmental regulations. I further certify that the waste materials described above are not a hazardous waste as defined by the Utah Hazardous Waste Management Regulations and 40 C.F.R. Part 260 & 261, as amended from time to time, and I acknowledge that said waste is designated for disposal and/or re-use at the Soils Regeneration Site operated by E.T. Technologies, Inc. I agree to pay for all disposal/processing fees and special handling charges as established by the Salt Lake Valley Soils Waste Management Council.  
I further agree to pay a late charge of 1.5 % per month (18% per annum) for all past due accounts (30 days after date of invoice) and reasonable attorney/collection fees for delinquent accounts.  
GENERATOR 1 - Certified By: Pam Brizuela Title Site Supervisor Company EM-Asst  
GENERATOR 2 - Certified By: \_\_\_\_\_ Title \_\_\_\_\_ Company \_\_\_\_\_  
GENERATOR 3 - Certified By: \_\_\_\_\_ Title \_\_\_\_\_ Company \_\_\_\_\_

- THIS PORTION FOR OFFICE USE ONLY -

Signature of E.T. Representative: \_\_\_\_\_ Date: 10/01/04

	Gross Weight	Tare Weight	Net Weight	Class	Price/Ton	Price
1)	<u>22540</u>	<u>78500</u>	<u>44040</u>	<u>75</u>	<u>30.30</u>	<u>669.21</u>
2)						
3)						

TICKET #	DEPOSAL AREA	SCALEHOUSE INITIALS	TRUCK #	PH	TV
<u>841300710</u>	<u>9-J</u>		<u>417</u>	<u>NA</u>	<u>0/0</u>



# E.T. TECHNOLOGIES INC.

No 33694

## NON-HAZARDOUS WASTE MANIFEST

E.T. TECHNOLOGIES INC.  
SOILS REGENERATION SITE  
SALT LAKE VALLEY LANDFILL  
6030 W. 1300 SOUTH (801) 973-2065  
SALT LAKE CITY, UTAH 84104

1. DATE SHIPPED 10 / 1 / 04 2. DATE RECEIVED 10 / 1 / 04

3. WASTE GENERATOR(S) INFORMATION:

GENERATOR 1 ALOE ADDRESS 700 NORTH 8800 WEST FRONTAGE RD.  
CITY SALT LAKE CITY STATE UTAH ZIP CODE 84104 PHONE 916-803-2221  
GENERATOR 2 \_\_\_\_\_ ADDRESS \_\_\_\_\_  
CITY \_\_\_\_\_ STATE \_\_\_\_\_ ZIP CODE \_\_\_\_\_ PHONE \_\_\_\_\_  
GENERATOR 3 \_\_\_\_\_ ADDRESS \_\_\_\_\_  
CITY \_\_\_\_\_ STATE \_\_\_\_\_ ZIP CODE \_\_\_\_\_ PHONE \_\_\_\_\_

4. TRANSPORTATION CERTIFICATION: I certify that the waste load(s) listed below (Section 5) were collected from the Waste Generators listed in Section 3 of this document. No other substance or waste from any other sources are included in this shipment. To the best of my knowledge, the information given in this Manifest is a true and accurate description of the waste material. I further acknowledge receipt of the shipment from the Waste Generators located in Section 3 above.

TRANSPORTER COMPANY NAME Ralph Smith Trucking  
DRIVER NAME (Please Print) CLAY FENSTERMAKER  
DRIVER SIGNATURE [Signature] DATE 10/1/04

5. SHIPPING DESCRIPTION

CONTAINER CODES:	A = SUMP TRUCK	B = PAM	C = TANKER	D = BARRELS	E = DUMP	F = OTHER
WASTE TYPE CODES:	G = KITCHEN SUMP	H = SHOP SUMP	I = YARD SUMP	J = SEPTIC / SEWAGE	K = SOIL	L = OTHER
DESCRIPTION OF WASTE MATERIALS	WASTE CODE / PROFILE NUMBER	CONTAINER	WASTE TYPE	TOTAL QUANTITY		
<u>NON HAZARDOUS, NON D.O.T. REGULATED</u>	<u>P2, P10, P11</u>	<u>ED</u>	<u>K</u>	<u>25 EST YARDS</u>	Lbs. Gals.	
<u>SOIL</u>	<u>75-11272</u>				Lbs. Gals.	
					Lbs. Gals.	

Additional Descriptions or Special Handling Instructions:

6. GENERATOR'S CERTIFICATION:

I hereby declare that the contents of this consignment are fully and accurately described above by proper shipping name and are classified, packed, marked, and labeled, and are in all respects in proper condition for transport by highway according to applicable Federal, State and Local governmental regulations. I further certify that the waste materials described above are not a hazardous waste as defined by the Utah Hazardous Waste Management Regulations and 40 C.F.R. Part 260 & 261, as amended from time to time, and I acknowledge that said waste is designated for disposal and/or re-use at the Soils Regeneration Site operated by E.T. Technologies, Inc. I agree to pay for all disposal/processing fees and special handling charges as established by the Salt Lake Valley Solid Waste Management Council. I further agree to pay a late charge of 1.5 % per month (18% per annum) for all past due accounts (30 days after date of invoice) and reasonable attorney/collection fees for delinquent accounts.

GENERATOR 1 - Certified By: [Signature] Title SITE SUPERVISOR Company EM ASSIST  
GENERATOR 2 - Certified By: \_\_\_\_\_ Title \_\_\_\_\_ Company \_\_\_\_\_  
GENERATOR 3 - Certified By: \_\_\_\_\_ Title \_\_\_\_\_ Company \_\_\_\_\_

THIS PORTION FOR OFFICE USE ONLY -

Signature of E.T. Representative: [Signature] Date: 10/1/04

	Gross Weight	Tare Weight	Net Weight	Class	Price/Ton	Price
1)	<u>75140</u>	<u>37860</u>	<u>37280</u>	<u>75</u>	<u>30.30</u>	<u>564.79</u>
2)						
3)						
	TICKET #	DISPOSAL AREA	SCALEHOUSE INITIALS	TRUCK #	PH	% T.V.
	<u>505/300711</u>	<u>9-5</u>		<u>447</u>	<u>N/A</u>	<u>0</u>



# E.T. TECHNOLOGIES INC.

No 33695

## NON-HAZARDOUS WASTE MANIFEST

E.T. TECHNOLOGIES INC.  
SOILS REGENERATION SITE  
SALT LAKE VALLEY LANDFILL  
6030 W. 1300 SOUTH (801) 973-2065  
SALT LAKE CITY, UTAH 84104

1. DATE SHIPPED 10 / 1 / 04 2. DATE RECEIVED 10 / 1 / 04

### 3. WASTE GENERATOR(S) INFORMATION:

GENERATOR 1 ADDE ADDRESS 20 North 8800 West Frontage Rd  
 CITY SALT LAKE CITY STATE UTAH ZIP CODE 84104 PHONE 916-803-2207  
 GENERATOR 2 \_\_\_\_\_ ADDRESS \_\_\_\_\_  
 CITY \_\_\_\_\_ STATE \_\_\_\_\_ ZIP CODE \_\_\_\_\_ PHONE \_\_\_\_\_  
 GENERATOR 3 \_\_\_\_\_ ADDRESS \_\_\_\_\_  
 CITY \_\_\_\_\_ STATE \_\_\_\_\_ ZIP CODE \_\_\_\_\_ PHONE \_\_\_\_\_

4. TRANSPORTATION CERTIFICATION: I certify that the waste load(s) listed below (Section 5) were collected from the Waste Generators listed in Section 3 of this document. No other substance or waste from any other sources are included in this shipment. To the best of my knowledge, the information given in this Manifest is a true and accurate description of the waste material. I further acknowledge receipt of the shipment from the Waste Generators located in Section 3 above.

TRANSPORTER COMPANY NAME Ralph Smith trucking  
 DRIVER NAME (Please Print) Dwight R Boswell  
 DRIVER SIGNATURE [Signature] DATE \_\_\_\_\_

### 5. SHIPPING DESCRIPTION

CONTAINER CODES:	A-SUMP TRUCK	B-RAM	C-TANKER	D-BARRELS	E-DUMP	F-OTHER
WASTE TYPE CODES:	G-KITCHEN SUMP	H-SHOP SUMP	I-YARD SUMP	J-SEPTIC/SEWAGE	K-SOL	L-OTHER
DESCRIPTION OF WASTE MATERIALS	WASTE CODE/ PROFILE NUMBER	CONTAINER	WASTE TYPE	TOTAL QUANTITY	Lbs. Gals.	
<del>NON-HAZARDOUS, NONDOT REGULATED</del>	Per Drum Dev	E	K	25 EST YARDS		
SOIL	KS-11272			29280	Lbs. Gals.	
					Lbs. Gals.	

Additional Descriptions or Special Handling Instructions:

### 6. GENERATOR'S CERTIFICATION:

I hereby declare that the contents of this consignment are fully and accurately described above by proper shipping name and are classified, packed, marked, and labeled, and are in all respects in proper condition for transport by highway according to applicable Federal, State and Local governmental regulations. I further certify that the waste materials described above are not a hazardous waste as defined by the Utah Hazardous Waste Management Regulations and 40 C.F.R. Part 260 & 261, as amended from time to time, and I acknowledge that said waste is designated for disposal and/or re-use at the Soils Regeneration Site operated by E.T. Technologies, Inc. I agree to pay for all disposal/processing fees and special handling charges as established by the Salt Lake Valley Solid Waste Management Council.  
 I further agree to pay a late charge of 1.5 % per month (18% per annum) for all past due accounts (30 days after date of invoice) and reasonable attorney/collection fees for delinquent accounts.

GENERATOR 1 - Certified By: Fant Brizuela Title Site Supervisor Company EM-ASSIST  
 GENERATOR 2 - Certified By: \_\_\_\_\_ Title \_\_\_\_\_ Company \_\_\_\_\_  
 GENERATOR 3 - Certified By: \_\_\_\_\_ Title \_\_\_\_\_ Company \_\_\_\_\_

THIS PORTION FOR OFFICE USE ONLY -

Signature of E.T. Representative: [Signature] Date: 10/1/04

Gross Weight	Tara Weight	Net Weight	Class	Price/Ton	Price
1) <u>67780</u>	<u>38560</u>	<u>29280</u>	<u>7S</u>	<u>30.30</u>	<u>443.59</u>
2)					
3)					
TICKET #	DISPOSAL AREA	SCALEHOUSE INITIALS	TRUCK #	PH	TLV
<u>62/300822</u>	<u>H</u>		<u>423</u>	<u>N/A</u>	<u>0</u>



# E.T. TECHNOLOGIES INC.

No 133696

## NON-HAZARDOUS WASTE MANIFEST

E.T. TECHNOLOGIES INC.  
SOILS REGENERATION SITE  
SALT LAKE VALLEY LANDFILL  
6030 W. 1300 SOUTH (801) 973-2065  
SALT LAKE CITY, UTAH 84104

1. DATE SHIPPED 10 / 1 / 04 2. DATE RECEIVED 10 / 1 / 04

3. WASTE GENERATOR(S) INFORMATION:  
GENERATOR 1 NSACE ADDRESS 20 North 8500 West Frontage Rd  
CITY Salt Lake Utah STATE UTAH ZIP CODE 84104 PHONE 916 805 2227  
GENERATOR 2 \_\_\_\_\_ ADDRESS \_\_\_\_\_  
CITY \_\_\_\_\_ STATE \_\_\_\_\_ ZIP CODE \_\_\_\_\_ PHONE \_\_\_\_\_  
GENERATOR 3 \_\_\_\_\_ ADDRESS \_\_\_\_\_  
CITY \_\_\_\_\_ STATE \_\_\_\_\_ ZIP CODE \_\_\_\_\_ PHONE \_\_\_\_\_

4. TRANSPORTATION CERTIFICATION: I certify that the waste load(s) listed below (Section 5) were collected from the Waste Generators listed in Section 3 of this document. No other substance or waste from any other sources are included in this shipment. To the best of my knowledge, the information given in this Manifest is a true and accurate description of the waste material. I further acknowledge receipt of the shipment from the Waste Generators located in Section 3 above.

TRANSPORTER COMPANY NAME Ralph Smith Trucking  
DRIVER NAME (Please Print) CLAY FEINSTERMAKER  
DRIVER SIGNATURE Clay Feinstermaker DATE 10/1/04

5. SHIPPING DESCRIPTION  
CONTAINER CODES: A=SUMP TRUCK B=RAM C=TANKER D=BARRELS E=DUMP F=OTHER  
WASTE TYPE CODES: G=KITCHEN SUMP H=SHOP SUMP I=YARD SUMP J=SEPTIC/SEWAGE K=SOIL L=OTHER

DESCRIPTION OF WASTE MATERIALS	WASTE CODE/ PROFILE NUMBER	CONTAINER	WASTE TYPE	TOTAL QUANTITY	Lbs. Gals.
<u>NONHAZARDOUS, NON-D.O.T regulated Soil</u>	<u>Per Dnm Dm TK-11272</u>	<u>E</u>	<u>K</u>	<u>25 EST YARDS 28340</u>	<u>Lbs. Gals. Lbs. Gals.</u>

Additional Descriptions or Special Handling Instructions:

6. GENERATOR'S CERTIFICATION:  
I hereby declare that the contents of this consignment are fully and accurately described above by proper shipping name and are classified, packed, marked, and labeled, and are in all respects in proper condition for transport by highway according to applicable Federal, State and Local governmental regulations. I further certify that the waste materials described above are not a hazardous waste as defined by the Utah Hazardous Waste Management Regulations and 40 C.F.R. Part 260 & 261, as amended from time to time, and I acknowledge that said waste is designated for disposal and/or re-use at the Soils Regeneration Site operated by E.T. Technologies, Inc. I agree to pay for all disposal/processing fees and special handling charges as established by the Salt Lake Valley Solid Waste Management Council.  
I further agree to pay a late charge of 1.5 % per month (18% per annum) for all past due accounts (30 days after date of invoice) and reasonable attorney/collection fees for delinquent accounts.  
GENERATOR 1 - Certified By: Toni Brizuelo Title SIR SUPERVISOR Company EM-ASSIST  
GENERATOR 2 - Certified By: \_\_\_\_\_ Title \_\_\_\_\_ Company \_\_\_\_\_  
GENERATOR 3 - Certified By: \_\_\_\_\_ Title \_\_\_\_\_ Company \_\_\_\_\_

- THIS PORTION FOR OFFICE USE ONLY -

Signature of E.T. Representative: \_\_\_\_\_ Date: 10/1/04

Gross Weight	Tare Weight	Net Weight	Class	Price/Ton	Price
1) <u>66200</u>	<u>37860</u>	<u>28340</u>	<u>75</u>	<u>30.30</u>	<u>429.35</u>
2)					
3)					
TICKET # <u>C-4/300837</u>	DISPOSAL AREA <u>B-H</u>	SCALEHOUSE INITIALS	TRUCK # <u>447</u>	PH <u>N/A</u>	<u>0%</u>



# E.T. TECHNOLOGIES INC.

No 133697

E.T. TECHNOLOGIES INC.  
SOILS REGENERATION SITE  
SALT LAKE VALLEY LANDFILL  
6030 W. 1300 SOUTH (801) 973-2065  
SALT LAKE CITY, UTAH 84104

## NON-HAZARDOUS WASTE MANIFEST

1. DATE SHIPPED 10 / 1 / 04 2. DATE RECEIVED 10 / 1 / 04

3. WASTE GENERATOR(S) INFORMATION:  
GENERATOR 1 USACE ADDRESS 700 NORTH 8500 West Frontage Rd  
CITY SALT LAKE CITY STATE UTAH ZIP CODE 84104 PHONE 916 803 2227  
GENERATOR 2 \_\_\_\_\_ ADDRESS \_\_\_\_\_  
CITY \_\_\_\_\_ STATE \_\_\_\_\_ ZIP CODE \_\_\_\_\_ PHONE \_\_\_\_\_  
GENERATOR 3 \_\_\_\_\_ ADDRESS \_\_\_\_\_  
CITY \_\_\_\_\_ STATE \_\_\_\_\_ ZIP CODE \_\_\_\_\_ PHONE \_\_\_\_\_

4. TRANSPORTATION CERTIFICATION: I certify that the waste load(s) listed below (Section 5) were collected from the Waste Generators listed in Section 3 of this document. No other substance or waste from any other sources are included in this shipment. To the best of my knowledge, the information given in this Manifest is a true and accurate description of the waste material. I further acknowledge receipt of the shipment from the Waste Generators located in Section 3 above.

TRANSPORTER COMPANY NAME Ralph Smith Trucking  
DRIVER NAME (Please Print) Bill Baswell  
DRIVER SIGNATURE Bill Baswell DATE \_\_\_\_\_

### 5. SHIPPING DESCRIPTION

CONTAINER CODES:	A = SUMP TRUCK	B = RAM	C = TANKER	D = BARRELS	E = DUMP	F = OTHER
WASTE TYPE CODES:	G = KITCHEN SUMP	H = SHOP SUMP	I = YARD SUMP	J = SEPTIC / SEWAGE	K = SOIL	L = OTHER
DESCRIPTION OF WASTE MATERIALS	WASTE CODE/ PROFILE NUMBER	CONTAINER	WASTE TYPE	TOTAL QUANTITY		
<u>NONHAZARDOUS, NONDOT regulated</u>	<u>Per Dumber</u>	<u>E</u>	<u>K</u>	<u>25</u>	<u>Lbs.</u>	
<u>Soil</u>	<u>75-11272</u>			<u>EST YARD</u>	<u>Gals.</u>	
					<u>Lbs.</u>	
					<u>Gals.</u>	
					<u>Lbs.</u>	
					<u>Gals.</u>	

Additional Descriptions or Special Handling Instructions:

### 6. GENERATOR'S CERTIFICATION:

I hereby declare that the contents of this consignment are fully and accurately described above by proper shipping name and are classified, packed, marked, and labeled, and are in all respects in proper condition for transport by highway according to applicable Federal, State and Local governmental regulations. I further certify that the waste materials described above are not a hazardous waste as defined by the Utah Hazardous Waste Management Regulations and 40 C.F.R. Part 260 & 261, as amended from time to time, and I acknowledge that said waste is designated for disposal and/or re-use at the Soils Regeneration Site operated by E.T. Technologies, Inc. I agree to pay for all disposal/processing fees and special handling charges as established by the Salt Lake Valley Solid Waste Management Council.

I further agree to pay a late charge of 1.5 % per month (18% per annum) for all past due accounts (30 days after date of invoice) and reasonable attorney/collection fees for delinquent accounts.

GENERATOR 1 - Certified By: Paul Briviera Title Site Supervisor Company EM Assist  
GENERATOR 2 - Certified By: \_\_\_\_\_ Title \_\_\_\_\_ Company \_\_\_\_\_  
GENERATOR 3 - Certified By: \_\_\_\_\_ Title \_\_\_\_\_ Company \_\_\_\_\_

- THIS PORTION FOR OFFICE USE ONLY -

Signature of E.T. Representative: \_\_\_\_\_ Date: 10/1/04

	Gross Weight	Tare Weight	Net Weight	Class	Price/Ton	Price
1)	<u>77620</u>	<u>38500</u>	<u>39120</u>	<u>75</u>	<u>30.30</u>	<u>592.67</u>
2)						
3)						
	TICKET #	DISPOSAL AREA	SCALEHOUSE INITIALS	TRUCK #	PH	TLV
	<u>64/133697</u>	<u>8-H</u>		<u>417</u>	<u>N/A</u>	<u>0/0</u>



# E.T. TECHNOLOGIES INC.

No 33698

## NON-HAZARDOUS WASTE MANIFEST

E.T. TECHNOLOGIES INC.  
SOILS REGENERATION SITE  
SALT LAKE VALLEY LANDFILL  
6030 W. 1300 SOUTH (801) 973-2065  
SALT LAKE CITY, UTAH 84104

1. DATE SHIPPED 10 / 1 / 04 2. DATE RECEIVED 10 / 1 / 04

3. WASTE GENERATOR(S) INFORMATION:  
GENERATOR 1 USACE ADDRESS 700 NORTH 8800 WEST FRONTAGE  
CITY SALT LAKE CITY STATE UTAH ZIP CODE 84104 PHONE 916-883-2227  
GENERATOR 2 \_\_\_\_\_ ADDRESS \_\_\_\_\_  
CITY \_\_\_\_\_ STATE \_\_\_\_\_ ZIP CODE \_\_\_\_\_ PHONE \_\_\_\_\_  
GENERATOR 3 \_\_\_\_\_ ADDRESS \_\_\_\_\_  
CITY \_\_\_\_\_ STATE \_\_\_\_\_ ZIP CODE \_\_\_\_\_ PHONE \_\_\_\_\_

4. TRANSPORTATION CERTIFICATION: I certify that the waste load(s) listed below (Section 5) were collected from the Waste Generators listed in Section 3 of this document. No other substance or waste from any other sources are included in this shipment. To the best of my knowledge, the information given in this Manifest is a true and accurate description of the waste material. I further acknowledge receipt of the shipment from the Waste Generators located in Section 3 above.

TRANSPORTER COMPANY NAME Ralph Smith Trucking  
DRIVER NAME (Please Print) Clifford Y Seely  
DRIVER SIGNATURE [Signature] DATE 10-1-04

5. SHIPPING DESCRIPTION  
CONTAINER CODES: A=SUMP TRUCK B=RAM C=TANKER D=BARRELS E=DUMP F=OTHER  
WASTE TYPE CODES: G=KITCHEN SUMP H=SHOP SUMP I=YARD SUMP J=SEPTIC/SEWAGE K=SOIL L=OTHER

DESCRIPTION OF WASTE MATERIALS	WASTE CODE/ PROFILE NUMBER	CONTAINER	WASTE TYPE	TOTAL QUANTITY	Lbs. Gals.
<u>NON HAZARDOUS, MND.O.T REGULATED</u>	<u>Per Dan Dan</u>	<u>F</u>	<u>K</u>	<u>25</u> <u>EST YARDS</u>	<u>Lbs.</u> <u>Gals.</u>
<u>SOIL</u>	<u>7511272</u>			<u>47540</u>	<u>Lbs.</u> <u>Gals.</u>

Additional Descriptions or Special Handling Instructions:

6. GENERATOR'S CERTIFICATION:  
I hereby declare that the contents of this consignment are fully and accurately described above by proper shipping name and are classified, packed, marked, and labeled, and are in all respects in proper condition for transport by highway according to applicable Federal, State and Local governmental regulations. I further certify that the waste materials described above are not a hazardous waste as defined by the Utah Hazardous Waste Management Regulations and 40 C.F.R. Part 260 & 261, as amended from time to time, and I acknowledge that said waste is designated for disposal and/or re-use at the Soils Regeneration Site operated by E.T. Technologies, Inc. I agree to pay for all disposal/processing fees and special handling charges as established by the Salt Lake Valley Solid Waste Management Council.  
I further agree to pay a late charge of 1.5 % per month (18% per annum) for all past due accounts (30 days after date of invoice) and reasonable attorney/collection fees for delinquent accounts.  
GENERATOR 1 - Certified By: Paul Brizuela Title Site Supervisor Company EM-Assist  
GENERATOR 2 - Certified By: \_\_\_\_\_ Title \_\_\_\_\_ Company \_\_\_\_\_  
GENERATOR 3 - Certified By: \_\_\_\_\_ Title \_\_\_\_\_ Company \_\_\_\_\_

THIS PORTION FOR OFFICE USE ONLY

Signature of E.T. Representative: [Signature] Date: 10/1/04

Gross Weight	Tare Weight	Net Weight	Class	Price/Ton	Price
1) <u>82340</u>	<u>34800</u>	<u>47540</u>	<u>7S</u>	<u>30.30</u>	<u>720.23</u>
2)					
3)					

TICKET #	DISPOSAL AREA	SCALEHOUSE INITIALS	TRUCK #	PH	o/v
<u>506/300820</u>	<u>8-H</u>		<u>437</u>	<u>N/A</u>	<u>0/0</u>



# E.T. TECHNOLOGIES INC.

No 133699

E.T. TECHNOLOGIES INC.  
SOILS REGENERATION SITE  
SALT LAKE VALLEY LANDFILL  
6030 W. 1300 SOUTH (801) 973-2065  
SALT LAKE CITY, UTAH 84104

## NON-HAZARDOUS WASTE MANIFEST

1. DATE SHIPPED 10 / 1 / 04 2. DATE RECEIVED 10 / 1 / 04

3. WASTE GENERATOR(S) INFORMATION:  
GENERATOR 1 USACE ADDRESS 20 north 8800 west + freighter Rd.  
CITY Salt Lake City STATE Utah ZIP CODE 84104 PHONE 916-803-2277  
GENERATOR 2 \_\_\_\_\_ ADDRESS \_\_\_\_\_  
CITY \_\_\_\_\_ STATE \_\_\_\_\_ ZIP CODE \_\_\_\_\_ PHONE \_\_\_\_\_  
GENERATOR 3 \_\_\_\_\_ ADDRESS \_\_\_\_\_  
CITY \_\_\_\_\_ STATE \_\_\_\_\_ ZIP CODE \_\_\_\_\_ PHONE \_\_\_\_\_

4. TRANSPORTATION CERTIFICATION: I certify that the waste load(s) listed below (Section 5) were collected from the Waste Generators listed in Section 3 of this document. No other substance or waste from any other sources are included in this shipment. To the best of my knowledge, the information given in this Manifest is a true and accurate description of the waste material. I further acknowledge receipt of the shipment from the Waste Generators located in Section 3 above.  
TRANSPORTER COMPANY NAME Ralph Smith Trucking  
DRIVER NAME (Please Print) Clifford Y Seely  
DRIVER SIGNATURE Cliff Y Seely DATE \_\_\_\_\_

5. SHIPPING DESCRIPTION  
CONTAINER CODES: A = SUMP TRUCK B = RAM C = TANKER D = BARRELS E = DUMP F = OTHER  
WASTE TYPE CODES: G = KITCHEN SUMP H = SHOP SUMP I = YARD SUMP J = SEPTIC / SEWAGE K = SOL L = OTHER

DESCRIPTION OF WASTE MATERIALS	WASTE CODE/ PROFILE NUMBER	CONTAINER	WASTE TYPE	TOTAL QUANTITY	Lbs. Gals.
<del>NON HAZARDOUS, NON D.O.T REGULATED</del>	<del>Per tank Den</del>	<del>E</del>	<del>K</del>	<del>25 EST YARDS</del>	<del>Lbs. Gals.</del>
<u>SOIL</u>	<u>75-11272</u>			<u>31100</u>	<u>Lbs. Gals.</u>
					<u>Lbs. Gals.</u>

Additional Descriptions or Special Handling Instructions:

6. GENERATOR'S CERTIFICATION:  
I hereby declare that the contents of this consignment are fully and accurately described above by proper shipping name and are classified, packed, marked, and labeled, and are in all respects in proper condition for transport by highway according to applicable Federal, State and Local governmental regulations. I further certify that the waste materials described above are not a hazardous waste as defined by the Utah Hazardous Waste Management Regulations and 40 C.F.R. Part 260 & 261, as amended from time to time, and I acknowledge that said waste is designated for disposal and/or re-use at the Soils Regeneration Site operated by E.T. Technologies, Inc. I agree to pay for all disposal/processing fees and special handling charges as established by the Salt Lake Valley Solid Waste Management Council.  
I further agree to pay a late charge of 1.5 % per month (18% per annum) for all past due accounts (30 days after date of invoice) and reasonable attorney/collection fees for delinquent accounts.  
GENERATOR 1 - Certified By: Paul Brinck Title: Site Supervisor Company: EM Assist  
GENERATOR 2 - Certified By: \_\_\_\_\_ Title: \_\_\_\_\_ Company: \_\_\_\_\_  
GENERATOR 3 - Certified By: \_\_\_\_\_ Title: \_\_\_\_\_ Company: \_\_\_\_\_

THIS PORTION FOR OFFICE USE ONLY -

Signature of E.T. Representative: [Signature] Date: 10/1/04

	Gross Weight	Tare Weight	Net Weight	Class	Price/Ton	Price
1)	<u>65900</u>	<u>34800</u>	<u>31100</u>	<u>75</u>	<u>30.30</u>	<u>471.16</u>
2)						
3)						

TICKET # C-5/300939 DISPOSAL AREA P-H SCALEHOUSE INITIALS \_\_\_\_\_ TRUCK # 437 PH N/A 9/8



# E.T. TECHNOLOGIES INC.

No 133700

E.T. TECHNOLOGIES INC.  
SOILS REGENERATION SITE  
SALT LAKE VALLEY LANDFILL  
6030 W. 1300 SOUTH (801) 973-2065  
SALT LAKE CITY, UTAH 84104

## NON-HAZARDOUS WASTE MANIFEST

1. DATE SHIPPED 10 / 1 / 04 2. DATE RECEIVED 10 / 1 / 04

### 3. WASTE GENERATOR(S) INFORMATION:

GENERATOR 1 USACE ADDRESS 700 north 8800 west Frontage Rd  
 CITY Salt Lake City STATE Utah ZIP CODE 84104 PHONE 916 803-2007  
 GENERATOR 2 \_\_\_\_\_ ADDRESS \_\_\_\_\_  
 CITY \_\_\_\_\_ STATE \_\_\_\_\_ ZIP CODE \_\_\_\_\_ PHONE \_\_\_\_\_  
 GENERATOR 3 \_\_\_\_\_ ADDRESS \_\_\_\_\_  
 CITY \_\_\_\_\_ STATE \_\_\_\_\_ ZIP CODE \_\_\_\_\_ PHONE \_\_\_\_\_

4. TRANSPORTATION CERTIFICATION: I certify that the waste load(s) listed below (Section 5) were collected from the Waste Generators listed in Section 3 of this document. No other substance or waste from any other sources are included in this shipment. To the best of my knowledge, the information given in this Manifest is a true and accurate description of the waste material. I further acknowledge receipt of the shipment from the Waste Generators located in Section 3 above.

TRANSPORTER COMPANY NAME Ralph Smith Trucking  
 DRIVER NAME (Please Print) CLAY FENISTER MAKER  
 DRIVER SIGNATURE Clay Fenister DATE 10/1/04

### 5. SHIPPING DESCRIPTION

CONTAINER CODES:	A = SUMP TRUCK	B = RAM	C = TANKER	D = BARRELS	E = DUMP	F = OTHER
WASTE TYPE CODES:	G = KITCHEN SUMP	H = SHOP SUMP	I = YARD SUMP	J = SEPTIC / SEWAGE	K = SOIL	L = OTHER
DESCRIPTION OF WASTE MATERIALS	WASTE CODE/ PROFILE NUMBER	CONTAINER	WASTE TYPE	TOTAL QUANTITY	Lbs. Gals.	
<u>NONHAZARDOUS, NON D.O.T REGULATED soil</u>	<u>Retention 75-11272</u>	<u>E</u>	<u>K</u>	<u>35 EST YARDS</u>	<u>37960</u> Gals.	
					Lbs. Gals.	

Additional Descriptions or Special Handling Instructions:

### 6. GENERATOR'S CERTIFICATION:

I hereby declare that the contents of this consignment are fully and accurately described above by proper shipping name and are classified, packed, marked, and labeled, and are in all respects in proper condition for transport by highway according to applicable Federal, State and Local governmental regulations. I further certify that the waste materials described above are not a hazardous waste as defined by the Utah Hazardous Waste Management Regulations and 40 C.F.R. Part 260 & 261, as amended from time to time, and I acknowledge that said waste is designated for disposal and/or re-use at the Soils Regeneration Site operated by E.T. Technologies, Inc. I agree to pay for all disposal/processing fees and special handling charges as established by the Salt Lake Valley Solid Waste Management Council.

I further agree to pay a late charge of 1.5 % per month (18% per annum) for all past due accounts (30 days after date of invoice) and reasonable attorney/collection fees for delinquent accounts.  
 GENERATOR 1 - Certified By: Paul Brizuela Title Site Supervisor Company EM Assist  
 GENERATOR 2 - Certified By: \_\_\_\_\_ Title \_\_\_\_\_ Company \_\_\_\_\_  
 GENERATOR 3 - Certified By: \_\_\_\_\_ Title \_\_\_\_\_ Company \_\_\_\_\_

- THIS PORTION FOR OFFICE USE ONLY -

Signature of E.T. Representative: \_\_\_\_\_ Date: 10/1/04

Gross Weight	Tare Weight	Net Weight	Class	Price/Ton	Price
1) <u>75P20</u>	<u>37860</u>	<u>37960</u>	<u>MS</u>	<u>20.30</u>	<u>575.09</u>
2)					
3)					

TICKET # C-6/300967 DISPOSAL AREA 9-J SCALEHOUSE INITIALS \_\_\_\_\_ TRUCK # 447 PH N/A 0%

## Soil Disposal

(Soil from excavation of area in front of earthen berm)

# E.T. TECHNOLOGIES INC.

No. 140443



E.T. TECHNOLOGIES INC.  
 SOILS REGENERATION SITE  
 SALT LAKE VALLEY LANDFILL  
 6030 W. 1300 SOUTH (801) 973-2065  
 SALT LAKE CITY, UTAH 84104

## NON-HAZARDOUS WASTE MANIFEST

1. DATE SHIPPED 5, 22, 06 2. DATE RECEIVED 5, 22, 06

3. WASTE GENERATOR(S) INFORMATION: 1325 J STREET  
 GENERATOR 1 US Army Corp. ADDRESS 700 NO. 8800 W.  
 CITY SACRAMENTO STATE CA ZIP CODE 95814 PHONE \_\_\_\_\_  
 GENERATOR 2 \_\_\_\_\_ ADDRESS \_\_\_\_\_  
 CITY \_\_\_\_\_ STATE \_\_\_\_\_ ZIP CODE \_\_\_\_\_ PHONE \_\_\_\_\_  
 GENERATOR 3 \_\_\_\_\_ ADDRESS \_\_\_\_\_  
 CITY \_\_\_\_\_ STATE \_\_\_\_\_ ZIP CODE \_\_\_\_\_ PHONE \_\_\_\_\_

4. TRANSPORTATION CERTIFICATION: I certify that the waste load(s) listed below (Section 5) were collected from the Waste Generators listed in Section 3 of this document. No other substance or waste from any other sources are included in this shipment. To the best of my knowledge, the information given in this Manifest is a true and accurate description of the waste material. I further acknowledge receipt of the shipment from the Waste Generators located in Section 3 above.

TRANSPORTER COMPANY NAME REYNOLDS BROS.  
 DRIVER NAME (Please Print) Bill Trujillo Bill Trujillo  
 DRIVER SIGNATURE Bill Trujillo DATE 5-22-06

5. SHIPPING DESCRIPTION

CONTAINER CODES: A=SUMP TRUCK B=RAM C=TANKER D=BARRELS E=DUMP F=OTHER  
 WASTE TYPE CODES: G=KITCHEN SUMP H=SHOP SUMP I=YARD SUMP J=SEPTIC/SEWAGE K=SOIL L=OTHER

DESCRIPTION OF WASTE MATERIALS	WASTE CODE/ PROFILE NUMBER	CONTAINER	WASTE TYPE	TOTAL QUANTITY	
<u>lead contaminated soil</u>	<u>7S-12272</u>	<u>E</u>	<u>H</u>	<u>41920</u>	<u>Lbs.</u> <u>Gals.</u>
					<u>Lbs.</u> <u>Gals.</u>
					<u>Lbs.</u> <u>Gals.</u>

Additional Descriptions or Special Handling Instructions:

SITE ADDRESS: 700 NO. 8800 WEST

6. GENERATOR'S CERTIFICATION:  
 I hereby declare that the contents of this consignment are fully and accurately described above by proper shipping name and are classified, packed, marked, and labeled, and are in all respects in proper condition for transport by highway according to applicable Federal, State and Local governmental regulations. I further certify that the waste materials described above are not a hazardous waste as defined by the Utah Hazardous Waste Management Regulations and 40 C.F.R. Part 260 & 261, as amended from time to time, and I acknowledge that said waste is designated for disposal and/or re-use at the Soils Regeneration Site operated by E.T. Technologies, Inc. I agree to pay for all disposal/processing fees and special handling charges as established by the Salt Lake Valley Solid Waste Management Council.

I further agree to pay a late charge of 1.5% per month (18% per annum) for all past due accounts (30 days after date of invoice) and reasonable attorney/collection fees for delinquent accounts.

GENERATOR 1 — Certified By: Edie Fide Title Env. Engr Company USACE  
 GENERATOR 2 — Certified By: \_\_\_\_\_ Title \_\_\_\_\_ Company \_\_\_\_\_  
 GENERATOR 3 — Certified By: \_\_\_\_\_ Title \_\_\_\_\_ Company \_\_\_\_\_

— THIS PORTION FOR OFFICE USE ONLY —

Signature of E.T. Representative: Thurs K. Blalock Date: 5-22-06

	Gross Weight	Tare Weight	Net Weight	Class	Price/Ton	Price
1)	<u>80420</u>	<u>38500</u>	<u>41920</u>	<u>7J</u>	<u>30.30</u>	<u>635.09</u>
2)						
3)						

TICKET #	DISPOSAL AREA	SCALEHOUSE INITIALS	TRUCK #	PH	TLV
<u>C-5 613555</u>	<u>G-J</u>		<u>D-36</u>	<u>N/A</u>	<u>0%</u>



# E.T. TECHNOLOGIES INC.

No. 140445

E.T. TECHNOLOGIES INC.  
SOILS REGENERATION SITE  
SALT LAKE VALLEY LANDFILL  
6030 W. 1300 SOUTH (801) 973-2065  
SALT LAKE CITY, UTAH 84104

## NON-HAZARDOUS WASTE MANIFEST

1. DATE SHIPPED 5 / 22 / 06 2. DATE RECEIVED 5 / 22 / 06

3. WASTE GENERATOR(S) INFORMATION:  
GENERATOR 1 US Army Corp. ADDRESS 1325 J STREET  
700 NO. 8800 W.  
CITY SACRAMENTO STATE CA ZIP CODE 95814 PHONE \_\_\_\_\_  
GENERATOR 2 \_\_\_\_\_ ADDRESS \_\_\_\_\_  
CITY \_\_\_\_\_ STATE \_\_\_\_\_ ZIP CODE \_\_\_\_\_ PHONE \_\_\_\_\_  
GENERATOR 3 \_\_\_\_\_ ADDRESS \_\_\_\_\_  
CITY \_\_\_\_\_ STATE \_\_\_\_\_ ZIP CODE \_\_\_\_\_ PHONE \_\_\_\_\_

4. TRANSPORTATION CERTIFICATION: I certify that the waste load(s) listed below (Section 5) were collected from the Waste Generators listed in Section 3 of this document. No other substance or waste from any other sources are included in this shipment. To the best of my knowledge, the information given in this Manifest is a true and accurate description of the waste material. I further acknowledge receipt of the shipment from the Waste Generators located in Section 3 above.

TRANSPORTER COMPANY NAME REYNOLDS BROS.  
DRIVER NAME (Please Print) Bill Trujillo  
DRIVER SIGNATURE [Signature] DATE 5-22-06

5. SHIPPING DESCRIPTION

CONTAINER CODES: A=SUMP TRUCK B=RAM C=TANKER D=BARRELS E=DUMP F=OTHER  
WASTE TYPE CODES: G=KITCHEN SUMP H=SHOP SUMP I=YARD SUMP J=SEPTIC/SEWAGE K=SOIL L=OTHER

DESCRIPTION OF WASTE MATERIALS	WASTE CODE/ PROFILE NUMBER	CONTAINER	WASTE TYPE	TOTAL QUANTITY	
<u>Lead contaminated soil</u>	<u>7S-12272</u>	<u>E</u>	<u>K</u>	<u>38020</u>	<u>(Lbs. Gals.)</u>
					<u>Lbs. Gals.</u>
					<u>Lbs. Gals.</u>

Additional Descriptions or Special Handling Instructions:

SITE ADDRESS: 700 NO. 8800 WEST

6. GENERATOR'S CERTIFICATION:  
I hereby declare that the contents of this consignment are fully and accurately described above by proper shipping name and are classified, packed, marked, and labeled, and are in all respects in proper condition for transport by highway according to applicable Federal, State and Local governmental regulations. I further certify that the waste materials described above are not a hazardous waste as defined by the Utah Hazardous Waste Management Regulations and 40 C.F.R. Part 260 & 261, as amended from time to time, and I acknowledge that said waste is designated for disposal and/or re-use at the Soils Regeneration Site operated by E.T. Technologies, Inc. I agree to pay for all disposal/processing fees and special handling charges as established by the Salt Lake Valley Solid Waste Management Council.  
I further agree to pay a late charge of 1.5 % per month (18% per annum) for all past due accounts (30 days after date of invoice) and reasonable attorney/collection fees for delinquent accounts.  
GENERATOR 1 — Certified By: [Signature] Title Env Engr Company USACE  
GENERATOR 2 — Certified By: \_\_\_\_\_ Title \_\_\_\_\_ Company \_\_\_\_\_  
GENERATOR 3 — Certified By: \_\_\_\_\_ Title \_\_\_\_\_ Company \_\_\_\_\_

Signature of E.T. Representative: [Signature] Date: 5-22-06

— THIS PORTION FOR OFFICE USE ONLY —

Gross Weight	Tare Weight	Net Weight	Class	Price/Ton	Price
1) <u>76520</u>	<u>38500</u>	<u>38020</u>	<u>7J</u>	<u>30.30</u>	<u>5761.00</u>
2)					
3)					

TICKET# <u>C-5613777</u>	DISPOSAL AREA <u>B-J</u>	SCALEHOUSE INITIALS	TRUCK # <u>D-36</u>	PH <u>N/A</u>	TLV <u>0/10</u>
-----------------------------	-----------------------------	---------------------	------------------------	------------------	--------------------

## **Backfill Soil**

(To fill area in front of earthen berm)

TO: Paul

**Invoice**

E.T. Technologies, Inc.

3110 West California Avenue

Suite D

Salt Lake City, UT 84104

Phone: 801-977-0731

Date	Invoice #
5/31/2006	2105

Bill To
EM Assist Attn: Paul Brizuela Fax: 916-355-8445

P.O. No.	Terms	Project
	Net 30	

Quantity	Description	Rate	Amount
	Transportation and disposal of lead contaminated soil and backfill the excavation		
39.97	As Per Bid- Provide 55 tons of clean fill	1,198.00	1,198.00
	As Per Bid- Transportation and disposal of soils at SRS (per ton)	57.53	2,299.47
	Credit for Disposal which will be billed directly from Soils Regeneration Site on Invoice #19074	-1,211.09	-1,211.09
		<b>Total</b>	<b>\$2,286.38</b>

**FINDING OF  
NO DEPARTMENT OF DEFENSE ACTION INDICATED**

1. **SITE NAME:** Salt Lake City Army Air Base Gunnery Range

**FORMERLY USED DEFENSE SITE NUMBER:** J08UT095100

**LOCATION:**

**City:** Salt Lake City

**County:** Salt Lake

**State:** Utah

2. **POINTS OF CONTACT:**

**CURRENT OWNERS:**

The following current owners were determined through personal communication with the Salt Lake County Assessor's Office, <http://www.assessor.slco.org>, (801) 468-3050:

Zions Securities Corporation

Epperson Associates, LLC

The Richard M. Morehouse and Lynn D. Morehouse Trust

Kennecott Utah Copper Corporation

Edward L. Gillmor

Siv J. Gillmor

National Audubon Society, Inc.

Salt Lake City Corporation

Diversified Habitat 1, LLC

Deanna Williams

**STATE OF UTAH:**

Rik Ombach

Utah Department of Environmental Quality

Division of Environmental Response and Remediation

Phone: (801) 536-4164

[rombach@utah.gov](mailto:rombach@utah.gov)

**U.S. ARMY CORPS OF ENGINEERS:**

Gerald Vincent

FUDS Program Manager

U.S. Army Corps of Engineers, Sacramento District

Phone: (916) 557-7452

[Gerald.E.Vincent@usace.army.mil](mailto:Gerald.E.Vincent@usace.army.mil)

3. **SITE DESCRIPTION:**

The former Salt Lake City Army Air Base Gunnery Range (Site) is located 10 miles west of Salt Lake City, Utah at 40° 47' 22.58"N, 112° 5' 40.61"W. This Site is approximately six miles west of the Salt Lake City International Airport terminal in U.S. Environmental Protection Agency (EPA) Region 8 and in Utah's Congressional District 1.

4. **SITE HISTORY:**

Between 1943 and 1944, the War Department acquired a total of 6,276.81 acres for the Salt Lake City Army Air Base as follows: 40.0 acres of public land were acquired by transfer from the Department of the Interior; 6,212.57 acres were acquired by Declaration of Taking or by lease; and 24.24 acres for two easements were acquired by donation. All 6,276.81 acres comprising the Site were declared surplus on April 22, 1944 and disposed: the 40.0 acres of public lands were relinquished to the Department of Interior on January 30, 1950; the 6,212.57 acres were returned to their original owners in May 1944; and the 24.24 acres easements were quitclaimed to the original owners on July 26, 1950. The Site is currently in private ownership. The western portion of the Site is part of the Kennecott Inland Sea Shorebird Reserve. The eastern part of the Site is used by a duck club. The remainder of the Site is used for seasonal cattle grazing.

The Site was established as a sub-post of the Salt Lake City Army Air Base (AAB), located to the east of what is now the Salt Lake City International Airport. Training at the Site for new personnel of the 18<sup>th</sup> Replacement Wing of the Second Air Force was conducted over a four-month period from December 1943 to April 1944. The Site included the following 13 small-arms training ranges:

- One skeet range;
- Two moving target (Jeep-type) ranges;
- Five high tower shotgun turret ranges;
- Two sub-machine gun ranges;
- One pistol range;
- One 200-yard known distance (KD) rifle range; and
- One Poorman range.

Construction and use of a 14<sup>th</sup> range, a malfunction range, was not likely completed although a building for the malfunction range was completed. Improvements made to the Site included concrete gun placements, supporting buildings, and latrines. No records were found of the frequency of use of the ranges or the amount of ammunition used.

5. **SITE INVESTIGATIONS / CURRENT STATUS:**

In 1992, an Inventory Project Report prepared for the US Army Corps of Engineers (USACE), Sacramento District, recommended an ordnance and explosives waste (OEW) project but referred the site to USACE, Huntsville District, for evaluation and determination of further action. The results of this evaluation were documented in the Archive Search Report, September 2004. The report concluded that expended small arms ammunition was present on the surface and that no chemical warfare materials were used on site. Project closeout for OEW was recommended. A Preliminary Assessment prepared in 1997 by the Utah Department of Environmental Quality, Division of

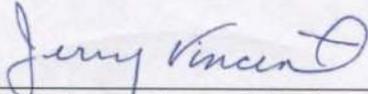
Environmental Response and Remediation (UDEQ/UDERR) concluded that spent munitions were present at the Site. A 2001 UDEQ/UDERR Site Inspection included the collection of seven soil samples. One sample exceeded the U.S. Environmental Protection Agency (EPA) Residential Preliminary Remediation Goal (PRG) for lead.

Two moving target (Jeep-type) ranges (Ranges 2 and 3) and the five high-tower shotgun ranges (Ranges 4 through 8) were identified as areas of concern and in 2004 were sampled by USACE, Sacramento District to assess the potential for lead contamination in soil. In soil from Range 2 and Ranges 4 through 8, lead did not exceed the Residential PRG. Soil at Range 3 which exceeded the Residential PRG for lead was excavated, and confirmation sampling was conducted to ensure that remaining soil had levels of lead below the Residential PRG. Over 189 tons of soil were excavated from Range 3. The excavated soil was disposed off-site as non-hazardous material. Concrete pads and pits were removed from the Site and recycled. Depressions left by the removal were backfilled.

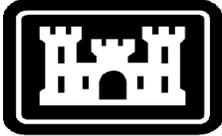
6. **NDAI RECOMMENDATION:**

Given this removal of the lead-contaminated soil and concrete debris, the Site is now recommended for No Further Defense Actions Indicated (NDAI).

7. **NDAI CONCURRENCE:**

  
\_\_\_\_\_  
U.S. Army Corps of Engineers  
Sacramento District

  
\_\_\_\_\_  
Utah Department of Environmental Quality,  
State of Utah



**US Army Corps  
of Engineers**

HUNTSVILLE ENGINEERING  
AND SUPPORT CENTER

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Defense Environmental Restoration Program  
For  
Formerly Used Defense Sites  
Ordnance and Explosives

# ARCHIVES SEARCH REPORT

## **Salt Lake City Army Air Base Gunnery Range**

Salt Lake City, UT  
Project Number – J08UT095101

**FINAL REPORT**

**September 2004**

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Prepared by  
U.S. Army Corps of Engineers  
ST. LOUIS DISTRICT



DEPARTMENT OF THE ARMY  
HUNTSVILLE CENTER, CORPS OF ENGINEERS  
P.O. BOX 1600  
HUNTSVILLE, ALABAMA 35807-4301

REPLY TO  
ATTENTION OF:

CEHNC-OE-CX (200-1c)

30 September 2004

MEMORANDUM FOR Commander, US Army Engineer District, Saint Louis (CEMVS-PM-M/  
Mr. Mike Dace), 1222 Spruce Street, Saint Louis, MO 63103-2833

SUBJECT: Results of the Technical Advisory Group (TAG) Review of Archives Search  
Reports (ASRs) and Fact Sheets for Defense Environmental Restoration Program-Formerly Used  
Defense Sites (DERP-FUDS)

1. The following ASRs and Fact Sheets have been finalized:

PROJECT NUMBER:

J09CA006701/02/03/04  
J09CA015301  
J09CA014401  
J08UT100104  
J09CA728001  
J09CA004801  
J09CA704401  
J09CA728901  
J09CA015601  
J09CA002602  
K06NW050101  
K06NM037301  
J09NV111801  
J09NV109301  
D01MA021801  
C002NY001604  
✓J08UT095101  
F10ID012201  
F10ID012101  
F10ID011901  
F10ID013401  
F10ID011301  
F10ID014001  
J09CA112003  
D01MA018304  
A04MS028201

SITE NAME:

Camp Elliott  
El Centro Bombing Target Site (Ogilby)  
Bombing Target Imperial Dunes  
Wendover Air Force Auxiliary Field - ADDENDUM  
Fresno Army Air Force Ground Training Center  
Iron Mountain/Kilbeck Hills  
Border Field State Park  
Drake's Bay Skip and Dive Bombing Range / Camp Hyde  
East Borego Bombing Target  
Santa Rosa Army Airfield (ADDENDUM)  
Walker AFB, Roswell S-10  
Clovis AFB Nara Visa PBR No. 1  
Pyramid Lake Torpedo and Bombing Range  
Aerial Gunnery Range No. 4  
Fort Standish  
Fort Tilden  
Salt Lake City Army Air Base Gunnery  
Pocatella Precision Bombing Range #2  
Pocatella Ground Gunnery Range  
Pocatello Moving Target Range  
Swan Falls Precision Bombing Range #4  
Precision Bombing Range #2 (Marsing)  
Mountain Home Air Force Range #1  
Corona Annex  
Camp Myles Standish - ADDENDUM  
Yazoo Bombing Range

CEHNC-OE-CX (200-1c)

30 September 2004

SUBJECT: Results of the Technical Advisory Group (TAG) Review of Archives Search Reports (ASR) and Fact Sheets for Defense Environmental Restoration Program-Formerly Used Defense Sites (DERP-FUDS)

2. Recommended strategy for future actions to be taken by the Project Manager is included in the enclosed fact sheets. Supporting data for TAG decisions are also included with the fact sheets.
3. Fact sheets, supporting data and corrected pages, due to prior reviews, are to be distributed with the subject ASRs.
4. Subject ASRs are recommended to be final when enclosed fact sheets, supporting data and corrected pages are included as a part of the project package.
5. If you have any questions concerning this action, please call me at 256-895-1797, DSN 760-1797, or facsimile 256-895-1798.

FOR THE DIRECTOR OF ORDNANCE AND EXPLOSIVES DIRECTORATE:

26 Encls  
as



DANNY R. MARDIS  
Archives Search Report Manager  
for Ordnance and Explosives Team

RISK ASSESSMENT PROCEDURES FOR  
MILITARY MUNITIONS RESPONSE PROJECTS

Property Name:	SALT LAKE CITY AAB GUNNERY RANGE	Rater's Name:	RON THORNHILL
Property Location:	SALT LAKE CITY, UT	Phone Number:	918-420-8395
FUDS Property/Project #:	J08UT095100	District:	ST. LOUIS
Property Type:	SMALL ARMS RANGE	Office Symbol:	SJMAC-ESM
Score:	5	Date Completed:	26 JULY 2004

RISK ASSESSMENT:

This risk assessment (RAC) procedure was developed to address explosives safety hazards related to munitions. This procedure does not address environmental hazards associated with munitions constituents. The U.S. Army Engineering and Support Center, Huntsville (USAESCH), Ordnance and Explosives Directorate (CEHNC-OE) developed this procedure in accordance with MIL-STD 882C and AR 385-10. The Risk Assessment Code (RAC) score will be used by the U.S. Army Corps of Engineers to prioritize the response action(s) at Formerly Used Defense Sites (FUDS). The risk assessment should be based on the best available information resulting from record searches, reports of Explosive Ordnance Disposal (EOD) actions, field observations (site visits), and interviews. This information is used to assess the risk involved based on the potential MMRP hazards identified for the project. The risk assessment evaluates two factors, hazard severity and hazard probability.

**Part I - Hazard Severity.** Hazard severity categories are defined to provide a qualitative measure of the worst credible event resulting from personnel exposure to various types and quantities of unexploded ordnance.

**TYPE OF ORDNANCE: (Check all that apply)**

A. Conventional ordnance and ammunition:	VALUE
Projectiles, explosive (20 millimeter and larger)	10 <input type="checkbox"/>
Bombs, explosive	10 <input type="checkbox"/>
Grenades, hand or rifle, explosive	10 <input type="checkbox"/>
Landmine, explosive	10 <input type="checkbox"/>
Rockets, guided missile, explosive	10 <input type="checkbox"/>
Other Explosive item not previously stated	10 <input type="checkbox"/>
Bomb, practice (w/spotting charge)	6 <input type="checkbox"/>
Detonators, blasting caps, fuses, boosters, bursters	6 <input type="checkbox"/>
Practice ordnance (w/ spotting charges, other than bombs)	4 <input type="checkbox"/>
Small arms, complete round (.50 cal or less)	1 <input type="checkbox"/>
Small arms, expended (.50 cal or less)	0 <input checked="" type="checkbox"/>
Practice ordnance (w/o spotting charges)	0 <input type="checkbox"/>
<b>Conventional ordnance and ammunition (enter largest single value checked)</b>	<u>0</u>

What evidence do you have regarding conventional unexploded ordnance? Historical documentation indicates only small arms ammunition were used on this site. The site inspection revealed expended small arms projectiles.

Property Name:  
Project Number:  
Property Type:

**B. Pyrotechnics (for munitions not described above):**

	VALUE
Munitions containing White Phosphorus (WP) or other pyrophoric material (i.e., spontaneously flammable)	10 <input type="checkbox"/>
Munitions containing a flame or incendiary material (i.e., Napalm, Triethylaluminum metal incendiaries)	10 <input type="checkbox"/>
Containers containing WP or other pyrophoric material or flame or incendiary material	6 <input type="checkbox"/>
Flares, signals, simulators, screening/burning smokes (other than WP)	4 <input type="checkbox"/>
<b>Pyrotechnics (enter the single largest value checked)</b>	<u>0</u>

What evidence do you have regarding pyrotechnics? NONE.

**C. Bulk Explosives (HE) (not an integral part of conventional ordnance; un-containerized):**

	VALUE
Primary or initiating explosives (Lead Styphnate, Lead Azide, Nitroglycerin, Mercury Azide, Mercury Fulminate, Tetracene, etc.)	10 <input type="checkbox"/>
Secondary explosives (Demolition charges, PETN, Compositions A, B, C, Tetryl, TNT, RDX, HMX, HBX, Black Powder, etc.)	8 <input type="checkbox"/>
Insensitive explosive substances (explosive contaminated soils, ammonium nitrate)	3 <input type="checkbox"/>
<b>Bulk Explosives (HE) (enter the single largest value checked)</b>	<u>0</u>

What evidence do you have regarding bulk explosives? NONE.

Property Name:  
Project Number:  
Property Type:

**D. Bulk propellants (not an integral part of rockets, guided missiles, or other conventional ordnance; uncontainerized )**

	VALUE
Solid or liquid propellants	6 <input type="checkbox"/>
<b>Bulk Propellants (select 6 or 0)</b>	<u>0</u>

What evidence do you have regarding bulk propellants? NONE.

**E. Recovered Chemical Warfare Materiel (RCWM), Weaponized Industrial Chemicals and Radiological Materiel:**

	VALUE
Toxic chemical agents (H-Mustard, G-Nerve, V-Nerve and L-Lewisite)	25 <input type="checkbox"/>
Chemical Agent Identification Sets	20 <input type="checkbox"/>
Radiological Materiel (If rad waste is identified please call the HTRW-CX at 402-697-2555)	15 <input type="checkbox"/>
Weaponized Industrial Chemicals (Hydrogen Cyanide AC; Cyanogen Chloride, CK; Phosgene, CG)	10 <input type="checkbox"/>
Riot Control Agents (vomiting, tear)	5 <input type="checkbox"/>
<b>Chemical and Radiological (enter the single largest value checked)</b>	<u>0</u>

What evidence do you have regarding chemical or radiological? NONE

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TOTAL HAZARD SEVERITY VALUE (Sum of value A through E, maximum of 61) 0  
Apply this value to Table 1 to determine Hazard Severity Category

---

---

Property Name:  
Project Number:  
Property Type:

TABLE I  
HAZARD SEVERITY\*

DESCRIPTION	CATEGORY	HAZARD SEVERITY VALUE
CATASTROPHIC	I <input type="checkbox"/>	21 and/or greater
CRITICAL	II <input type="checkbox"/>	10 to 20
MARGINAL	III <input type="checkbox"/>	5 to 9
NEGLIGIBLE	IV <input type="checkbox"/>	1 to 4
**NONE	V <input checked="" type="checkbox"/>	0

\*Apply Hazard Severity Category to Table 3 and complete Part II of this form.

\*\*If hazard severity value is 0, complete Part II of this form. Then proceed to Part III and use a RAC score of 5 to determine your appropriate action.

**PART II - Hazard Probability.** The probability that a hazard has been, or will be, created due to the presence and other rated factors of unexploded ordnance, explosives, incendiary, pyrotechnic, radiological, or RCWM materials on a formerly used Department of Defense (DOD) site.

AREA, EXTENT, ACCESSIBILITY OF MMRP HAZARD (Check all that apply)

A. Locations of MMRP hazards:

	VALUE
On the surface	5 <input checked="" type="checkbox"/>
Within tanks, pipes, vessels, or other confined areas	4 <input type="checkbox"/>
Inside walls, ceilings, or other building/structure	3 <input type="checkbox"/>
Subsurface	2 <input checked="" type="checkbox"/>

Location (enter the single largest value checked) 5

What evidence do you have regarding the location of MMRP? Expended small arms ammunition was present on the surface and may be present subsurface.

Property Name:  
Project Number:  
Property Type:

**B. Distance to nearest inhabited location/structure likely to be at risk from MMRP hazard (road, park, playground, building, etc.).**

	VALUE
Less than 1,250 feet	5 <input checked="" type="checkbox"/>
1,250 feet to 0.5 mile	4 <input type="checkbox"/>
0.5 mile to 1.0 mile	3 <input type="checkbox"/>
1.0 mile to 2.0 Miles	2 <input type="checkbox"/>
Over 2 miles	1 <input type="checkbox"/>

**Distance (enter the single largest value checked)** 5

What are the nearest inhabited structures/buildings? There is a radio tower and transmitting facility less than a quarter mile south of the firing lines. Interstate 80 is one mile to the south of the firing lines and there is a significant light industry and hotel development within 2 miles of the east end of the site, that is expanding westward.

**C. Number(s) of building(s) within a 2-mile radius measured from the MMRP hazard area, not the installation boundary.**

	VALUE
26 and over	5 <input checked="" type="checkbox"/>
16 to 25	4 <input type="checkbox"/>
11 to 16	3 <input type="checkbox"/>
6 to 10	2 <input type="checkbox"/>
1 to 5	1 <input type="checkbox"/>
0	0 <input type="checkbox"/>

**Number of buildings (enter the single largest value checked)** 5

Narrative: It is not clear how many buildings are currently within 2 miles of the site as there is significant light industry and hotel development within 2 miles of the east end of the site that is expanding westward.

Property Name:  
Project Number:  
Property Type:

**D. Types of Buildings (within 2-mile radius)**

	VALUE
Educational, childcare, residential, hospitals, hotels, commercial, shopping centers	5 <input type="checkbox"/>
Industrial, warehouse, etc.	4 <input checked="" type="checkbox"/>
Agricultural, forestry, etc.	3 <input type="checkbox"/>
Detention, correctional	2 <input type="checkbox"/>
No buildings	0 <input type="checkbox"/>
<b>Types of buildings (enter the single largest value checked)</b>	<b>4</b>

Describe the types of buildings: Light industry is within two miles of the potential MMRP hazards.

**E. Accessibility to site refers to access by humans to military munitions. Use the following guidance:**

	VALUE
No barrier nor security system	5 <input type="checkbox"/>
Barrier is incomplete (e.g., in disrepair or does not completely surround the site). Barrier is intended to deny egress from the site, as for a barbed wire fence for grazing	4 <input type="checkbox"/>
A barrier (any kind of fence in good repair) but no separate means to control entry. Barrier is intended to deny access to the site.	3 <input checked="" type="checkbox"/>
Security Guard, but no barrier	2 <input type="checkbox"/>
A 24-hour surveillance system (e.g., television monitoring or surveillance by guards or facility personnel continuously monitors and controls entry; or, an artificial or natural barrier (e.g., fence combined with a cliff) which completely surrounds the area; and, a means to control entry at all times through the gates or other entrances (e.g., an attendant, television monitors, locked entrances, or controlled roadway access to the area).	0 <input type="checkbox"/>

**Accessibility (enter the single largest value checked)** **3**

Describe the site accessibility: The site is used for grazing and has fencing present to contain livestock and deny ready access to the site.

Property Name:  
Project Number:  
Property Type:

F. Site Dynamics. This deals with site conditions that are subject to change in the future, but may be stable at the present. Examples would be excessive soil erosion on beaches or streams, increasing land development that could reduce distances from the site to inhabited areas or otherwise increase accessibility.

	VALUE
Expected	5 <input checked="" type="checkbox"/>
Not anticipated	0 <input type="checkbox"/>
Site Dynamics (enter the single largest value checked)	<u>5</u>

Describe the site dynamics: Development of the site is being considered for the foreseeable future.

TOTAL HAZARD PROBABILITY VALUE 27  
 (Sum of largest values for A through F (maximum of 30). Apply this value to Hazard Probability Table 2 to determine the Hazard Probability Level.

**TABLE 2  
HAZARD PROBABILITY\***

<u>DESCRIPTION VALUE</u>	<u>LEVEL</u>	<u>HAZARD PROBABILITY</u>
FREQUENT	A <input checked="" type="checkbox"/>	27 or greater
PROBABLE	B <input type="checkbox"/>	21 to 26
OCCASIONAL	C <input type="checkbox"/>	15 to 20
REMOTE	D <input type="checkbox"/>	8 to 14
IMPROBABLE	E <input type="checkbox"/>	less than 8

\*Apply Hazard Probability Level to Table 3.

Property Name:  
 Project Number:  
 Property Type:

**Part III - Risk Assessment.** The risk assessment value for this site is determined using the following Table. Enter the results of the Hazard Probability and Hazard Severity values.

TABLE 3

PROBABILITY LEVEL	FREQUENT A	PROBABLE B	OCCASIONAL C	REMOTE D	IMPROBABLE E
SEVERITY CATEGORY:					
CATASTROPHIC I	1 <input type="checkbox"/>	1 <input type="checkbox"/>	2 <input type="checkbox"/>	3 <input type="checkbox"/>	4 <input type="checkbox"/>
CRITICAL II	1 <input type="checkbox"/>	2 <input type="checkbox"/>	3 <input type="checkbox"/>	4 <input type="checkbox"/>	4 <input type="checkbox"/>
MARGINAL III	2 <input type="checkbox"/>	3 <input type="checkbox"/>	4 <input type="checkbox"/>	4 <input type="checkbox"/>	4 <input type="checkbox"/>
NEGLIGIBLE IV	3 <input type="checkbox"/>	4 <input type="checkbox"/>	4 <input type="checkbox"/>	4 <input type="checkbox"/>	4 <input type="checkbox"/>

None (V) = RAC 5

RISK ASSESSMENT CODE (RAC)

RAC 1-4 Recommend and approve further action as appropriate. Refer to EP 1110-1-18 for discussion of MMRP projects and the process to be followed for execution of project response actions.

RAC 5 Usually indicates that No DOD Action Indicated (NDAI) is necessary. Recommend and approve NDAI and follow instructions for project closeout in accordance with current program guidance.

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**PART IV - Narrative.** Summarize the documented evidence that supports this risk assessment. If no documented evidence was available, explain all the assumptions that you made.  
Historical documentation indicated only small arms ammunition was used at this site. There was no indication of CWM used at this site. Site investigation revealed only expended small arms ammunition. Recommend a RAC score of 5.

---

Property Name:  
 Project Number:  
 Property Type:

ARCHIVES SEARCH REPORT  
TABLE OF CONTENTS

	<u>Page Number</u>
TAG REVIEW FACT SHEET	TAG-1
EXECUTIVE SUMMARY	ES-1
RISK ASSESSMENT CODE	RAC-1
ACKNOWLEDGEMENTS	a
<b>1 INTRODUCTION .....</b>	<b>1</b>
1.1 AUTHORITY .....	1
1.2 SUBJECT .....	1
1.3 PURPOSE.....	2
1.4 SCOPE.....	3
<b>2 PREVIOUS INVESTIGATIONS.....</b>	<b>4</b>
2.1 CORPS OF ENGINEERS DOCUMENTS.....	4
2.2 OTHER REPORTS .....	4
<b>3 SITE DESCRIPTION .....</b>	<b>5</b>
3.1 EXISTING LAND USE.....	5
3.1.1 Location.....	5
3.1.2 Prior Land Use.....	5
3.1.3 Current Land Use and Ownership .....	5
3.2 CLIMATIC DATA.....	5
3.3 TOPOGRAPHY .....	7
3.4 GEOLOGY AND SOILS .....	7
3.4.1 Geology and Physiology.....	7
3.4.2 Soils .....	8
3.5 HYDROLOGY .....	8
3.5.1 Surface Water .....	8
3.5.2 Ground Water.....	9
3.6 NATURAL RESOURCES .....	10
3.7 HISTORIC CULTURAL RESOURCES AND DEMOGRAPHICS .....	11
3.7.1 Historical and Cultural Resources.....	11
3.7.2 Demographics.....	11
<b>4 HISTORICAL SITE SUMMARY .....</b>	<b>14</b>
4.1 CHRONOLOGICAL SITE SUMMARY.....	14
4.1.1 General Site History.....	14
4.2 HISTORIC MILITARY MUNITIONS USAGE.....	15

4.2.1	Summary of OE Activities.....	15
4.2.1.1	OE General .....	16
4.2.1.2	OE Facilities On Site .....	16
4.2.1.3	OE Storage Facilities .....	17
4.2.2	Summary of CWM Activities.....	17
4.2.3	Certificates of Clearance.....	17
4.2.4	EOD Incidents .....	17
4.3	OTHER POTENTIAL AREAS OF ENVIRONMENTAL INTEREST .....	17
4.4	MAP ANALYSIS .....	18
4.5	AERIAL PHOTO INTERPRETATION .....	18
4.5.1	1946 Imagery (Plates 3).....	19
4.5.2	1956 and later Imagery .....	20
4.6	INTERVIEWS .....	20
<b>5</b>	<b>SITE ELIGIBILITY .....</b>	<b>21</b>
5.1	CONFIRMED FUDS.....	21
5.2	ADDITIONAL CONFIRMED FUDS ACREAGE .....	21
5.3	POTENTIAL FUDS .....	22
<b>6</b>	<b>VISUAL SITE INSPECTION .....</b>	<b>23</b>
6.1	GENERAL PROCEDURES AND SAFETY .....	23
6.2	SITE INSPECTION SYNOPSIS .....	23
<b>7</b>	<b>SITE OE/CWM TECHNICAL DATA .....</b>	<b>28</b>
7.1	OE ITEMS HISTORICALLY EXISTING ON SITE.....	28
7.2	CWM ITEMS HISTORICALLY EXISTING ON SITE.....	28
<b>8</b>	<b>EVALUATION OF ORDNANCE PRESENCE.....</b>	<b>29</b>
8.1	GENERAL EVALUATION OF OE AND CWM PRESENCE.....	29
8.1.1	Evaluation of OE Presence .....	29
8.1.2	Evaluation of CWM Presence .....	29
8.2	SITE SPECIFIC AREAS.....	29
8.2.1	Military Munitions Response Areas - General.....	29
8.2.1.1	MMR Area – Range Complex.....	30
8.2.1.2	MMR Area Delineation Criteria.....	31
8.2.1.3	Skeet & Trap Range .....	31
8.2.1.4	Moving Jeep Type Target Range .....	32
8.2.1.5	Malfunction Range .....	33
8.2.1.6	Sub-machine Gun Range.....	33
8.2.1.7	Pistol Range.....	34
8.2.1.8	Known Distance Rifle Range .....	35
8.2.2	Non-Military Munitions Response Areas .....	35

## APPENDICES

<b><u>A</u></b>	<b>REFERENCE SOURCES AND RECORDS REVIEWED .....</b>	<b>A-1</b>
<b>A.1</b>	<b>TEXTUAL AND CARTOGRAPHIC REPOSITORIES .....</b>	<b>A-1</b>
<b>A.1.1</b>	<b><i>Air Force Historical Research Agency USAFHRA/HO.....</i></b>	<b>A-1</b>
<b>A.1.2</b>	<b><i>Fort Douglas Military Museum .....</i></b>	<b>A-4</b>
<b>A.1.3</b>	<b><i>Golden Gate National Recreation Area (GGNRA) – Park Archives and Records Center (PARC).....</i></b>	<b>A-4</b>
<b>A.1.4</b>	<b><i>Hill Air Force Base – 775<sup>th</sup> CES/CED (Explosive Ordnance Disposal Flight) .....</i></b>	<b>A-4</b>
<b>A.1.5</b>	<b><i>National Archives I.....</i></b>	<b>A-5</b>
<b>A.1.6</b>	<b><i>National Archives at College Park, Textual Records Branch .....</i></b>	<b>A-5</b>
<b>A.1.7</b>	<b><i>National Archives at College Park, Cartographic and Architectural Branch .....</i></b>	<b>A-9</b>
<b>A.1.8</b>	<b><i>National Archives at College Park, Still Pictures Branch.....</i></b>	<b>A-10</b>
<b>A.1.9</b>	<b><i>National Archives And Records Administration - Rocky Mountain Region .....</i></b>	<b>A-10</b>
<b>A.1.10</b>	<b><i>National Personnel Records Center Military Personnel Records (NPRC, MPR) .....</i></b>	<b>A-11</b>
<b>A.1.11</b>	<b><i>Salt Lake City International Airport.....</i></b>	<b>A-12</b>
<b>A.1.12</b>	<b><i>Tooele Army Depot North .....</i></b>	<b>A-12</b>
<b>A.1.13</b>	<b><i>University of Utah – Campus Design and Planning.....</i></b>	<b>A-13</b>
<b>A.1.14</b>	<b><i>University of Utah - J. W. Marriott Library .....</i></b>	<b>A-13</b>
<b>A.1.15</b>	<b><i>Utah Air National Guard, 151<sup>st</sup> Civil Engineers.....</i></b>	<b>A-13</b>
<b>A.1.16</b>	<b><i>Utah State Archives and Records Service.....</i></b>	<b>A-14</b>
<b>A.1.17</b>	<b><i>U.S. Army Military History Institute (USAMHI).....</i></b>	<b>A-14</b>
<b>A.1.18</b>	<b><i>U.S. Army Corps Of Engineers - Sacramento District .....</i></b>	<b>A-14</b>
<b>A.1.19</b>	<b><i>U.S. Army Corps Of Engineers - Sacramento District .....</i></b>	<b>A-15</b>
<b>A.1.20</b>	<b><i>U.S. Army Corps Of Engineers - Sacramento District .....</i></b>	<b>A-15</b>
<b>A.1.21</b>	<b><i>U.S. Army Soldier Biological Chemical Command (SBCCOM).....</i></b>	<b>A-16</b>
<b>A.2</b>	<b>AERIAL PHOTOGRAPHY REPOSITORIES .....</b>	<b>A-16</b>
<b>A.2.22</b>	<b><i>National Archives at College Park, Cartographic &amp; Architectural Branch .....</i></b>	<b>A-16</b>
<b>A.2.23</b>	<b><i>U.S. Geological Survey - EROS Data Center.....</i></b>	<b>A-18</b>
<b>A.2.24</b>	<b><i>U.S. Department of Agriculture - Aerial Photography Field Office..</i></b>	<b>A-18</b>
<b>B</b>	<b>REFERENCES</b>	
<b>C</b>	<b>ABBREVIATIONS, ACRONYMS AND BREVITY CODES</b>	
<b>D</b>	<b>ORDNANCE TECHNICAL DATA SHEETS</b>	
<b>E</b>	<b>TEXTUAL REFERENCES</b>	
<b>F</b>	<b>STILL PHOTOGRAPH REFERENCES</b>	

---

G MAPS/DRAWINGS REFERENCES

H INTERVIEWS

I SITE SAFETY AND HEALTH PLAN (SSHP)

J- SITE INSPECTION REPORT

K PRESENT SITE PHOTOGRAPHS

L RESPONSE TO COMMENTS

M REPORT DISTRIBUTION LIST

REPORT PLATES

1 **Salt Lake City Army Air Base Gunnery Range** – [Vicinity Map](#)

2 **Salt Lake City Army Air Base Gunnery Range** – [Current Land Usage/Ownership](#)

3 **Salt Lake City Army Air Base Gunnery Range** – [Aerial Photography 1946](#)

4 **Salt Lake City Army Air Base Gunnery Range** – [Military Munitions Response Area](#)

RESTORATION INFORMATION MANAGEMENT SYSTEM  
PROJECT FACT SHEET  
FORMERLY USED DEFENSE SITES  
SEPTEMBER 2003  
TAG REVIEW DATE: 17 AUGUST 2004

1. **SITE NAME:** SALT LAKE CITY ARMY AIR BASE GUNNERY  
RANGE

**SITE NUMBER:** J08UT095100

**LOCATION:**

County: Salt Lake  
State: Utah

**PROJECT NUMBER:** J08UT095101

**CATEGORY:** MMRP

**INPR RAC:**

**ASR RAC:** 4

**TAG RAC:** 5

2. **POC'S:**

**GEOGRAPHIC DISTRICT:**  
Name: Gerald Vincent  
Office: CESPk-PM-H  
Phone: 916-557-7452

**GEOGRAPHIC DIVISION:**  
Name: Vincent Delgreco  
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**HEADQUARTERS:**  
Name: Sara Goodwin  
Office: CEMP-RF  
Phone: 202-761-5223

**ASR/INPR TEAM:**  
Name: Bradford McCowan  
Office: CEHNC-OE-CX  
Phone: 256-895-1174

**ASR SUPPORT DISTRICT:**  
Name: Randal Curtis  
Office: CEMVR-ED-P  
Phone: 309-794-5466

**ASR TECHNICAL REVIEWER:**  
Name: Ron Thornhill  
Office: SJMAC-ESM  
Phone: 918-420-8395

**3. SITE DESCRIPTION:**

a. The 6,276.81 acres that comprise the former Salt Lake City Army Air Base Gunnery Range is located in Salt Lake County, Utah approximately 6.5 miles west of the Salt Lake City International Airport. The site was a sub-post of the Salt Lake City Army Air Base and consisted of a series of small arms ground ranges including skeet, moving target (jeep type), high tower shotgun turret, sub-machine gun, pistol, rifle and poorman ranges.

b. The ASR site inspection team found no evidence of Munitions and Explosives of Concern (MEC) or Chemical Warfare Material (CWM) in the area, however, during the INPR site visit, expended small arms projectiles were found.

**4. SITE HISTORY:**

a. Military occupation started on 02 October 1943, and lasted about 8 months though actual range use appears to have been less than half a year.

b. On 31 May 1944, the army completed terminating the leases for the gunnery range accounting for all but 64 acres of the site. It would take another 6 years before the acreage, which included 2 easements and a tract acquired from the Department of the Interior by an informal permission, officially left DoD control but this ostensibly a result of oversight and not due to continued use.

**5. PROJECT DESCRIPTION:**

Size:	6,276.81 acres
Former Use:	Small Arms Range Complex
Present Use:	Grazing Land
Possible End Use:	Residential/Commercial
MEC Presence:	
Confirmed:	Expended Small Arms Ammunition
Potential:	Small Arms Ammunition
ASR Recommends:	RAC 4
HNC Safety:	RAC 4

6. **CURRENT STATUS:**

The U.S. Army Corps of Engineers, St. Louis District, completed the Archives Search Report for Salt Lake City Army Air Base Gunnery Range in September 2003.

7. **STRATEGY:** NDAI

8. **ISSUES AND CONCERNS:**

a. Historical documentation and the site visit indicate this site was used as a small arms complex. The INPR site visit produced evidence of expended small arms ammunition projectiles. Expended small arms, .50 caliber and smaller, does not constitute MEC presence.

b. The ASR site acreage is not consistent throughout the document.

c. The Huntsville Center Technical Advisory Group met and evaluated this ASR on 17 August 2004. The consensus was RAC 5.

9. **SCHEDULE SUMMARY:**

<u>Phase</u>	<u>Orig.</u>	<u>Sch.</u>	<u>Actual</u>	<u>Orig.</u>	<u>Sch.</u>	<u>Actual</u>
	<u>Start</u>	<u>Start</u>	<u>Start</u>	<u>Comp.</u>	<u>Comp.</u>	<u>Comp.</u>

10. **FUNDING/BUDGET SUMMARY:**

<u>Year</u>	<u>Phase</u>	<u>EXEC</u>	<u>IN House</u>	<u>Contract</u>	<u>Funds</u>
		<u>FOA</u>	<u>Required</u>	<u>Required</u>	<u>Obligated</u>

## **EXECUTIVE SUMMARY**

**Salt Lake City Army Air Base Gunnery Range** consisted of 6,276.81 acres near Salt Lake City, UT located in Salt Lake County. Salt Lake City Army Air Base Gunnery Range was a sub-post of the Salt Lake City Army Air Base (AAB) and consisted of a series of small arms ground ranges. Military occupation began on 2 October 1943 and lasted about 8 months though actual range use appears to have been less than half a year. On 31 May 1944, the Army completed terminating the leases for the gunnery range accounting for all but 64 acres of the site. It would take another 6 years before that acreage, which included two easements and a tract acquired from the Department of the Interior by an informal permission, officially left DoD control but this is ostensibly the result of oversight and not due to continued use.

The only types of Ordnance and Explosives (OE) associated with the site were small arms stored and used at the range complex. The range complex included approximately 13-14 small arms ranges arranged in a single east-west firing line that included skeet ranges, moving target (jeep type) ranges, high tower shotgun turret ranges, malfunction range building, sub machine gun (2), pistol, 200 yard known distance rifle range and a Poorman range. The ASR team did not find an overt indication of a current OE hazard at Salt Lake City Army Air Base Gunnery Range and no evidence was found to indicate there were chemical warfare (CW) training activities associated with the site.

1 May 03  
Previous Editions Obsolete

**RISK ASSESSMENT PROCEDURES FOR  
MILITARY MUNITIONS RESPONSE PROJECTS**

Site Name: Salt Lake City AAB Gunnery Range Rater's Name: Randal Curtis and George Sloan  
Site Location: Salt Lake City, UT Phone No.: 314-331-8786 & 314-331-8796  
DERP Project #: J08UT095101 Organization: CEMVS-ED-P  
Date Completed: 17 September 2003 Score: 4

**MEC RISK ASSESSMENT:**

The Military Munitions Response (MMR) / Munitions and Explosives of Concern (MEC) risk assessment (RAC) procedure was developed in accordance with MIL-STD 882C and AR 385-10 by the U.S. Army Engineering and Support Center, Huntsville (USAESCH), Ordnance and Explosives Directorate (CEHNC-OE). The Risk Assessment Code (RAC) score will be used by the U.S. Army Corps of Engineers to prioritize the response action(s) at Formerly Used Defense Sites (FUDS). The risk assessment should be based on the best available information resulting from records searches, reports of Explosive Ordnance Disposal (EOD) actions, field observations (site visits), and interviews. This information is used to assess the risk involved based on the potential MMR hazards identified for the project. The risk assessment evaluates two factors, hazard severity and hazard probability.

**PART I. Hazard Severity** - Hazard severity categories are defined to provide a qualitative measure of the worst credible event resulting from personnel exposure to various types and quantities of unexploded ordnance.

TYPE OF ORDNANCE: (Check all that apply)	VALUE
A. Conventional ordnance and ammunition:	
Explosive Projectiles (.50 cal and larger)	10 <input type="checkbox"/>
Bombs, explosive	10 <input type="checkbox"/>
Grenades, hand or rifle, explosive	10 <input type="checkbox"/>
Landmine, explosive	10 <input type="checkbox"/>
Rockets, guided missile, explosive	10 <input type="checkbox"/>
Bombs, practice (w/explosive spotting charges)	10 <input type="checkbox"/>
Other explosive item not previously stated	10 <input type="checkbox"/>
Detonators, blasting caps, fuzes, boosters, bursters	6 <input type="checkbox"/>
Practice ordnance (w/spotting charges)	4 <input type="checkbox"/>
<b>Small arms (ball only or blank), complete round (.22 cal - .50 cal)</b>	<b>1</b> <input checked="" type="checkbox"/>
<b>Small arms (ball only or blank), expended (.22 cal - .50 cal)</b>	<b>0</b> <input checked="" type="checkbox"/>
Practice ordnance (w/o spotting charges)	0 <input type="checkbox"/>

Conventional ordnance and ammunition (enter largest single value checked)   1  

What evidence do you have regarding conventional unexploded ordnance? Historical documents indicated only small arms were used on this site. The site inspection located evidence of debris from broken trap at the skeet ranges but found no complete rounds.

1 May 03  
Previous Editions Obsolete

B. Pyrotechnics (for munitions not described above.)	VALUE
Munition containing White Phosphorus (WP) or other pyrophoric material (i.e., spontaneously flammable)	10 <input type="checkbox"/>
Munition containing a flame or incendiary material (i.e., Napalm, Triethylaluminum metal incendiaries)	10 <input type="checkbox"/>
Containers containing WP or other pyrophoric material or flame or incendiary material	6 <input type="checkbox"/>
Flares, signals, simulators, screening/burning smokes (other than WP)	4 <input type="checkbox"/>
Pyrotechnics (enter the single largest value checked)	<u>  </u> 0 <u>  </u>

What evidence do you have regarding pyrotechnics? *None. The archives search did not uncover evidence that this site used or stored these materials.*

C. Bulk Explosives (HE) (not an integral part of conventional ordnance; uncontainerized.):	VALUE
Primary or initiating explosives (Lead Styphnate, Lead Azide, Nitroglycerin, Mercury Azide, Mercury Fulminate, Tetracene, etc.)	10 <input type="checkbox"/>
Secondary explosives (Demolition charges, PETN, Compositions A, B, C, Tetryl, TNT, RDX, HMX, HBX, Black Powder, etc.)	8 <input type="checkbox"/>
Insensitive explosive substances (explosive contaminated soils, ammonium nitrate,	3 <input type="checkbox"/>
High explosives (enter the single largest value checked)	<u>  </u> 0 <u>  </u>

What evidence do you have regarding bulk explosives? *None. The archives search did not uncover evidence that this site used or stored these materials.*

D. Bulk Propellants (not an integral part of rockets, guided missiles, or other conventional ordnance; uncontainerized):	VALUE
Solid or liquid propellants	6 <input type="checkbox"/>
Bulk Propellants (select 6 or 0)	<u>  </u> 0 <u>  </u>

What evidence do you have regarding bulk propellants? *None. The archives search did not uncover evidence that this site used or stored these materials.*

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<b>E. Recovered Chemical Warfare Material (RCWM), Weaponized Industrial Chemicals and Radiological Material:</b>	<b>VALUE</b>
Toxic chemical agents (H-Mustard, G-Nerve, V-Nerve and L-Lewisite)	25 <input type="checkbox"/>
Chemical Agent Identification Sets	20 <input type="checkbox"/>
Radiological Materiel (If rad waste is identified, please call the HTRW-CX at (402) 697-2555)	15 <input type="checkbox"/>
Weaponized Industrial Chemicals (Hydrogen Cyanide AC; Cyanogen Chloride, CK; Phosgene, CG)	10 <input type="checkbox"/>
Riot Control Agents (vomiting, tear)	5 <input type="checkbox"/>
Chemical and Radiological (enter the single largest value checked)	_0_

What evidence do you have regarding chemical or radiological? **None. The archives search did not uncover evidence that this site used or stored these materials.**

**TOTAL HAZARD SEVERITY VALUE** (Sum of value A through E)  
(Maximum of 61) —  
Apply this value to Table 1 to determine Hazard Severity Category

<u>DESCRIPTION</u>	<u>CATEGORY</u>	<u>HAZARD SEVERITY VALUE</u>
CATASTROPHIC	I <input type="checkbox"/>	21 and/or greater
CRITICAL	II <input type="checkbox"/>	10 to 20
MARGINAL	III <input type="checkbox"/>	5 to 9
<b>NEGLIGIBLE</b>	<b>IV</b> <input checked="" type="checkbox"/>	<b>1 to 4</b>
**NONE	V <input type="checkbox"/>	0

\*Apply Hazard Severity Category to Table 3 and complete Part II of this form.

\*\*If hazard severity value is 0, complete Part II of this form. Then proceed to Part III and use a RAC score of 5 to determine your appropriate action.

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**PART II. Hazard Probability** - The probability that a hazard has been, or will be, created due to the presence and other rated factors of unexploded ordnance, explosives, incendiary, pyrotechnic, radiological, or RCWM materials on a formerly used Department of Defense (DoD) site.

**AREA, EXTENT, ACCESSIBILITY OF OE HAZARD**

(Check all that apply)

A. Location of OE hazards: VALUE

- |   |                                       |
|---|---------------------------------------|
| On the surface  | 5 <input type="checkbox"/>            |
| Within tanks, pipes, vessels, or other confined areas | 4 <input type="checkbox"/>            |
| Inside walls, ceilings, or other building/structure   | 3 <input type="checkbox"/>            |
| Subsurface  | 2 <input checked="" type="checkbox"/> |

Location (enter the single largest value checked) \_2\_

What evidence do you have regarding the location of OE? The ASR did not locate any clear evidence of an OE hazards remaining, so the minimal value of subsurface was selected.

B. Distance to nearest inhabited location/structure likely to be at risk from OE hazard (road, park, playground, building etc.): VALUE

- |                        |                                       |
|------------------------|---------------------------------------|
| Less than 1,250 feet   | 5 <input checked="" type="checkbox"/> |
| 1,250 feet to 0.5 mile | 4 <input type="checkbox"/>            |
| 0.5 mile to 1.0 mile   | 3 <input type="checkbox"/>            |
| 1.0 mile to 2.0 Miles  | 2 <input type="checkbox"/>            |
| Over 2 miles           | 1 <input type="checkbox"/>            |

Distance (enter the single largest value checked) \_5\_

What are the nearest inhabited structures/buildings? There is a radio tower and transmitting facility less than a quarter of mile south of the firing lines. Interstate 80 is one mile to the south of the firing lines and there is significant light industry and hotel development within 2 miles of the east end of the site, that is expanding west ward.

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C. Number of buildings within a 2-mile radius measured from the OE hazard area, not the installation boundary. VALUE

26 and over	5	<input checked="" type="checkbox"/>
16 to 25	4	<input type="checkbox"/>
11 to 15	3	<input type="checkbox"/>
6 to 10	2	<input type="checkbox"/>
1 to 5	1	<input type="checkbox"/>
0	0	<input type="checkbox"/>

Number of buildings (enter the single largest value checked)   5  

Narrative: It is not clear how many buildings are currently within 2 miles of the site as there is significant light industry and hotel development within 2 miles of the east end of the site, that is expanding west ward.

D. Types of Buildings (within a 2 mile radius) VALUE

Educational, child care, residential, hospitals, hotels, commercial, shopping centers	5	<input type="checkbox"/>
Industrial, warehouse, etc.	4	<input checked="" type="checkbox"/>
Agricultural, forestry, etc.	3	<input type="checkbox"/>
Detention, correctional	2	<input type="checkbox"/>
No buildings	0	<input type="checkbox"/>

Types of buildings (enter the single largest value checked)   4  

Describe the types of buildings: Light industry is within two miles of the potential OE hazard.

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E. Accessibility to site refers to access by humans to ordnance and explosives. Use the following guidance:

BARRIER	VALUE
No barrier nor security system	5 <input type="checkbox"/>
Barrier is incomplete (e.g., in disrepair or does not completely surround the site). Barrier is intended to deny egress from the site, as for a barbed wire fence for grazing.	4 <input type="checkbox"/>
A barrier (any kind of fence in good repair) but no separate means to control entry. Barrier is intended to deny access to the site.	3 <input checked="" type="checkbox"/>
Security Guard, but no barrier	2 <input type="checkbox"/>
A 24-hour surveillance system (e.g., television monitoring or surveillance by guards or facility personnel continuously monitors and controls entry; or, an artificial or natural barrier (e.g., fence combined with a cliff) which completely surrounds the area; and, a means to control entry at all times through the gates or other entrances (e.g., an attendant, television monitors, locked entrances, or controlled roadway access to the area).	0 <input type="checkbox"/>
Accessibility (enter the single largest value checked)	__3__

Describe the site accessibility. The site is used for grazing and has fencing present to contain livestock and deny ready access to the site.

F. Site Dynamics. This deals with site conditions that are subject to change in the future, but may be stable at the present. Examples would be excessive soil erosion on beaches or streams, increasing land development that could reduce distances from the site to inhabited areas or otherwise increase accessibility.

	VALUE
Expected	5 <input checked="" type="checkbox"/>
None anticipated	0 <input type="checkbox"/>
Site Dynamics (enter the single largest value checked)	__5__

Describe the site dynamics: Development of the site is being considered for the foreseeable future.

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**TOTAL HAZARD PROBABILITY VALUE**  
(sum of largest values for A through F (maximum of 30)) \_\_\_\_\_

Apply this value to Hazard Probability Table 2 to determine **Hazard Probability Level**.

<b>TABLE 2</b>		
<b>HAZARD PROBABILITY*</b>		
DESCRIPTION	LEVEL	HAZARD PROBABILITY VALUE
FREQUENT	A	27 or greater
<b>PROBABLE</b>	<b>B</b>	<b>21 to 26</b>
OCCASIONAL	C	15 to 20
REMOTE	D	8 to 14
IMPROBABLE	E	less than 8

\* Apply **Hazard Probability Level** to Table 3.

**PART III. Risk Assessment.** The risk assessment value for this site is determined using the following Table. Enter the results of the Hazard Probability and Hazard Severity values.

**TABLE 3**

PROBABILITY LEVEL	FREQUENT A	<b>PROBABLE</b> B	OCCASIONAL C	REMOTE D	IMPROBABLE E
<b>SEVERITY CATEGORY:</b>					
CATASTROPHIC I	1 <input type="checkbox"/>	1 <input type="checkbox"/>	2 <input type="checkbox"/>	3 <input type="checkbox"/>	4 <input type="checkbox"/>
CRITICAL II	1 <input type="checkbox"/>	2 <input type="checkbox"/>	3 <input type="checkbox"/>	4 <input type="checkbox"/>	4 <input type="checkbox"/>
MARGINABLE III	2 <input type="checkbox"/>	3 <input type="checkbox"/>	4 <input type="checkbox"/>	4 <input type="checkbox"/>	4 <input type="checkbox"/>
<b>NEGLIGIBLE IV</b>	3 <input type="checkbox"/>	<b>4</b> <input checked="" type="checkbox"/>	4 <input type="checkbox"/>	4 <input type="checkbox"/>	4 <input type="checkbox"/>

NONE      V = RAC 5

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**RISK ASSESSMENT CODE (RAC)**

- RAC 1 Expedite INPR, recommending further action by USAESCH - Immediately call CEHNC-OE-S (commercial: (256) 895-1582/1598).
- RAC 2 High priority on completion of INPR - Recommend further action by USAESCH.
- RAC 3 Complete INPR - Recommend further action by USAESCH.
- RAC 4 Complete INPR - Recommend further action by USAESCH.
- RAC 5 Usually indicates that No DOD Action Indicated (NDAI) is necessary - Submit NDAI and RAC to USAESCH.
- =====

**PART IV. Narrative.** Summarize the documented evidence that supports this risk assessment. If no documented evidence was available, explain all the assumptions that you made.

The RAC score assigned to Salt Lake City Army Air Base Gunnery Range is 4.

Part I received a Hazard Severity Rating of "Negligible", Part II received a Hazard Probability Rating of "Probable". According to table 3, these ratings convert to a Risk Assessment Code of 4.

The archives search based the OE/RCWM potential on the scenario that a small percentage of complete rounds may remain on site. The ASR uncovered no evidence indicating any other type of conventional ordnance or chemical warfare materials were stored or used at Salt Lake City Army Air Base Gunnery Range

## ACKNOWLEDGEMENTS

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St. Louis District  
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## **1 INTRODUCTION**

### **1.1 AUTHORITY**

In 1986, Congress established the Defense Environmental Restoration Program (DERP) at 10 United State Code (USC) 2701 et seq. This program directed the Secretary of Defense to “carry out a program of environmental restoration at facilities under the jurisdiction of the Secretary.”

In March 1990, the Environmental Protection Agency (EPA) issued a revised National Contingency Plan (NCP). Under 40 Code of Federal Regulations (CFR) 300.120, EPA designated the Department of Defense (DoD) to be the removal response authority for incidents involving DoD military weapons and munitions under the jurisdiction, custody and control of DoD.

Since the beginning of this program, the U.S. Army Corps of Engineers has acted as the agency responsible for environmental restoration at Formerly Used Defense Sites (FUDS). Beginning in 1990, the U.S. Army Engineering and Support Center, Huntsville (USAESCH) has served as the Center of Expertise (CX) and Design Center for Ordnance and Explosives. In cooperation with the USAESCH, the U.S. Army Corps of Engineers, St. Louis District, prepares Archives Search Reports (ASR) in support of environmental restoration at active DoD installations, Formerly Used Defense Sites (FUDS) and installation transitions under Base Realignment and Closure (BRAC) recommendations.

### **1.2 SUBJECT**

**Salt Lake City Army Air Base Gunnery Range (SLCAABGR)** consisted of 6,276.81 acres near Salt Lake City, UT, located in Salt Lake County. SLCAABGR was a sub-post of the Salt Lake City Army Air Base (AAB) and consisted of a series of small arms ground ranges. Military occupation began on 2 October 1943 and lasted about 8 months though actual range use appears to have been less than half a year. On 31 May 1944, the Army completed terminating the leases for the gunnery range accounting for all but 64 acres of the site. It would take another 6 years before that acreage, which included two easements and a tract acquired from the Department of the Interior by an informal permission, officially left DoD control but this is ostensibly the result of oversight and not due to continued use. Ordnance and explosive (OE) related features of the former sub-post included approximately 13-14 small arms ranges arranged in a single east-west firing line that included skeet ranges, moving target (jeep type) ranges, high tower shotgun turret ranges, malfunction range building, sub machine gun (2), pistol, 200 yard known distance rifle range and a Poorman range. No evidence was found to indicate there were chemical warfare (CW) training activities associated with the site. Plate 1 in the report plates section shows the general location of the site.

### 1.3 PURPOSE

The ASR compiles information obtained through historical research at various archives and records holding facilities. The archives search process is primarily a textual, cartographic and photographic research and analysis effort. It also makes use of site visits and interviews to gather information concerning the site. It does not include sampling or quantitative field assessment techniques to gather data. The search directs efforts towards determining possible use or disposal of OE and Chemical Warfare Material (CWM) on the former military establishment. The research places particular emphasis on establishing the types, quantities and areas of use and disposal. This process obtains information for use in developing recommendations for further action at the former Salt Lake City Army Air Base Gunnery Range.

Currently, the U. S. Army Corps of Engineers Safety Office defines OE, chemical agent and CWM as:<sup>1</sup>

#### **Ordnance and Explosives (OE):**

*“. . . anything related to munitions designed to cause damage to personnel or material through explosive force, incendiary action or toxic effects. OE is: bombs and warheads, missiles; artillery, mortar and rocket ammunition, small arms ammunition; antipersonnel and antitank mines; demolition charges; high explosives and propellants; depleted uranium rounds; military chemical warfare materials as defined [below]; and all similar and related items or components, explosive in nature or otherwise designed to cause damage to personnel or material (e.g., fuze, boosters/propellants or soils/media contaminated with explosives if the concentration is sufficient to be reactive.) . . . Unexploded Ordnance (UXO) is an item of explosive ordnance which has failed to function as designed or has been abandoned, discarded or improperly disposed of and is still capable of functioning, causing damage to personnel or material. . . ”*

#### **Chemical Agent:**

*“A chemical substance that is intended for use in military operations to kill, seriously injure, or incapacitate a person through its physiological effects. Excluded from consideration are industrial chemicals, riot control agents, chemical herbicides, smoke, and incendiary materials.”*

#### **Chemical Warfare Material (CWM):**

*“An item configured as a munition containing a chemical substance that is intended to kill, [seriously injure], or incapacitate a person through physiological effects. Also includes V- and G- series nerve agent, H-series series blister agent, and lewisite in other than munition configurations. Due to their prevalence and military unique application, chemical agent identifications sets (CAIS) are also considered CWM. CWM does not include: riot control agents, chemical herbicides, smoke and flame producing items, or soil, water, debris or other media*

*contaminated with chemical agent. CWM also falls under the definition of Ordnance and Explosives...”*

As stated above, CWM items excludes pyrotechnics (incendiaries, flares, signals, simulators, screening/burning smokes) and riot control agents (vomiting, tear), which were developed and managed by the Army’s Chemical Warfare Service (CWS) but are still considered OE. These items historically were material managed by the CWS, along with the chemical agents and weaponized industrial chemicals (e.g. Hydrogen Cyanide AC; Cyanogen Chloride, CK; Phosgene, CG) that are currently defined as CWM.

#### 1.4 SCOPE

This investigation focuses on potential OE and/or CWM contamination remaining on the former Salt Lake City Army Air Base Gunnery Range. The DERP-FUDS project number is J08UT095101. This report presents the following:

- A review of related site investigations
- Description and characteristics of the immediate surrounding area
- A brief history of Salt Lake City Army Air Base Gunnery Range
- Description of the OE and/or CW activities identified with the site
- A map and aerial photography analysis of the site with regards to OE and/or CW activities
- Real estate information, past and present
- Findings of the site inspection
- General technical data on OE and/or CWM items associated with Salt Lake City Army Air Base Gunnery Range

These factors represent the basis for the evaluation of potential OE and CWM contamination and associated risks at Salt Lake City Army Air Base Gunnery Range.

## **2 PREVIOUS INVESTIGATIONS**

### **2.1 CORPS OF ENGINEERS DOCUMENTS**

The Sacramento District of the Corps of Engineers prepared the following investigations in support of the DERP for FUDS:

[\*Site Survey Summary Sheet For DERP FUDS Site No. J08UT095100, Inventory Project Report Salt Lake City Army Air Base Gunnery Range.\*](#)<sup>2</sup>

The Inventory Project Report (INPR) assigned a Risk Assessment Code (RAC) of 3 for the OE/CWM portion of this site (See Appendix E for this report). The INPR identified only OE project as a potential hazard at the former Salt Lake City Army Air Base Gunnery Range.

### **2.2 OTHER REPORTS**

The archives search did not locate any additional environmental investigations or reports concerning Salt Lake City Army Air Base Gunnery Range. Investigations conducted by the property owners and the State of Utah reportedly existed but were not evaluated by the ASR team.

### **3 SITE DESCRIPTION**

#### **3.1 EXISTING LAND USE**

##### **3.1.1 Location**

Salt Lake City Army Air Base Gunnery Range consisted of 6,276.81 acres in Salt Lake County, UT (see Vicinity Map Plate #1). This site lies approximately ten miles west of downtown Salt Lake City, UT and about 6.5 miles west of the Salt Lake City International Airport terminal.

##### **3.1.2 Prior Land Use**

Prior to the Army Air Forces operation of Salt Lake City Army Air Base Gunnery Range, the land was predominately undeveloped and used as marginal grazing lands and for recreational hunting in the wetlands.

##### **3.1.3 Current Land Use and Ownership**

The former Salt Lake City Army Air Base Gunnery Range has no known land use restrictions. The land is privately owned and the general public would be trespassing through locked gates to gain access to much of this land. At the time of this writing, it remains in use for agricultural cattle grazing and recreational duck hunting. The landowners are considering redeveloping the site in the next few years for a mixture of uses including: single and multi-family residential housing; light industrial; commercial; schools and child care facilities and offices. Records reviewed indicate the current site is owned by a number of private property landowners including Bothwell Saner Company, Jolley Cattle Company, Baley Lake Duck Club, and the Inland Sea Shorebird Reserve. Plate 2 depicts the Land Usage of the former Salt Lake City Army Air Base Gunnery Range known at the time of INPR/ASR.

#### **3.2 CLIMATIC DATA**

Climatological data for the former Salt Lake City Army Air Base Gunnery Range came from the National Weather Service (NWS) station located at Salt Lake City International Airport, UT, approximately 6.5 miles east of the site. This station provided temperature, wind speed and direction, and precipitation information (*see Table 3.2.1*).

<b>Table 3.2.1 - Climatological Data For Salt Lake City Intern. Airport, Utah</b>					
Month	Temperature		Precipitation Mean (inches)	Wind	
	Mean Minimum (°F)	Mean Maximum (°F)		Mean Speed (knots)	Prevailing Direction
January	23	37	1.3	8	SSE
February	28	43	1.4	9	SSE
March	34	53	1.9	11	S
April	41	63	2.0	9	SSE
May	50	72	1.8	9	SSE
June	58	83	0.9	9	SSE
July	67	93	0.6	9	SSE
August	65	91	0.8	9	SSE
September	56	81	1.0	9	SSE
October	45	67	1.5	8	SSE
November	34	51	1.4	8	SSE
December	26	39	1.3	8	SSE
Mean	44	65	16.0	9	SSE

Salt Lake City is located in a northern Utah valley surrounded by mountains on three sides and the Great Salt Lake to the northwest. The city varies in altitude from near 4,200 to 5,000 feet above sea level.

The site lies in the salt flats at the southern tip of the Great Salt Lake on the west side of Salt Lake City. The Wasatch Mountains, east of Salt Lake City have peaks to nearly 12,000 feet above sea level. Their orographic effects cause more precipitation in the eastern part of the city than over the western part.

The Oquirrh Mountains to the southwest of the city have several peaks to above 10,000 feet above sea level. The Traverse Mountain Range at the south end of the Salt Lake Valley rises to above 6,000 feet above sea level. These mountain ranges help to shelter the valleys from storms from the southwest in the winter, but are instrumental in developing thunderstorms, which can drift over the valley in the summer.

Besides the mountain ranges, the most influential natural condition affecting the climate of Salt Lake City is the Great Salt Lake, ranging for around 80 miles west and northwest of the site. This large inland body of water, which never freezes over due to its high salt content, can moderate the temperatures of cold winter winds blowing from the northwest and helps drive a lake/valley wind system. The warmer lake water during the winter and spring also contributes to increased precipitation in the valley downwind from the lake. The combination of the Great Salt Lake and the Wasatch Mountains often enhances storm precipitation in the valley.

Salt Lake City normally has a semi-arid continental climate with four well-defined seasons. Summers are characterized by hot, dry weather, but the high temperatures are usually not oppressive since the relative humidity is generally low and the nights usually cool. July is the hottest month with temperature readings in the 90s. The mean diurnal temperature range is about 30 degrees in the summer and 18 degrees during the winter. Temperatures above 102 degrees in the summer or colder than -10 degrees in the winter are likely to occur one season out of four.

Winters are cold, but usually not severe. Mountains to the north and east act as a barrier to frequent invasions of cold continental air. The average annual snowfall is under 60 inches at the airport but much higher amounts fall in higher bench locations. Heavy fog can develop under temperature inversions in the winter and persist for several days. Precipitation, generally light during the summer and early fall, is heavy in the spring when storms from the Pacific Ocean are moving through the area more frequently than any other season of the year.

Winds are usually light, although occasional high winds have occurred in every month of the year, particularly in March. The growing season is over five months in length. Yard and garden foliage generally are making good growth by mid-April. The last freezing temperature in the spring averages late April and the first freeze of the fall is mid-October.<sup>3</sup>

### 3.3 TOPOGRAPHY

The topography of Salt Lake City Army Air Base Gunnery Range can generally be described as flat and has low grass vegetation.

### 3.4 GEOLOGY AND SOILS

#### 3.4.1 Geology and Physiology

The former Salt Lake City Army Air Base Gunnery Range is located within the Great Basin section of the Basin and Range physiographic province. The Basin and Range province is characterized by long narrow mountain ranges, tilted fault blocks, alternating with intermountain basins partially filled with gravel and sand derived from the mountains.

The Great Salt Lake Desert is a large playa derived from the largest and by far the best known of the Pleistocene Great Basin lakes, Lake Bonneville. Present-day lakes that are remnants of Lake Bonneville are Great Salt Lake to the north of the site, Sevier Lake to the south of the site, and Lake Utah to the southeast of the site. Former levels of Lake Bonneville are indicated by shorelines and associated deltas, bars, deposits of calcareous tuff, wave-cut niches in bedrock and other shoreline features, as well as sedimentary deposits consisting of gravel, sand, silt, and clay.<sup>4</sup>

Previous to the development of Lake Bonneville in Pleistocene time, the western deserts of Utah were subjected to the following: mid-Tertiary to present-day crustal stretching, resulting in normal and detachment faulting and creating the linear mountain ranges and desert basins with simultaneous infilling of intermountain basins with sediment derived from the mountains, and with volcanic outpourings; a mid-Tertiary regional uplift, with doming of the area as much as 5,000 feet; igneous activity, with associated intrusions and huge volcanic outbursts, in mid-Tertiary (Eocene to early Miocene time); Cretaceous age thrust faulting, resulting in development of the Seiver Mountain belt<sup>5</sup>.

The site surface is relatively flat. The highest and lowest elevations are within 10 feet of 4,220 feet above mean sea level. There are no physical surface characteristics that disturb the land surface.

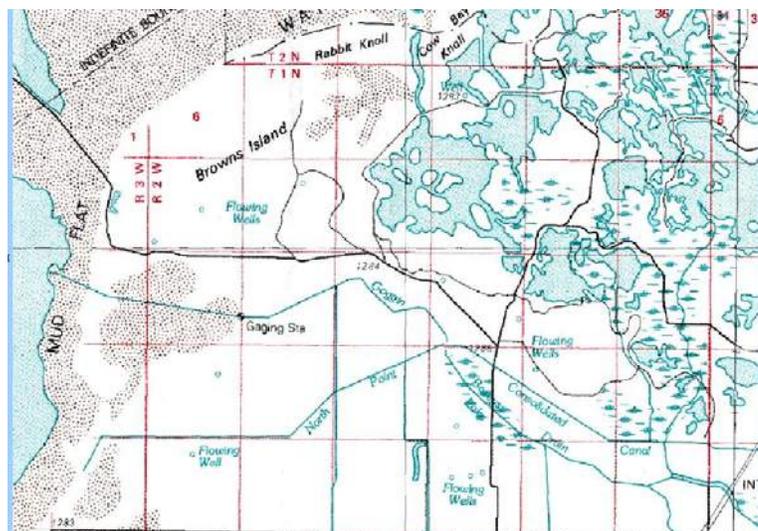
### 3.4.2 Soils

In the simplest terms, the primary soil type at the Salt Lake City Army Air Base Gunnery Range can be described as clay and/or sand with stone. The soils are very deep and well drained. They formed from alluvium that was derived from limestone, quartzite, and lacustrine sediments. The majority of the surface layer is composed of grayish brown and brown stony and very gravelly sandy silty clay about 10 inches deep. The subsoil layer consists of pale brown gravelly sandy silty clay to a depth of 20 inches. The lower subsoil layer is composed of very pale brown, very gravelly sandy silty clay to a depth over 60 inches. The permeability of the soil is moderately rapid, the available water capacity is moderate, and runoff is medium<sup>6</sup>.

## 3.5 HYDROLOGY

### 3.5.1 Surface Water

The site area has a +/- 5 foot change in elevation throughout with the exception of the triangular earth embankments for the moving targets (jeep type) ranges. Precipitation on the site will flow north-northwest into the Great Salt Lake. Several canals also cross the site carrying water to the Great Salt Lake. An USGS gage is located on the Goggin Drain near the center of the site (see map above). Estimated historic peak flow at this gage was recorded on June 13<sup>th</sup>, 1983 at 1,560 CFS. Data from this gage is reported below in Table 3.5.1.<sup>7</sup>



**Table 3.5.1 - Salt Lake County, Utah – Hydrologic Unit Code 16020204**

Latitude 40°49'00", Longitude 112°06'00" NAD27

Drainage area 0.01 square miles; Gage datum 4,204.00 feet above sea level NGVD29

Year	Annual mean streamflow, in ft <sup>3</sup> /s	Year	Annual mean streamflow, in ft <sup>3</sup> /s	Year	Annual mean streamflow, in ft <sup>3</sup> /s
<b>1964</b>	53.6	<b>1974</b>	193	<b>1979</b>	142
<b>1965</b>	57.4	<b>1975</b>	233	<b>1980</b>	244
<b>1966</b>	25.3	<b>1976</b>	217	<b>1981</b>	172
<b>1972</b>	139	<b>1977</b>	28.7	<b>1982</b>	463
<b>1973</b>	155	<b>1978</b>	95.8	<b>1983</b>	1,069

### 3.5.2 Ground Water

The groundwater at depth of the former Salt Lake City Army Air Base Gunnery Range is most likely recharged by mountain precipitation which enters bedrock fractures and flows downgradient and eventually enters the lake bed or by runoff into alluvial or colluvial sediments flanking the mountain ranges and interfingering with the basinal lake sediments. Ground water has been developed mostly from aquifers in unconsolidated fill deposits that underly the basins of the Basin and Range province. However, substantial quantities of ground water also occur in and move through the consolidated carbonate rocks that comprise parts or most of the mountain ranges and underlie many of the basins. The water in these rocks is under pressure and wells drilled into these underlay rocks will actually flow at the surface.

The basin fill is the major surficial hydrogeologic unit. Groundwater occurs within the basin fill in shallow unconfined units and, at depth, with confined aquifer units. In most basins the permeable sands and gravels that yield water readily to wells occur in the upper 700 to 1,500 feet of sediment. Ground water is generally unconfined in the uppermost tens of feet and confined in the lower parts of the basins that are away from the mountain fronts. Carbonate rocks consisting of massive to thinly bedded limestones and dolomites with silty and sandy interbeds represent a secondary hydrogeologic unit. The carbonate rocks range in thickness from about 500 to 25,000 feet. Regional transmittal of groundwater occurs from the carbonate rocks to the upper lake sediment aquifer.

Depth to water in the site area ranges from near ground surface to 50 feet below ground surface. The vertical hydraulic conductivity of the fine-grained beds in the basin fill that function as confining or semi-confining beds for the principal artesian aquifers has been calculated from aquifer-test data. Values of 0.0006 and 0.12 foot per day were obtained in the Sevier Desert, to the west of the site, and the Salt Lake Valley, to the east of the site,

respectively. The basin-fill water is typically too saline to use for any domestic purpose without treatment<sup>8</sup>.

### 3.6 NATURAL RESOURCES

The U.S. Fish and Wildlife Service (USFWS) and the Utah Division of Wildlife Resources have indicated that the following federally and/or state listed, proposed, candidate, species of concern, and critical habitats may occur within or near the former Salt Lake City Army Air Base Gunnery Range.<sup>9</sup>

<b>Table 3.6 - Listed Threatened Or Endangered Species</b>				
<b>Species Common Name</b>	<b>Scientific Name</b>	<b>Group</b>	<b>Federal Status</b>	<b>State Status</b>
American white pelican	<i>Pelecanus erythrorhynchos</i>	Bird		SC
Bald eagle	<i>Haliaeetus leucocephalus</i>	Bird	T	
Western yellow-billed cuckoo	<i>Coccyzus americanus occidentalis</i>	Bird	C	
Peregrine falcon	<i>Falco peregrinus</i>	Bird		E
Long-billed curlew	<i>Numenius americanus</i>	Bird		SC
Burrowing owl	<i>Athene cunicularia</i>	Bird		SC
June sucker	<i>Chasmistes liorus</i>	Fish	E	E
Bonneville cutthroat trout	<i>Oncorhynchus clarki utah</i>	Fish	CA	CS
Western toad	<i>Bufo boreas</i>	Amphibian		SC
Ute ladies' -tresses	<i>Spiranthes diluvialis</i>	Plant	T	
Slender moonwort	<i>Botrychium lineare</i>	Plant	C	

**Federal Status:** E – Endangered, T – Threatened, C – Candidate, PT – Proposed threatened, SC – Species of Concern, CH – Critical Habitat, CA - Conservation Agreement

**State Status:** E – Endangered, T – Threatened, SC – Species of Concern, CS – Conservation Species, R – Rare

A portion of the site of the former Salt Lake City Army Air Base Gunnery Range is now the Inland Shorebird Reserve and Wetland Mitigation Bank containing seasonal wetlands of the Great Salt Lake ecosystem, a part of the Western Hemispheric Shorebird Reserve Network. The USFWS identifies this FUDS site as having high natural resource value.

Federally endangered and threatened species are protected by Federal law and must be considered prior to project development. If it is determined that the proposed project may affect a federally listed or proposed species or critical habitat, the lead Federal Agency should initiate consultation (or conference for proposed species) with the USFWS pursuant to section 7 of the Endangered Species Act of 1973, as amended (16

U.S.C. 1531 *et seq.*). Informal consultation may be used to exchange information and resolve conflicts with respect to listed species prior to a written request for formal consultation. Federal agencies are required to confer with the USFWS, pursuant to section 7(a)(4) of the Act, when an agency action is likely to jeopardize the continued existence of any proposed species or result in the destruction or adverse modification of proposed critical habitat (50 CFR 402.10(a)).

Candidate species are those species presently under review by the USFWS for consideration for federal listing. Candidate species should be considered in the planning process in the event that they become listed or proposed for listing prior to project completion. Preparation of a biological assessment, as described in section 7(c) of the Act, is not required for candidate species. However, if early evaluation of the project indicates that it is likely to affect a candidate species, technical assistance should be requested from the USFWS.

No additional information on the occurrence of rare or endangered species or natural communities is known at this time. This does not mean that other State or Federally listed species may not be present within the areas of interest. An on-site inspection by a biologist familiar with the project site and with the species listed is recommended to verify the presence, absence, or location of listed species or natural communities, and to definitively assess the potential for direct, indirect, and cumulative effects likely to result if remedial action is recommended as part of the final ASR.

### 3.7 HISTORIC CULTURAL RESOURCES AND DEMOGRAPHICS

#### 3.7.1 Historical and Cultural Resources

The Utah State Historic Preservation Office (SHPO) was contacted regarding Salt Lake City Army Air Base Gunnery Range. At the time of the writing of the ASR, there are no specific known culturally significant historic or archeological sites in the vicinity but no surveys have been completed along the south shore of the Great Salt Lake. This should not be construed to mean that no culturally significant sites exist, especially given discoveries over the years along the lake margins, which indicate the potential for buried archeological sites and buried human remains are high.<sup>10</sup>

#### 3.7.2 Demographics

The U.S. Census Bureau provided the general county and state demographics of the site.<sup>11</sup>

<b>Table 3.7.2.1 – U.S. Census Bureau County and State Data People QuickFacts</b>			
	<b>People QuickFacts</b>	<b>Salt Lake County</b>	<b>Utah</b>
<a href="#">i</a>	Population, 2001 estimate	904,331	2,269,789
<a href="#">i</a>	Population percent change, April 1, 2000-July 1, 2001	0.7%	1.6%
<a href="#">i</a>	Population, 2000	898,387	2,233,169
<a href="#">i</a>	Population, percent change, 1990 to 2000	23.8%	29.6%
<a href="#">i</a>	Persons under 5 years old, percent, 2000	8.9%	9.4%
<a href="#">i</a>	Persons under 18 years old, percent, 2000	30.5%	32.2%
<a href="#">i</a>	Persons 65 years old and over, percent, 2000	8.1%	8.5%
<a href="#">i</a>	Female persons, percent, 2000	49.6%	49.9%
<a href="#">i</a>	White persons, percent, 2000 (a)	86.3%	89.2%
<a href="#">i</a>	Black or African American persons, percent, 2000 (a)	1.1%	0.8%
<a href="#">i</a>	American Indian and Alaska Native persons, percent, 2000 (a)	0.9%	1.3%
<a href="#">i</a>	Asian persons, percent, 2000 (a)	2.6%	1.7%
<a href="#">i</a>	Native Hawaiian and Other Pacific Islander, percent, 2000 (a)	1.2%	0.7%
<a href="#">i</a>	Persons reporting some other race, percent, 2000 (a)	5.4%	4.2%
<a href="#">i</a>	Persons reporting two or more races, percent, 2000	2.6%	2.1%
<a href="#">i</a>	Persons of Hispanic or Latino origin, percent, 2000 (b)	11.9%	9.0%
<a href="#">i</a>	White persons, not of Hispanic/Latino origin, percent, 2000	80.9%	85.3%
<a href="#">i</a>	Living in same house in 1995 and 2000, pct age 5+, 2000	50.0%	49.3%
<a href="#">i</a>	Foreign born persons, percent, 2000	10.4%	7.1%
<a href="#">i</a>	Language other than English spoken at home, pct age 5+, 2000	16.2%	12.5%
<a href="#">i</a>	High school graduates, percent of persons age 25+, 2000	86.8%	87.7%
<a href="#">i</a>	Bachelor's degree or higher, pct of persons age 25+, 2000	27.4%	26.1%
<a href="#">i</a>	Persons with a disability, age 5+, 2000	131,045	298,686
<a href="#">i</a>	Mean travel time to work, workers age 16+ (minutes), 2000	22.5	21.3
<a href="#">i</a>	Housing units, 2000	310,988	768,594
<a href="#">i</a>	Homeownership rate, 2000	69.0%	71.5%
<a href="#">i</a>	Housing units in multi-unit structures, percent, 2000	27.7%	22.0%
<a href="#">i</a>	Median value of owner-occupied housing units, 2000	\$157,000	\$146,100
<a href="#">i</a>	Households, 2000	295,141	701,281
<a href="#">i</a>	Persons per household, 2000	3.00	3.13
<a href="#">i</a>	Median household money income, 1999	\$48,373	\$45,726
<a href="#">i</a>	Per capita money income, 1999	\$20,190	\$18,185
<a href="#">i</a>	Persons below poverty, percent, 1999	8.0%	9.4%

**Table 3.7.2.2 – U.S. Census Bureau County and State Data Business QuickFacts**

	<b>Business QuickFacts</b>	<b>Salt Lake County</b>	<b>Utah</b>
	Private nonfarm establishments, 1999	25,333	53,809
	Private nonfarm employment, 1999	475,802	889,355
	Private nonfarm employment, percent change 1990-1999	50.0%	55.8%
	Nonemployer establishments, 1999	55,803	134,513
	Manufacturers shipments, 1997 (\$1000)	10,012,161	24,014,379
	Retail sales, 1997 (\$1000)	10,139,410	19,964,601
	Retail sales per capita, 1997	\$12,046	\$9,666
	Minority-owned firms, percent of total, 1997	5.7%	5.1%
	Women-owned firms, percent of total, 1997	24.5%	24.8%
	Housing units authorized by building permits, 2000	4,435	17,638
	Federal funds and grants, 2001 (\$1000)	3,975,004	11,377,441
	Local government employment - full-time equivalent, 1997	25,158	63,884

**Table 3.7.2.3 – U.S. Census Bureau County and State Data Geography QuickFacts**

	<b>Geography QuickFacts</b>	<b>Salt Lake County</b>	<b>Utah</b>
	Land area, 2000 (square miles)	737	82,144
	Persons per square mile, 2000	1,218.4	27.2
	Metropolitan Area	Salt Lake City- Ogden, UT MSA	

## **4 HISTORICAL SITE SUMMARY**

### **4.1 CHRONOLOGICAL SITE SUMMARY**

#### **4.1.1 General Site History**

The **Salt Lake City Army Air Base Gunnery Range** was acquired in 1943 as a sub-post of the Salt Lake City Army Air Base (AAB) located on the east side of the current Salt Lake International Airport. Through the 1920s and 1930s, an Army Air Corps detachment leased hanger space at Woodward Field/ Salt Lake City Municipal Airport but it was a minor installation with a mission primarily for reservists. The airfield mission dramatically expanded in 1940 as the Army Air Corps began negotiations with the Department of the Interior (DOI) for land to create a massive bombing and gunnery range in the salt flats of the western part of Utah near Wendover in April 1940. In August 1940, the Army made Fort Douglas, located on the east side of Salt Lake City, an “airbase”, with its flying facilities located at the Salt Lake City Municipal Airport and the housing and support facilities located at the fort. The Army transferred the Seventh Bomb Group (Heavy) from Hamilton Field, CA to Fort Douglas, establishing a bombing training station at the airfield on 16 August 1940. Concurrently, the Army established Wendover Army Air Field located on the Utah-Nevada state line, as another sub-post of Fort Douglas. By October, President Roosevelt made the first land withdrawal for the Wendover Bombing and Gunnery Range (WBGR), which would eventually cover over 1.8 million acres. Fort Douglas served as the main military reservation, for all three of the sub-posts (i.e. WBGR, Wendover Army Air Field and the Salt Lake City airfield) as construction of targets, airfield upgrades, temporary buildings, and operating facilities began. Bombing from the Salt Lake airfield on the WBGR began by the end of November 1940.<sup>12</sup>

By January 1942, the Army Air Base moved to Salt Lake City AAB and Fort Douglas became the Headquarters for the Ninth Corps Area. In 1942, operation of the WBGR became centered at the Wendover Army Air Field. With the operations shift across the state, the Second Air Force established a Replacement Wing (Provisional) at Salt Lake City AAB by May 1942. The Replacement Wing at Salt Lake City AAB mission was to receive, classify, and dispatch all officer and enlisted personnel entering the Second Air Force and to operate training detachments and schools to prepare bases for the arrival of Second Air Force personnel. Furthermore the replacement wing was to form appropriate units (i.e. replacement combat crews, associate service crews, air base station complements, engineer battalions, military police companies, etc.) at different stations within the Second Air Force. This would provide a continuity of training for the personnel as well as establishing the appropriate types of units needed.<sup>13</sup>

With the growing training program assigned to the Salt Lake City AAB, additional training areas were required and were partially fulfilled by

- Sub-base No. 1, a portion of Utah State Fairgrounds about 3 ½ miles east of the main base used to house school activities.
- Sub-base No. 2, Pleasant Grove CCC about 36 miles south of the main base, used as a holding and training ground for troops.

Small arms range training occurred off post at Fort Douglas, Camp Kearns Small Arms Firing Range about 8 miles to the south airfield and at a 200 yard rifle range at Sub-base No. 2. By 1 July 1943, it appears that the Army constructed a skeet range and a rifle range in the Ordnance Storage area at the north end of the base near the ordnance storage area.<sup>14</sup>

Plans for a more elaborate gunnery range began in July 1943, when the Army transferred a range construction project originally slated for [Camp] Kearns AAB, UT to Salt Lake City AAB. The original plan included two moving target “jeep type” ranges, a malfunction range building and a 30-position 200 yard rifle range. A 6,000 plus acre site was located about 6.5 miles west of the Salt Lake City AAB and on 2 October 1943, the Army took control of most of the property for the site by Declaration of Taking. Between 16 November and 17 December, construction contractor R. J. Daum transferred the completed range facilities to the Army. In January 1944, a Poorman Gunnery Range was added to the site. A Poorman Range is a ground machine gun range named after its inventor, which simulates problems encountered in the air while firing at a fighter attacking on a pursuit curve. Unfortunately, no range layout maps were located specifying the locations of the ranges or the exact number and use of each range. Based on latter surplus reports, it appears there were 13 or 14 ranges.<sup>15</sup>

The life span of the gunnery range complex was less than a half a year. By 3 April 1944, the Corps of Engineers received a declaration of excess for the gunnery range and on 22 April 1944, it was declared surplus. On 17 May 1944, Army Service Command took command of the Salt Lake Army Air Base and placed it on standby status.<sup>16</sup>

There was a bit of confusion concerning the fate of the gunnery range, as on 30 May 1944, Secretary of War Stimson signed a letter stating it was “...deemed necessary and advantageous to the interests of the United States to extend the term...to June 30 1945”. However, by the next day, the Army completed terminating the leases for the gunnery range accounting for all but 64 acres of the site. It would take another 6 years before a 40-acre tract acquired from the Department of the Interior (DOI) by an informal permission was officially relinquished back to the DOI on 20 January 1950. Similarly two easements were quitclaim deeded back to the owners on 26 July 1950. The delays are ostensibly the result of oversight and not due to continued use.<sup>17</sup>

## 4.2 HISTORIC MILITARY MUNITIONS USAGE

### 4.2.1 Summary of OE Activities

#### *4.2.1.1 OE General*

The OE activities at Salt Lake City AAB Gunnery Range centered on a series of 13-14 small arms ranges arranged along an east-west line along the southern portion of the property with a northerly direction of fire. In addition to the ranges, there was modest OE storage on site, as well as office and other storage space.

#### *4.2.1.2 OE Facilities On Site*

In July 1943, the original plan for the Salt Lake City AAB Gunnery Range included two moving target “jeep type” ranges, a malfunction range building, and a 30 position 200 yard Rifle Range. By 9 September 1943, the Chief of Engineers authorized construction of the following ranges in addition to those planned in July:

- .45 Caliber Pistol Range
- 3 Skeet Ranges
- 5 High Tower Shotgun Turret Range
- 2 Sub-Machine Gun Ranges
- 1 24-Gun Malfunction Range<sup>18</sup>

The planned ranges were all for horizontal ground to ground firing with maximum projectiles height not exceeding 25 feet, negating the need for Interdepartmental Air Traffic Control Board (IATCB) approval.<sup>19</sup>

Authorization for one "Poorman" type target with 5 firing positions with expansion capabilities for up to 32 firing positions was given on 22 January 1944, but by 14 March 1944, the authority for construction was revoked. The newly constructed concrete turret bases, target support and two canvas assemblies for the Poorman range were transferred on 29 March 1944, but not the track or turret cage assemblies. It appears that Poorman range was never in use, since it appears incomplete less than a week before the gunnery range complex was declared excess.<sup>20</sup>

Although no range layout maps were located, the layout and range numbering can be determined based on the requested ranges, transfer of new construction and surplus material reports and aerial imagery analysis. It is clear from 1946 aerial photos, that most of the ranges were arranged along a single firing line that ran east-west for about 2 miles about 100 yards north of the southern property line. The ranges had a northerly direction of fire and it appears that the ranges were laid out east to west as follows:

- Range 1                      Skeet Range (3 position)
- Ranges 2-3                 Moving Target (jeep type) Ranges
- Ranges 4-8                 High Tower Shotgun Turret Ranges
- Range 9                     Malfunction Range Building

- Ranges 10-12 & 14 Sub Machine Gun (2), Pistol and Poorman Ranges
- Range 13                    200 yard Known Distance Rifle Range<sup>21</sup>

No evidence of any bombing targets on the Salt Lake City AAB Gunnery Range was found, even though the base had a bombing mission and storage magazines located on the air base proper. The ground gunnery range had clearance for horizontal ground-to-ground firing with the maximum height of the projectiles not to exceed twenty-five feet<sup>22</sup>. Bombing activities were most likely conducted on the close by Wendover Bombing and Gunnery Range.

#### *4.2.1.3 OE Storage Facilities*

In addition to the storage facilities at the Salt Lake City AAB, there was 144 square feet of magazine storage space at Salt Lake City AAB Gunnery Range, most likely used only for small arms.<sup>23</sup>

#### 4.2.2 Summary of CWM Activities

Even though chemical warfare training activities were a major part of training activities for the troops stationed at the Salt Lake City AAB, as well as at most World War II air bases, the research team found no credible evidence indicating that chemical warfare materials were used, stored or disposed of at the Salt Lake City AAB Gunnery Range. CWM activities occurred at several different locations associated with the airfield (i.e. Fort Douglas, Salt Lake City AAB, Pleasant Grove CCC camp Sub-base No. 2, and [Camp] Kearns AAB) but are not directly covered by this ASR.

#### 4.2.3 Certificates of Clearance

The research team did not find a Certificate of Clearance covering all of the Salt Lake City AAB Gunnery Range. However, in 1950, the Corps of Engineers gave "...a careful visual inspection and no decontamination work is deemed necessary" for the Department of Interior parcel that was subsequently released in January.<sup>24</sup>

#### 4.2.4 EOD Incidents

The archives search did not reveal any EOD incidents associated with the former Salt Lake City Army Air Base Gunnery Range.

### 4.3 OTHER POTENTIAL AREAS OF ENVIRONMENTAL INTEREST

Potential lead contamination from the use of the small arms on the ranges at Salt Lake City Army Air Base Gunnery Range has been identified as potential environmental concern. The Sacramento District of the Corps of Engineers manages the investigations regarding this potential concern.

#### 4.4 MAP ANALYSIS

This archives search did not locate any site-specific layout plans for Salt Lake City Army Air Base Gunnery Range. The only maps of the site that were located, were real estate ones showing the acquired parcels and the site boundary. Those maps did not delineate any OE and/or CW activities occurring on site.

#### 4.5 AERIAL PHOTO INTERPRETATION

Government and contractor personnel conducted an aerial photography database search (included in Appendix A.2 Aerial Photography Repositories). The aerial photography retrieved covered Salt Lake City Army Air Base Gunnery Range following military use. The imagery acquired is in photographic print format. The analyst performed the interpretation using the following source materials:

<b>PHOTO DATE</b>	<b>APPROX. SCALE</b>
17 August 1946	1:20,000
31 August 1955	1:12,000
16 July 1997	1:40,000

The analyst delineated imagery containing important areas on hard copy plots and digitized it using Computer-Aided Drafting and Design (CADD) software. The digitized features overlay scanned aerial photography, resulting in the final plots (see Plate 3). The analysis used stereo viewing of photography, which allows more accurate identifications than monoscopic interpretations. The resolution and scale of the imagery limited the identification of features discussed in this study. The analyst used the word “probable” when discussing features for which identification is reasonably accurate. The analyst used the term “possible” when identification was not positive, but the object/area matched known features/locations on other sources. Analysis of the aerial photographs referenced the maps discussed in section 4.4 above. The boldfaced numbers and letters in parentheses referenced in the sub-paragraphs below refer to the feature descriptions on the annotated aerial photography plates. The numbers directly correlate to the Range number. The sub-paragraphs below describe the relevant features identified on the imagery. In the digital version of this report, the paragraph headings are all hyperlinked to \*.JPEG images of the resultant plates.

The measurements of features in the aerial photo analysis are **ALL** approximations, whether specifically stated or not. Measurements from the photo prints are converted to distances based on the stated accuracy of the imagery, which vary between frames and flight lines. Another factor affecting the measurements of features is the scale of the imagery. At the higher scales, the features being measured are smaller and more difficult to measure. The interpretation measurements are estimated to be within approximately 20% of the actual values.

#### 4.5.1 [1946 Imagery \(Plate 3\)](#)

Although no range layout maps were located, most of the ranges can be identified on the 1946 aerial imagery with the aid of historical documents. It is clear that most of the ranges were arranged along a single firing line that ran east-west for about 2 miles about 100 yards north of the southern property line, which is clearly visible as a section line road. The ranges had a northerly direction of fire and it appears that the ranges were laid out east to west as follows (nomenclature is from historical construction documents):

- Range 1                    Skeet Range (3 position)
- Ranges 2-3                Moving Target (jeep type) Ranges
- Ranges 4-8                High Tower Shotgun Turret Ranges
- Range 9                    Malfunction Range Building
- Ranges 10-12 & 14        Sub Machine Gun (2), Pistol and Poorman Ranges
- Range 13                  200 yard Known Distance Rifle Range

The standard semi-circular outlines are clearly visible for the three skeet ranges (**1**), but the trap houses only appear on the western two ranges. To the east of this are the West and East Moving Target (jeep type) Ranges (**2** & **3**). The triangular earthen embankments (**2A** & **3A**) for these ranges are the most distinctive features of the site. They are equilateral triangles about 900 feet on a side with the apex pointed up range. In addition to the triangular embankments, the firing line positions (**2B** & **3B**) can also be discerned. On the West Moving Target Range, there are 3 apparent firing lines up range from the closest point of the embankment: one with 5 positions about 500 yards (**2B1**), another with approximately 10 positions about 1,000 feet away (**2B2**) and a third about 500 feet away with no distinct positions (**2B3**). The East Moving Target Range has only 2 apparent firing lines: one about 500 yards away with 250-foot long concrete line (**3B1**) and another with approximately 10 positions about 500 feet away (**3B2**). Both of these ranges have probable concrete pads about 20 by 50 feet (**2C** & **3C**) and devegetated/graded areas roughly 50 by 300 feet (**2D** & **3D**) behind the 500-yard lines. The pads were most likely for some of the storage buildings on site.

To the east of the jeep ranges, are a series of about 15-foot square concrete emplacements spaced along 1,400 feet. There are 5 groups of 6, which correspond to Ranges 4-8, High Tower Shotgun Turret Ranges (**4**, **5**, **6**, **7** & **8**). There is a devegetated/graded area roughly 50 by 300 feet (**5A**), similar to the ones noted for the jeep range, down range from Range 5. The ranges east of the north-south road that separates sections 29 and 28 are less distinct. A lineation roughly 800 feet long (**10** & **11**) is in line with the previously discussed firing lines but there are no other distinct features. It appears that this is the firing line for Ranges 10-11, Sub Machine Gun, but this is supposition. To the east of this, is a devegetated/graded area roughly 200 feet wide with 50 yards of depth (**12**), that has a distinct road leading to it and is probably the pistol range but there is no

clear berm present. To the east of this, there is a distinct dark lineation about 200 feet long and 25 feet wide that is probably a firing line (14). As opposed to all the other lines that fire due north, this one is skewed roughly 30° to fire north, northwest. This is possibly Range 14, Poorman Range, which would have required a longer safety fan than the other ranges. Behind the firing line in this area, there is a dark rectangle feature about 80 by 150 feet (9), which is possibly the footprint of Range 9, Malfunction Range Building, though the structure is no longer present.

The next 1,000 yards do not appear to have been developed, ostensibly due to the drainage in the area. Near the eastern boundary of the site, Range 13 is clearly visible (13). It appears to be a standard 200 yard Known Distance Rifle Range, with firing lines discernable at 100 and 200 yards. The range is approximately 450 feet wide, which should have accommodated 50-60 men at a time.

#### 4.5.2 1956 and later Imagery

The later imagery was reviewed for additional evidence of the military's use of the site, though no features of any significance beyond those described above were noted.

#### 4.6 INTERVIEWS

The archives search team conducted telephone and personal interviews to assist in the collection of information for this report. The team attempted to locate persons with first hand knowledge of Salt Lake City Army Air Base Gunnery Range although no one was found with information of value to this investigation. Contact with local law enforcement, hazardous device squads and military Explosive Ordnance Disposal (EOD) units resulted in no incident reports of OE or CWM in this area.

## **5 SITE ELIGIBILITY**

### **5.1 CONFIRMED FUDS**

The former Salt Lake City Army Air Base Gunnery Range consisted of a total of 6,276.81 acres of real estate. This site consisted of portions of sections 15-22, 27-30 and 32 in T1N, R23W S.L. B & M. The Army acquired this acreage as follows:

- 40 acres                      inter-agency transfer from Department of Interior by informal permission
- 6,212.57 acres              leased land from private owners
- 24.24 acres                  easement from private owners and the County of Salt Lake<sup>25</sup>

This real estate figure concurs with the acreage number stated in the INPR (Appendix E-1).

By 3 April 1944, the Corps of Engineers received a declaration of excess for the gunnery range and on 22 April 1944, it was declared surplus. It would take another 6 years before the 40-acre tract acquired from the Department of the Interior (DOI) by an informal permission was relinquished back to the DOI on 20 January 1950. Similarly two easements were quitclaim deeded back to the owners on 26 July 1950. The delays are most likely the result of oversight and not due to continued use.<sup>26</sup>

Based on a review of available real estate documents, the War Department released Salt Lake City Army Air Base Gunnery Range with no restrictive covenants or land use restrictions.

### **5.2 ADDITIONAL CONFIRMED FUDS ACREAGE**

Based on available information (e.g. historical documents, aerial photos, interviews etc.), the archives search did not identify any additional areas of undocumented military ownership associated with Salt Lake City Army Air Base Gunnery Range. However, when range safety fans or OE potential range cells are drawn for this site, they extend beyond the acquired FUDS boundaries and potentially represent land use by the DoD. The archives search did not find direct evidence of OE hazards on the real estate contained within these fans beyond the FUDS boundary. The DoD accepts responsibility for remediation of OE hazards resulting from their activities. If DoD OE hazards exist on real estate never acquired, they are generally eligible for cleanup under the Defense Environmental Restoration Program.

### 5.3 POTENTIAL FUDS

The archives search identified additional areas of previously undocumented military ownership or land use associated with Salt Lake City Army Air Base but were not contiguous to the airfield or the gunnery range sites. They include:

- Salt Lake AAB Sub-base No. 1, portion of Utah State Fairgrounds
- Salt Lake AAB Sub-base No. 2, Pleasant Grove CCC

Recovered material concerning this use has been forwarded separately to Sacramento District to initiate formal identification of these sites for the FUDS program.

## **6 VISUAL SITE INSPECTION**

### **6.1 GENERAL PROCEDURES AND SAFETY**

An ASR site inspection is limited in scope to a visual, non-intrusive inspection of the areas suspected of having an OE or CWM hazard potential. This potential is based on an analysis of the collected information. Prior to the inspection, the Archives Search team determines the areas of the site to investigate. The team follows a site safety and health plan (SSHP) prohibiting digging or handling of potential OE and CWM. The SSHP defines standard operating procedures to ensure safety and prevent accidents. Appendix I contains a copy of the SSHP. Subsection 6.2 contains a synopsis of the site inspection and Appendix K includes current site photographs.

### **6.2 SITE INSPECTION SYNOPSIS**

On Wednesday 10 September 2003, the team gathered in Salt Lake City, UT to begin a site inspection of the former Salt Lake City Army Air Base Gunnery Range. The site inspection team consisted of the following individuals:

U.S. Army Corps of Engineers - St. Louis District (CEMVS-ED-P)

Randy Curtis  
George Sloan

U.S. Army Corps of Engineers – Sacramento District (CESPK-PM-H)

Gerald (Jerry) Vincent  
Tim Chapman (contractor)

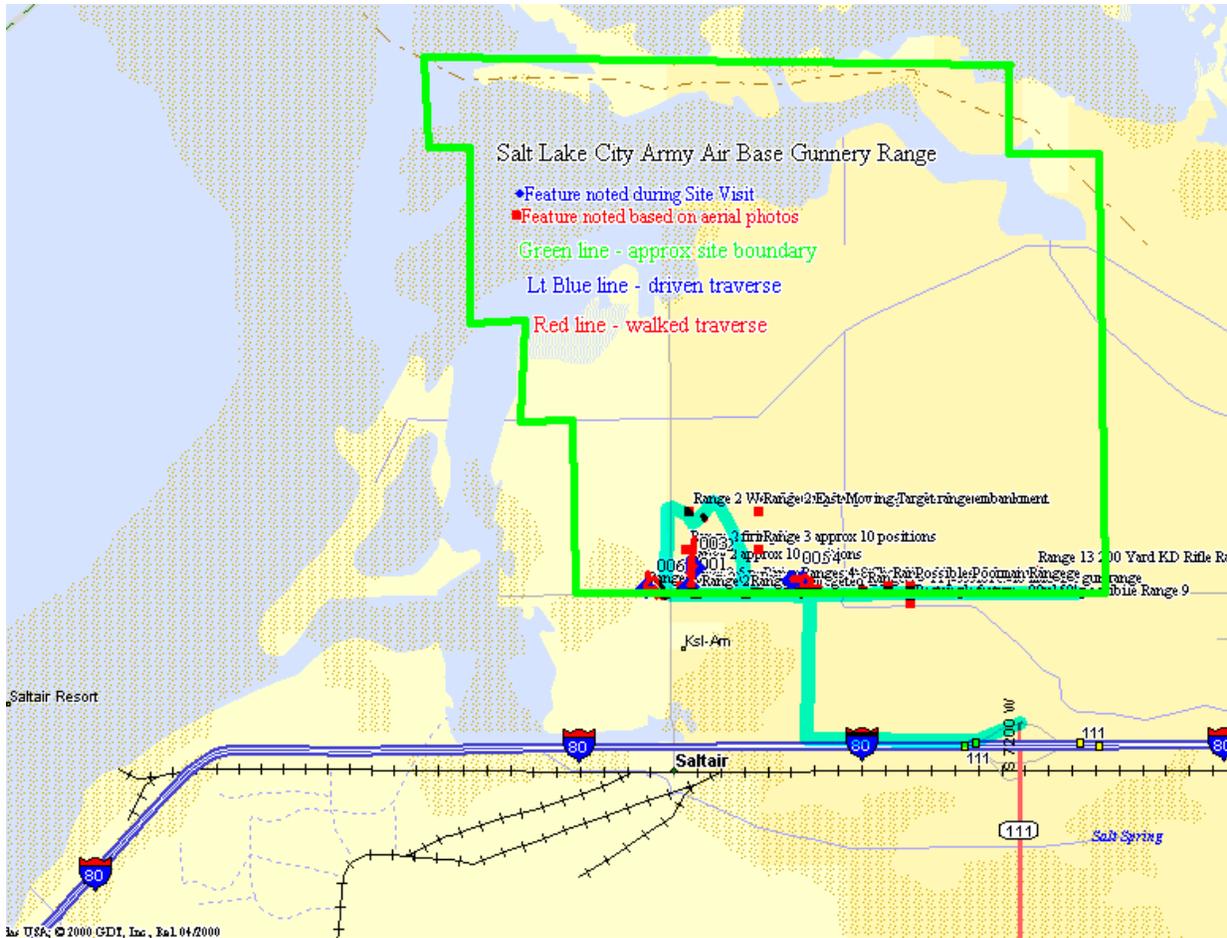
State of Utah Department of Environmental Quality – Division of Environmental Response and Remediation

Rik Ombach, Environmental Scientist  
Phil Greer, voluntary cleanup group

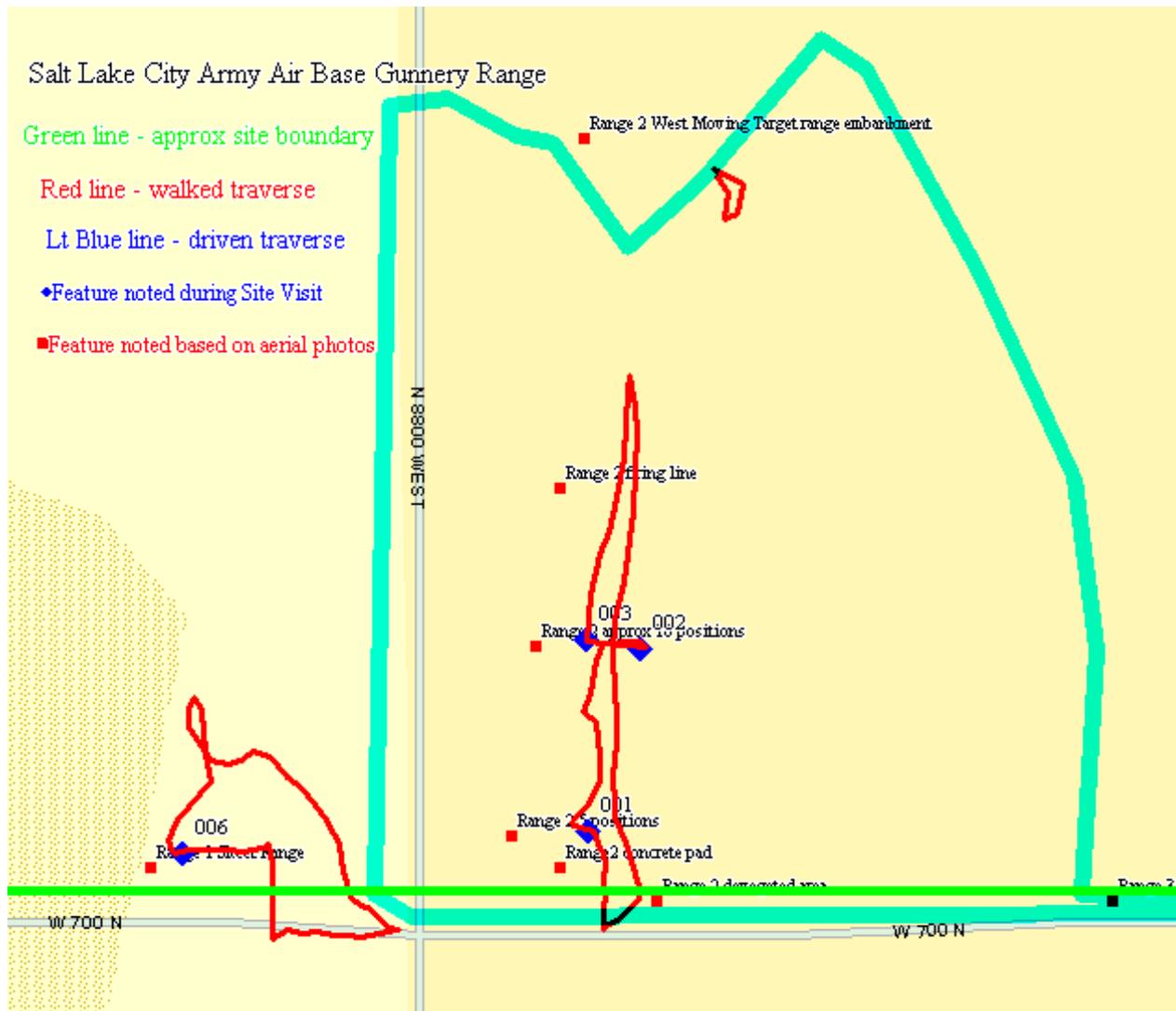
Stoel Rives, Attorneys at Law (representing one of the landowners)

Martin (Marty) Banks  
Richard Hall

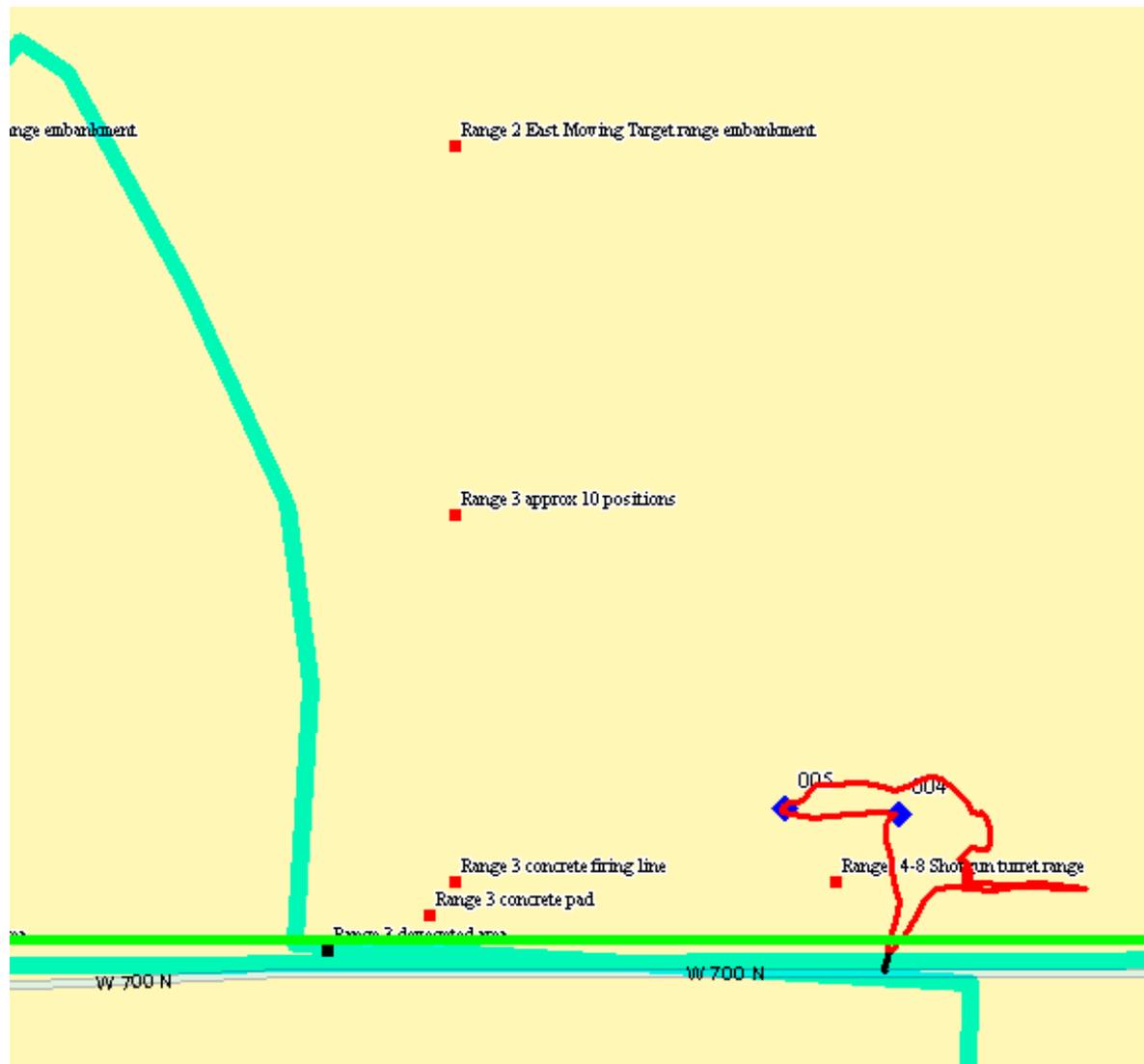
Prior to arriving the team used georeferenced historic aerial imagery to determine the coordinates of the features of interest. These coordinates were then uploaded as waypoints into a Garmin Etrex Legend GPS (Global Positioning System) receiver using mapping datum WGS 1984 (All coordinates are located in tables at the end of this memorandum). The sketch on the following page shows the general scope of the inspection with a close up maps shown later with more legible waypoint labels.



The site inspection team gathered shortly after 0800 and traveled to the moving target (jeep type) ranges portion of the site belonging to the Bothwell Swaner landowners represented by the attorneys. At the embankment of the west jeep range (i.e. Range 2), the inspection team discussed the status of the site. Except for the St. Louis District, elements of the other groups present had visited the site previously and reported finding .50 caliber projectiles during those visits. The attorneys noted that the landowners were considering developing the area as a mixed use residential, commercial and light industrial community in the foreseeable future. In the last few years, the State of Utah conducted some lead sampling on the southern edges of the earth embankments and selected areas around the property with the highest concentration found on the south end of the east embankment. The upper portion of the south end and all the western portion of the west embankment had been removed for use as road fill on property to the east a couple years earlier.



The team traveled to the 500-yard firing line for Range 2, which is downrange from the embankment. There they easily found the five 5-foot square concrete slabs with 3-foot circular depressions in them as shown in Figure 3 of the [Inventory Project Report](#)<sup>27</sup> (INPR) for the site. The team found the other features in the area matched INPR Figure 3 as well, except a corral has since been constructed in the area. Traveling down range, the site inspection team found nine pyramidal concrete points about 1 foot on a side with threaded pipe about 6-inches in diameter (Note: these were not measured). These correspond to the firing points identified on the 1946 aerial photo about 1,000 feet away south of the earth embankment. There was no ready evidence of a firing line about 500 feet away from the target as seen on the aerial images.



Given the level of accuracy of the INPR figures, the team didn't verify all aspects previously depicted and decided to skip visiting Range 3. At the High Tower Shotgun Turret Ranges (i.e. Ranges 4-8), the team found debris from broken clay pigeons in between the 5 groups of 6 square concrete slabs and the foundation blocks for the towers to the north (see Figure 4 of INPR).

The other ranges on site did not belong to the Bothwell Swaner landowners. The ranges to the east (i.e. Range 9, Malfunction Range Building; Ranges 10-12 & 14, Sub Machine Gun (2), Pistol and Poorman Ranges and Range 13, 200 yard Known Distance Rifle Range) lay on the Jolley Cattle Company and Baley Lake Duck Club property. These ranges were not visited as they were on the other side of a canal filled with water and permission had not been received to visit this property, which had been visited previously during the INPR (see Figures 5 & 6).

The 3-position Skeet Range (i.e. Range 1), lies just to the west of the Bothwell Swaner property and is on land that belongs to the Inland Sea Shorebird Reserve. As part of the

reserve, the area of the skeet ranges has been reworked and the evidence of the former skeet ranges is not clearly as evident as indicated in Figure 2 of the INPR. The concrete platforms appear to have been removed and the 2-foot high semi-circle embankments are barely discernable. Debris from broken clay pigeons remains in the vicinity. The site inspection team left the area about 1100.

<b>Range Feature Locations based on Georeferenced Aerial Photography</b>		
N40° 47' 03"	W112° 06' 15"	Range 1, Skeet Range
		Range 2, West Moving Target range embankment
N40° 47' 26"	W112° 05' 57"	
N40° 47' 04"	W112° 06' 00"	Range 2, 5 positions
N40° 47' 10"	W112° 05' 59"	Range 2, approx 10 positions
N40° 47' 15"	W112° 05' 58"	Range 2, firing line
N40° 47' 03"	W112° 05' 58"	Range2, concrete pad
N40° 47' 02"	W112° 05' 54"	Range 2, devegetated area
		Range 2, East Moving Target range embankment
N40° 47' 26"	W112° 05' 30"	
N40° 47' 04"	W112° 05' 30"	Range 3, concrete firing line
N40° 47' 15"	W112° 05' 30"	Range 3, approx 10 positions
N40° 47' 03"	W112° 05' 31"	Range 3, concrete pad
N40° 47' 02"	W112° 05' 35"	Range 3, devegetated area
N40° 47' 04"	W112° 05' 15"	Ranges 4-8, Shotgun turret range
N40° 46' 59"	W112° 04' 30"	Rect. feature ~80x150', possible Range 9
		Range 10-11, possible sub-machine gun range
N40° 47' 03"	W112° 04' 49"	
N40° 47' 04"	W112° 04' 39"	Range 12, possible pistol range
N40° 47' 09"	W112° 03' 42"	Range 13, 200 Yard KD Rifle Range
N40° 47' 04"	W112° 04' 30"	Possible Poorman Range

<b>Range Feature Locations Acquired with GPS (Garmin Etrex Legend)</b>		
<b>Latitude</b>	<b>Longitude</b>	<b>Feature</b>
N40.784501 °	W112.099127 °	Range 2, 500-yard firing line square concrete slab
N40.7861 °	W112.098529 °	Range 2, east end of 1,000 feet firing line concrete points
N40.786171 °	W112.099143 °	Range 2, west end of 1,000 feet firing line concrete points
N40.785014 °	W112.086801 °	High Tower Shotgun Turret Ranges, a square concrete slab
N40.785074 °	W112.088059 °	High Tower Shotgun Turret Ranges, a metal foundation brackets
N40.784308 °	W112.103816 °	Range 1 Skeet Range

## **7 SITE OE/CWM TECHNICAL DATA**

### **7.1 OE ITEMS HISTORICALLY EXISTING ON SITE**

The archives search identified only small arms conventional ordnance items being associated with Salt Lake City Army Air Base Gunnery Range. The team compiled this list from documentation and the site visit. The following sections in Appendix D contain Ordnance Technical Data Sheets of typical examples<sup>i</sup> of OE items identified with Salt Lake City Army Air Base Gunnery Range:

D-1            Small Arms Ammunition

### **7.2 CWM ITEMS HISTORICALLY EXISTING ON SITE**

The archives search did not uncover evidence of the use of CWM at Salt Lake City Army Air Base Gunnery Range. The activities at this site did not include the storage, disposal or use of CWM in training.

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<sup>i</sup> These are general descriptions and may not include all the specific variations of a particular ammunition item. This list is compiled from information found regarding the site and may not be comprehensive.

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## 8 EVALUATION OF ORDNANCE PRESENCE

### 8.1 GENERAL EVALUATION OF OE AND CWM PRESENCE

#### 8.1.1 Evaluation of OE Presence

The archives search uncovered evidence that the Army Air Forces both stored and utilized conventional ordnance at Salt Lake City Army Air Base Gunnery Range. The types of ordnance and explosives associated with the site included only small arms in use at the range complex. This information was gathered from documentation, maps, and aerial photography analysis. None of the reviewed information indicated any other ordnance related operations at Salt Lake City Army Air Base Gunnery Range.

The ASR team did not find an overt indication of a current ordnance and explosive hazard at Salt Lake City Army Air Base Gunnery Range. Research discovered no historical records indicating ordnance disposal on site. Interviews did not disclose any incidents of ordnance or explosive hazards found in the past. Aerial photography analysis did not locate any distinct signs of on-site burial. Additionally, the site inspection did not uncover evidence of ordnance or explosive hazards.

#### 8.1.2 Evaluation of CWM Presence

The archives search uncovered no evidence of chemical warfare materials storage, usage or disposal at Salt Lake City Army Air Base Gunnery Range. The mission of Salt Lake City Army Air Base Gunnery Range does not imply the presence of CWM.

### 8.2 SITE SPECIFIC AREAS

#### 8.2.1 Military Munitions Response Areas - General

Analysis of the information gathered during the archives search identifies the following confirmed and potential OE / CWM Military Munitions Response areas at the former Salt Lake City Army Air Base Gunnery Range (see Plate 4 Military Munitions Response Area) for depiction:

<b>Table 8.2.1 - Military Munitions Response Areas</b>			
<b>Military Munitions Response Areas</b>	<b>Acreage (est.)</b>	<b>OE/CWM Related Function</b>	<b>OE/CWM Potential</b>
Range Complex	8,931	Series of small arms weapon use	<b>Confirmed OE Debris</b> , broken clay pigeons and expended projectiles.

A Range Complex is comprised of several similar ranges, which overlap. Range Complex consisted of the following sub-ranges:

- Triple Position Skeet Range
- West Moving Target Range
- East Moving Target Range
- High Tower Shotgun Turret Range
- Sub Machine Gun Range
- Pistol Range
- Poorman Range
- 200 Yard Known Distance Rifle Range

The information gathered during the archives search indicated that the Army Air Forces did not store, use, or dispose of chemical warfare material at Salt Lake City Army Air Base Gunnery Range.

#### *8.2.1.1 MMR Area – Range Complex*

The Range Complex consisted of about 9 small arms sub-ranges about 6.5 miles west of the main base on marginal grazing and wet lands adjacent to the Great Salt Lake. Although no range layout map was located, most elements of the complex can be determined from available information. It is clear from 1946 aerial photos, that most of the ranges were arranged along a single firing line that ran east-west for about 2 miles about 100 yards north of the southern property line. The ranges had a northerly direction of fire and were laid out east to west as follows:

- Range 1 Skeet Range (3 position)
- Ranges 2-3 Moving Target (jeep type) Ranges
- Ranges 4-8 High Tower Shotgun Turret Ranges
- Range 9 Malfunction Range Building
- Ranges 10-12 Sub Machine Gun (2), Pistol and Poorman Ranges
- Range 13 200 yard Known Distance (KD) Rifle Range

Ranges 1-8 and 13 are clearly discernable as the stated ranges on aerial imagery. Ranges 4-8, the High Tower Shotgun Turret Ranges, are referred to as 5 separate ranges but consist of five adjacent 6-position mounts that are essentially a single range.

There's approximately a one-mile gap between ranges 8 and 13. In this gap there is a drainage canal present limiting use on either side. There are ground scars and other features present between ranges 8-13, which are seemingly range related but it is not clear for what specific purpose. The August 1943 construction request included 2 Sub Machine Gun ranges and a Pistol range, which ostensibly are ranges 10-12. The

Poorman Range, completed a few days before the site use ended, was likely placed in this area as well but it is unclear if the Poorman range was a "14th" range or if only one Sub-Machine gun range was built. Based on aerial imagery, it appears that from west to east, there's a submachine gun range (s), a pistol range and a Poorman Range.

### 8.2.1.2 MMR Area Delineation Criteria

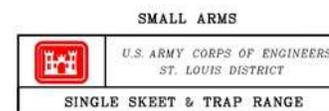
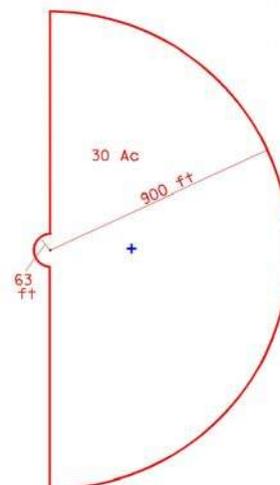
The investigation team identified a number of different types of ranges at Salt Lake City Army Air Base Gunnery Range. The information recovered for this investigation typically did not indicate the extent of the range fan or safety buffer area; therefore, the MMR Area boundary has been developed based on reference guidance. MMR Area boundaries for typical and standard ranges have been developed using historical manuals. These manuals represent the general layout, which includes the safety buffer area, of a range. These standard range layouts are modified when additional information (e.g. number of firing positions) is known. However, since no additional information is known, the standard layouts represented in these historical manuals are used here. Furthermore, an MMR Area boundary which is delineated based on range safety fans represent the theoretical upper limit of the extent of the MEC area from that activity. The actual extent of MEC requiring remediation would probably be significantly less. The following subparagraphs described the methodology used to develop the MMR Area boundary for the range types identified with Salt Lake City Army Air Base Gunnery Range:

- **Skeet & Trap Range**
- **Moving Jeep Type Target Range**
- **Malfunction Range**
- **Submachine Gun Range**
- **Pistol Range**
- **Known Distance Rifle Range**

Note: although a Poorman Range was constructed, it was completed just as the facility was declared excess to the needs of the Army, so it apparently was never used.

### 8.2.1.3 Skeet & Trap Range

Typically, skeet ranges should be located in open country. A range facility may consist of one or several shooting fields, which are normally positioned side by side. A shooting field is laid out in a semi-circle with a 63-foot radius. Many ranges utilized concrete walkways. The safety fan consists

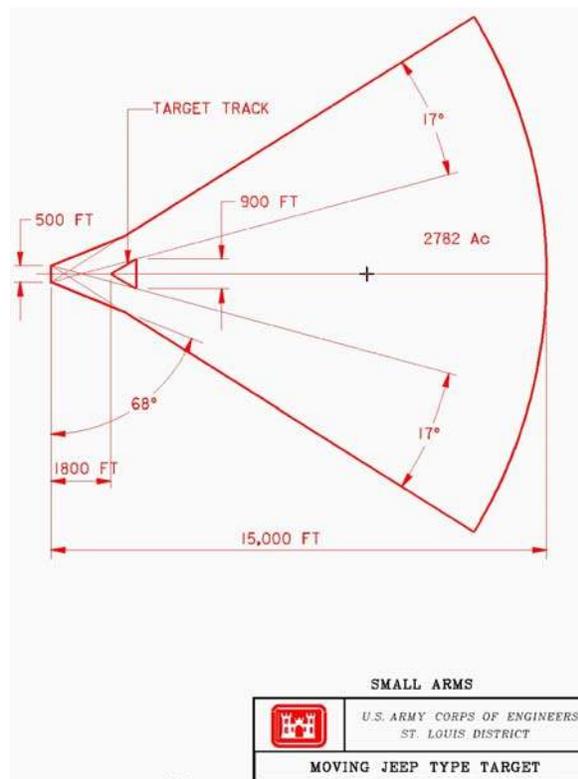


of a semi-circle with a 900-foot radius that utilizes the same apex as the shooting field. Trap houses may have been constructed of wood, concrete, or brick. The Salt Lake City Army Air Base Gunnery Range included a triple position Skeet Range, Range 1 and a High Tower Shotgun Turret Range, Ranges 4-8 with similar range fans.

Reference(s): AR 750-10, *Range Regulations for Firing Ammunition in Time of Peace*, May 1939 – January 1944; TM 9-855, *Targets, Target Material, and Training Course Lay-outs*, August 1944 & November 1951

#### 8.2.1.4 Moving Jeep Type Target Range

This type of range consists of a jeep mounted target that is driven on a track laid out in a triangular shape. Gun turrets mounted on stationary platforms were positioned along the firing line approximately 600 yards to the front of the target. Local requirements would have dictated the number of turrets. An earthen berm constructed around the target area was required to conceal and protect the vehicles and personnel.



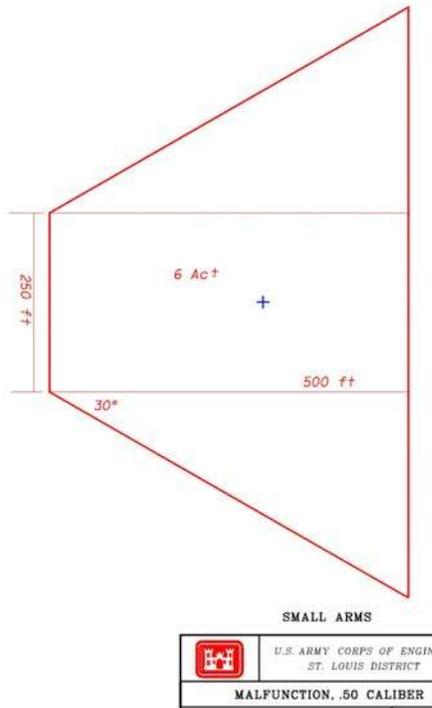
The range cell was derived using the following assumptions: a 500-foot firing line positioned 1,800 feet from the forward edge of the target; a 900-foot wide target; the down range distance (as stated in reference – from the firing line to the end of the safety fan) is 15,000 feet (5,000 yards) for a .30 caliber round as seen on the typical sketch to the right (for .50 caliber rounds it is extended to 7,500 yards). Safety fans were calculated by adding an additional 17° safety fan to the right and left limits of the far right and far left gun positions. Right and left limits are locally established, but typically set at the ends of the target area. A set safety fan of 22° would extend from each end of the firing line and extend to intersect the right and left limit safety fan.

<u>Ammunition (probable)</u>	<u>Max Range (yards)</u>	<u>Muzzle Velocity (fps)</u>
.50 caliber	7,500	2,545

Reference(s): *Second Air Force Ground Gunnery Range Requirements*, July 1943; AR 750-10, *Range Regulations for Firing Ammunition in Time of Peace*, May 1939 – January

1944; TM 9-855, *Targets, Target Material, and Training Course Lay-outs*, August 1944 & November 1951

### 8.2.1.5 Malfunction Range



A typical malfunction range area, including the danger area, is approximately 850 feet by 500 feet. To conform to this limit, a 16-foot earth embankment was required to be constructed to the rear of the range (approximately 500 feet to the front of the firing line) and extend to the outer limits of the safety fan. A firing line approximately 250-foot long would accommodate up to 25 machine guns.

All guns would have been post mounted (fixed), thereby restricting movement in azimuth and elevation. The earth embankment plus the fixed guns allowed for the reduction in the downrange danger area typically seen on small arms ranges. The danger area includes an angle of fire plus the required safety fan, totaling 30°, which originates from each end of the firing line and extends to the earthen berm.

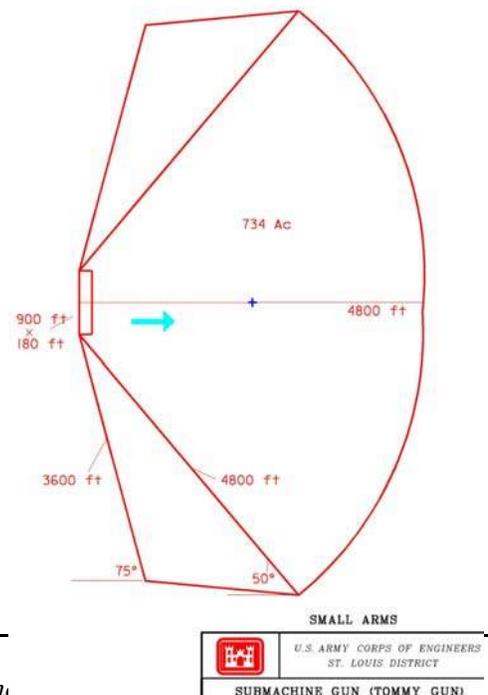
<u>Ammunition (probable)</u>	<u>Max Range (yards)</u>	<u>Muzzle Velocity (fps)</u>
.50 caliber	7,500	2,545

The specifics of the malfunction range at Salt Lake City Army Air Base Gunnery Range are not known and there was no clear evidence of the berms on aerial imagery. The resulting range fan would lie within the boundaries of the entire range complex.

Reference(s): 2<sup>nd</sup> Air Force Ground Gunnery Range Requirements, July 1943; AR 750-10, *Range Regulations for Firing Ammunition in Time of Peace*, May 1939 – January 1944.

### 8.2.1.6 Sub-machine Gun Range

The specifics of the sub-machine gun ranges at Salt Lake City Army Air Base Gunnery Range are not known. However, a typical Sub-machine Gun Range (.45 caliber) was approximately 300 yards wide by 60 yards long, was laid out with 10 targets per firing position. Six firing points may be laid out to allow for independent or non-independent operation. The difference between independent and

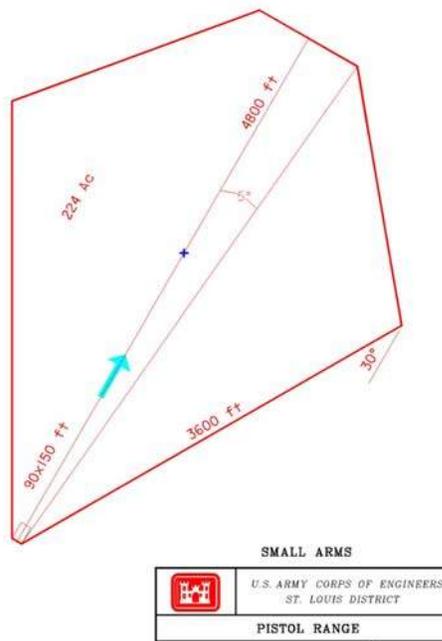


non-independent is the minimum separation between firing positions. Non-independent firing requires a 160-foot separation, whereas independent firing requires a 350-foot separation. Therefore, 6 firing positions would require 800 feet and 1,750 feet of separation, respectively. Because of the lateral distance involved, it is assumed unlikely that a single range accommodated 6 firing positions with independent operations. Therefore, the range is estimated to be no more than 300 yards (900 feet) wide. The danger area consists of a 50° fan, which extends 1,600 yards downrange from each end of the range, and a 25° fan, originating from the same point, which extends 1,200 yards downrange.

<u>Ammunition (probable)</u>	<u>Max Range (yards)</u>	<u>Muzzle Velocity (fps)</u>
.45 caliber	1,600	802

Reference(s): AR 750-10, *Range Regulations for Firing Ammunition in Time of Peace*, May 1939 – January 1944; TM 9-855, *Targets, Target Material, and Training Course Lay-outs*, August 1944 & November 1951.

#### 8.2.1.7 Pistol Range



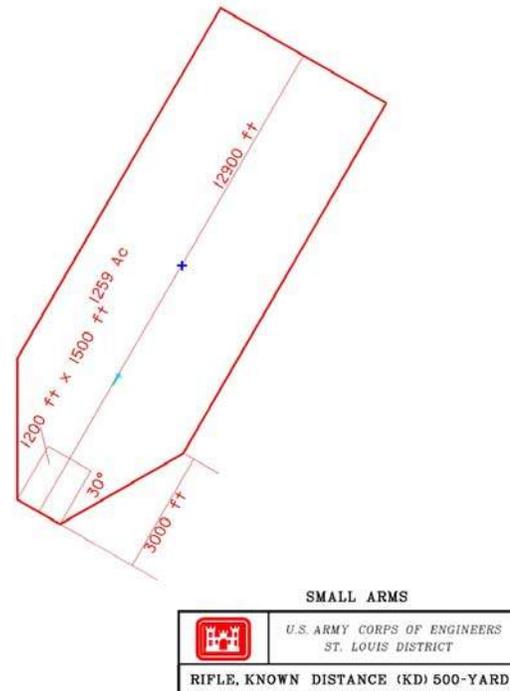
A typical Pistol Range might accommodate 25 firing positions, and be approximately 30 yards wide by 50 yards deep. A pistol range is comprised of a salvage wall (earthen berm), the targets, the firing line(s), safety fan, and an area behind the firing lines, which typically included the ready line, ammunition issue point, and administrative area. The salvage wall (earthen berm) would have been constructed along the backside of the range approximately 5 feet to the rear of the target line. In situations where bluffs or steep hills were present, a salvage wall may not have been required. A five-foot opening typically separated each target. Firing lines would have been positioned at 5, 10, 15, and 25 yards in front of the targets. A 5° angle

of fire extended from each end of the firing line down range a distance of 1,600 yards; and an additional 25° safety fan, which originated from the same points as the angle of fire, extended down range a distance of 1,200 yards.

Reference(s): AR 750-10, *Range Regulations for Firing Ammunition in Time of Peace*, May 1939 – January 1944; TM 9-855, *Targets, Target Material, and Training Course Lay-outs*, August 1944 & November 1951

### 8.2.1.8 Known Distance Rifle Range

Frequently referred to as a known distance (KD) range, rifle ranges are utilized for weapons familiarization and qualifications and for function firing of weapons and ammunitions. KD ranges may be designated 200 yard, 300-yard, 500-yard or more, which refers to the distance between the firing line and the targets. The width of the range would have been determined based on terrain and installation requirements. A range constructed to accommodate 50 men was approximately 400 yards wide. A range is comprised of a salvage wall (earthen berm) constructed directly behind the targets, the targets, the firing line(s), an area behind the firing lines, which typically included the ready line, ammunition issue point, and administrative area. The 30° safety fan originates from the end of each firing line and extends down range 1,000 yards, at which point it continues an additional distance, which is a function of the ammunition being fired. The outline for the range at would be laid out in a similar fashion, some wider, some narrower and some longer up to 1,000 yard facility. Aerial photos indicate that the rifle range at Salt Lake City Army Air Base Gunnery Range was a fairly standard 200 yard Known Distance Range, with firing lines discernable at 100 and 200 yards. The range was approximately 450 feet wide.



Reference(s): AR 750-10, *Range Regulations for Firing Ammunition in Time of Peace*, May 1939 – January 1944; TM 9-855, *Targets, Target Material, and Training Course Lay-outs*, August 1944 & November 1951

### 8.2.2 Non-Military Munitions Response Areas

Analysis of the information gathered during the archives search identifies the following confirmed and potential OE / CWM non-Military Munitions Response areas at the former Salt Lake City Army Air Base Gunnery Range:

<b>Table 8.2.2 – Non-Military Munitions Response Areas - General</b>			
<b>Storage Areas or Indoor Ranges</b>	<b>Acreage (est.)</b>	<b>OE/CWM Related Function</b>	<b>OE/CWM Potential</b>
144 SF of Magazine storage	<1 acre	Storage for small arms ammunition.	<b>Documented Past Use,</b> site inspections located the concrete slab foundations of a few buildings but not any related debris or other evidence.

**APPENDIX A**

**REFERENCE SOURCES AND RECORDS REVIEW**

## **APPENDIX A**

### **REFERENCE SOURCES AND RECORDS REVIEWED**

Appendix B contains full references of all in text citations, along with the location of where the document was found. The research team searched at the following locations for records relating to OE and CWM activities at Salt Lake City Army Air Base Gunnery Range. At these repositories the research team used finding aids and records managers to assist in locating documents relevant to the research topic. The ASR team also accumulated complementary documents reviewed on Salt Lake City Army Air Base Gunnery Range but not specifically used. These complementary documents are stored with the original ASR documents. Appendix H lists additional repositories and personnel contacted which reported no pertinent information. The following subparagraphs described the research team's efforts at the noted archival repositories:

#### **TABLE OF CONTENTS**

#### **A.1 TEXTUAL AND CARTOGRAPHIC REPOSITORIES**

The following repositories were consulted for primarily for textual and cartographic information regarding Salt Lake City Army Air Base Gunnery Range.

**A.1.1 Air Force Historical Research Agency USAFHRA/HO  
Maxwell AFB, AL 36112-6424  
POC: Archie Difante  
334-953-2447 DSN: 493  
334-953-4434 (FAX)**

Corps of Engineers Boxes

- Box Donaldsonville-Douglas Airfield (02018617-02018652)
- Box Douglas Airfield (02018653-02018691)
- Box Douglas Airfield (02018692 – 02018713)
- Box Douglas Army Airfield (02018714-02018751)
- Box Douglas Aircraft (02018752)
- Box Douglas-Dover (02018786-02018818)
- Box Salisburg-Salt Lake (02042930-02042962)
- Box Salt Lake (02042963-02042979)
- Box Salt Lake (02042980-02042994)
- Box Salt Lake (02042995-02043007)
- Box Salt Lake-San Angelo (02043008-02043032)

## Unit Histories

Microfilm Roll No. A0937  
SQ-SV-1-HI – SQ-SV-11-HI

Microfilm Roll No. B0127  
GP-38-HI – GP-39-HI

Microfilm Roll No. B0131  
GP-41-HI – GP-42-HI

Microfilm Roll No. A0192  
Company 816 Chemical Air Operations (July 1942-May 1944)

Microfilm Roll No. A0515A  
SQ-ADRM-69-HI (February-November 1943)  
SQ-ADRM-72-HI (February-December 1943)

Microfilm Roll No. A0525  
SQ-AVN-48-HI (July 1942-October 1943)

Microfilm Roll No. A0588  
SQ-BOMB-368-HI (March 1942-December 1943)

Microfilm Roll No. A0610  
SQ-BOMB-423-HI (September 1942-June 1944)

Microfilm Roll No. A0626  
SQ-BOMB-509-HI (November 1942-April 1945)  
SQ-BOMB-510-HI (October 1942-October 1945)

Microfilm Roll No. B0277  
GP-330-HI (Bomb) (July 1942-April 1944)

Microfilm Roll No. B0278  
GP-331-HI (July-December 1942)

Microfilm Roll No. B0280  
GP-333-HI (July 1942-February 1943)

Microfilm Roll No. B0304  
GP-351-HI (Bomb) (October 1942-April 1945)

Microfilm Roll No. B0371  
GP-382-HI V. 1 (November 1942-March 1944)

Microfilm Roll No. B0373

GP-383-HI (Bomb) (November-December 1942)

Microfilm Roll No. B2498

288.32-1 V. 1 (August 1940-December 1941)

288.32-2 V. 1 (December 1941)

288.32-2 V. 2 (December 1941-1942)

288.32-2A (May-December 1942)

288.32-2 V. 3 (1942)

288.31-18 10/45 – 288.32-3 v1 1-8/43

Microfilm Roll No. B2499

288.32-3 – 288.32-3

288.32-3 V. 2 (January-August 1943)

288.32-3B (January 1942-April 1944)

288.32-4 V. 1 (September 1943)

288.32-4 V. 2 (September 1943)

288.32-4 V. 4 (January-December 1943)

288.32-5 (October 1943)

288.32-6 (November 1943)

288.32-7 (December 1943)

288.32-8 (January 1944)

Microfilm Roll No. C0184

WG-REPL-18-HI V. 1 (June-December 1942)

Microfilm Roll No. 38234

289.32-10 "Bomb-Bay Messenger"

Microfilm Roll No. B0836

GP-SV-310-HI (February 1944-April 1943)

Microfilm Roll No. B0843

GP-SV-329-HI (January 1945)

### **A.1.2 Fort Douglas Military Museum**

**State of Utah, Utah National Guard**

**32 Potter Street**

**Fort Douglas, UT 84113**

**801-581-1710**

**POC: Charles “Chuck” Hibbard, Chief Historian**

**POC: Jay Nielson, Curator**

**801-581-1251-museum office**

**<http://www.fortdouglas.org/>**

The research team met with the chief historian, the curator and a former curator Jess McCall (11 years) to discuss the museums holdings. This group provided valuable assistance concerning previous research efforts, particularly for Chuck Hibbard’s book: *Fort Douglas, Utah: A Frontier Fort 1862-1991*. The research team also reviewed the museum’s general Fort Douglas map drawer holdings, which included about 8 drawers. The maps aren’t organized in any clear order, though they appear to be the originals source maps for the copies at the University of Utah’s library reviewed earlier. No drawings were copied for the SLCAABGR.

### **A.1.3 Golden Gate National Recreation Area (GGNRA) – Park Archives and Records Center (PARC)**

**Presidio San Francisco Building 667**

**Intersection of McDowell Ave. and Cowles St.**

**San Francisco, CA 94129**

**POC: Kim Sulik, Archivist**

**415-561-4817**

**POC: Suzanne Uling Hailey, Chief Archivist**

**415-561-4804**

**<http://www.nps.gov/prsf/>**

The research team had the archive staff query their holding folder list (originally created by the Army) for “Douglas”:

<b>Accession</b>	<b>Box</b>	<b>Folder Description</b>
ADPWEM-001	147	Fort Douglas – TAD Camp Williams
ADPWEMR-003	065	Fort Douglas, Utah
APAO-004	008	Fort Douglas and Tooele Ordnance Depot, Utah

### **A.1.4 Hill Air Force Base – 775<sup>th</sup> CES/CED (Explosive Ordnance Disposal Flight)**

**Bldg. 1781, Browning Road**

**Hill Air Force Base, UT 84056**

**POC: SGT Santos, SGT Boston and MSGT Paul Hicks**

**801-777-5502**

The EOD unit, formerly the 2701 Explosive Ordnance Disposal Squadron, provided the St. Louis District research team access to their historical Explosive Ordnance Disposal Reports (AF Form 3579A), from calendar year 1984 to 2002, excluding 1998 thru 2000, which could not be located (the 1998 and 1999 scanned in as Form Flow documents were not reviewed). The research team reviewed the reports for past incidents regarding Salt Lake City Army Air Base Gunnery Range.

**A.1.5 National Archives I  
8th and Pennsylvania  
Washington, D.C. 20408  
POC: Jill Abraham, Room 410  
202- 501-5671**

**Record Group 49 (Records of the Bureau of Land Management)**  
Entry, Index to General Land Office, Abandoned Military Reservation Files,  
1822-1937  
Boxes 105-107

**A.1.6 National Archives at College Park, Textual Records Branch  
8601 Adelphi Road  
College Park, MD 20740-6001  
POC: Rich Boylan  
301-713-6800**

**Record Group 18 (Records of the Army Air Forces)**

Entry 2A, Air Adjutant General Mail and Records Division Classified Records  
Decimal File Unclassified Correspondence, 1944-1946  
Boxes 2273, 2304, 2332

Entry 2C, Air Adjutant General Decimal File Decimal 686 Unclassified  
Correspondence, 1944-1948  
Box 2814

Entry 2E, Air Adjutant General Decimal File Unclassified Correspondence, 1944-  
1948  
Box 3205

Entry 46, Office of the Air Inspector, Central Decimal Correspondence  
Boxes 43, 106

Entry 47, Decimal File, 1943  
Box 1

Entry 52, Decimal File, 1942-1946  
Box 6

Entry 166, Central Decimal Files, 1917-1938 (General Correspondence)  
Boxes 590, 592-607, 630

Entry 168, Central Decimal Files 1917-1938, Project Files Airfields  
Boxes 2508-2510

Entry 292A, Air Adjutant General Mail and Records Division Classified Records  
Central Decimal File Unclassified Correspondence, 1942-1944  
Boxes 1493, 1502, 1572

Entry 294A, Air Adjutant General Bulky Decimal Files Decimal 686, 1942-1944  
Box 945

Entry 295A, Correspondence Relating to Airfields, 1939-1942  
Boxes 1732-1737

Entry 296, Correspondence Relating to Camps and Forts, 1939-1942  
Box 1035

Entry 297, Correspondence Relating to Corps Areas, 1939-1942  
Boxes 1085-1086

**Record Group 77 (Records of the Office of the Chief of Engineers)**

Entry 106B, General Correspondence, 1918-1945  
Boxes 775-776, 796

Entry 391A, Construction Completion Reports, 1917-1943  
Box 274

Entry 435, Project Geographic Files, 1949-1950 (Old Accession 77-53A-0325)  
Boxes 61, 62

Entry 1011, Formerly Security Classified Subject Files 1941-1945 (Geographic  
File)  
Boxes 322, 323, 768

Entry 1013, General Correspondence with Districts, 1941-1945  
Boxes 265-273

Entry 1014, General Correspondence with Divisions, 1941-1945  
Boxes 76-86

Entry 1019, General Correspondence with Service Commands, 1918-1946  
Boxes 29-33

**Record Group 107 (Records of the Office of the Secretary of War)**

Entry 102, General Correspondence Files of Secretary of War Stimson  
Box 132

Entry 211, Establishment of Airfields and Air Bases, 1940-1945  
Box 212

**Record Group 159 (Records of the Office of the Inspector General)**

Entry 26D, General Correspondence (Confidential), 1939-1947  
Boxes 428, 478

**Record Group 175 (Records of the Office of the Chemical Warfare Service)**

Entry 1, U.S. Army Schools, Chemical Corps School  
Boxes 1-10

Entry 2, Index Briefs 1918-Oct. 1942  
Box 448

Entry 3, Special File, 1922-1943  
Boxes 16, 17

**Record Group 237 (Records of the Federal Aviation Administration)**

Entry 37, Minutes of the IATCB, 1941-1946  
Boxes 1-4

**Record Group 291 (Records of the Federal Property Resources Service)**

Entry, Real Property Disposal Case Files, (Acc. 68-C-5714)  
Box 311

Entry, Real Property Disposal Case Files 400 Series GSA Disposals, 1963-1967,  
(Acc 68A-5714)  
Box 311

**Record Group 319 (Records of the Army Staff)**

Entry 47G, Army Intelligence Project Decimal Files, 1951-1952  
Box 42

Entry 47F, Army Intelligence Project Decimal Files, 1949-1950  
Box 75

**Record Group 337 (Records of the Headquarters Army Ground Forces)**

Entry 29C, Decimal File 1942-1943  
Boxes 112-126

**Record Group 338 (Records of U. S. Army Commands, 1942 -)**

Accession 338-73C-5356 HQ 6th Army  
Boxes 10, 11

Accession 338-74-0805 HQ 6th Army  
Boxes 1-16

Accession 338-75A-0739 HQ 6th Army  
Boxes 1-5

Entry 35151, Unit History Sixth Army, 1946-1966  
Boxes 291594-291625, 291638, 291647-291649

Entry 35151A, Six Army, 1946-1966  
Boxes 16, 33, 57-58, 75-76, 91-92, 103, 111-112, 114-115, 122-124, 136,  
142, 146-153, 162

Entry, Ninth Service Command Chemical Warfare Office Decimal File, 1927-  
1945  
Box 24

Entry, Ninth Service Command Engineer's Office Decimal File, 1941-1943  
Box 27

Entry, Records of Fourth U.S. Army & Western Defense Command Adjutant  
General Section, General Correspondence, 1940-1946  
Box 21

**Record Group 341 (Records of Headquarters U.S. Air Force (Air Staff))**

Entry 494, Correspondence Relating to Real Estate Facilities, 1948-1955  
Boxes 23, 44, 81, 107, 152, 174, 199, 200, 205-207, 230

**Record Group 407 (Records of the Adjutant General's Office 1917-)**

Entry 363A, Unclassified Project Decimal Files, 1940-1945  
Boxes 4332, 4383, 4429

Entry, Unclassified Project Decimal Files, 1949-1950  
Boxes 1074-1076

**Record Group 500 (Records of U.S. Army Operational and Tactical Formations; 1942-)**

Entry 353, 6<sup>th</sup> Army, Army Wide Command, Accession 338-78-0173  
Box 1

Entry 354, 6<sup>th</sup> Army 1942-65, Accession 338-78-0174  
Boxes 1-4

**A.1.7 National Archives at College Park, Cartographic and Architectural Branch  
8601 Adelphi Road  
College Park, MD 20740  
POC: Henry Gwazda  
301-713-7040**

**Record Group 23 (Records of the U.S. Coast and Geodetic Survey); filed under  
Record Group 370 (Records of the National Oceanic and Atmospheric  
Administration)**

Entry, Sectional Aeronautical Charts - Salt Lake City  
Folder 1935-1959 (1 of 2)

**Record Group 77 (Records of the Office of the Chief of Engineers)**

Entry, Engineer Reproduction Plant (ERP)  
Items 4605, 4684, 5428

Entry, Fortifications Map File  
Drawer 189, Utah

Entry, Miscellaneous Fortifications File  
Fort Douglas, Utah Territory  
Items, 1, 1A, 1C, 26, 45, 73 and 75

Entry, War Department Map Collections  
Fort Douglas, Utah –  
Items 4-Utah, 4-Utah, 4D-Utah, 12-Utah

## **Record Group 92 (Records of the Office of the Quartermaster General)**

Entry, Blueprint Files  
Fort Douglas, Utah  
Items 1, 2, 4-10, 12-14, 16-17. 23- 26, 29-45

Entry, Bound Volumes of Plans  
1904, Page 46  
1905, Page 38

**A.1.8 National Archives at College Park, Still Pictures Branch  
8601 Adelphi Road  
College Park, MD 20740  
POC: Reference Desk  
301-713-6795**

## **RG 111 SC (Signal Corps), 1941-1954**

The research team reviewed index files for the following site names and subsequently reviewed boxes containing potentially pertinent imagery:

Boxes 146, 159, 168, 191, 220, 226, 250, 254, 256, 257, 261, 281, 285 and 289

**A.1.9 National Archives And Records Administration - Rocky Mountain Region  
Building 48, Denver Federal Center  
Denver, CO 80225  
POC: Marene Sweeney  
303-236-0817; 303-236-9297-FAX**

The research team reviewed the finding aids for the following record groups:

Record Group 77 (Records of the U.S. Army Corps of Engineers)  
Record Group 95 (Records of the Forest Service) – Wasatch Cache NF  
Record Group 121 (Records of the U.S. Public Building Service)  
Record Group 156 (Records of the U.S. Army Chief of Ordnance)  
Record Group 270 (Records of the War Assets Administration)  
Record Group 291 (Records of the Federal Property Resources Service)

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Record Group 338 (Records of the U.S. Army Commands)  
Record Group 342 (Records of the U. S. Air Force Commands)

The team reviewed the following:

**Record Group 77 (Records of the U.S. Army Corps of Engineers)**

Accession 8NS-77-93-178  
Box 1, Records of Salt Lake City District, 1942-50

**Record Group 270 (Records of the War Assets Administration)**

Accession 8NS-270-93-218, Real Property Disposal Case Files, 1939-1962  
Boxes 91-93

Entry, Real Property Disposal Case Files, UTAH 1940-1946 (originally NN372-195, currently Accession 8NS-270-95-114)  
Boxes 13-17, 72 & 77

**Record Group 291 (Records of the Federal Property Resources Service)**

Accession 8NN 291-90-018 Real Property Disposal Case Files 1944-1965  
(includes 5 old accessions)  
Boxes 9-10, 52-54, 70 and 73

**A.1.10 National Personnel Records Center Military Personnel Records (NPRC, MPR)**

**9700 Page Avenue  
St. Louis, MO 63132-5100  
POC: John Daily, Archivist, Military Operations Branch  
314-538-4107**

**Record Group 342 (Records of United States Air Force Commands, Activities, and Organizations)**

Accession 342-48A-5044, Salt Lake City Army Air Base Installation  
Development, 1941-1946  
Boxes 1-6

Accession 342-48B-5044, Salt Lake City Army Air Base Organizational History  
Box 1

Accession 342-50D4001, Technical Training Command West Installation  
Development, 1942-1945  
Box 1

Accession 342-52B3007, Wright Patterson General Correspondence 1940  
Box 71

Accession 342-53F5038, Air Material Area Sacramento Installation Development  
1939-1951  
Box 13

Accession 342-55P5042, Director of Operations and Support, Wright Patterson  
General Correspondence, 1952  
Box 17

Accession 342-57B3007, Air Material Area Ogden Installation Development  
1942-1949  
Boxes 8-13

#### **A.1.11 Salt Lake City International Airport**

**776 North Terminal Drive  
Salt Lake City, UT 84116  
Postal Address:  
AMF Box 22084  
Salt Lake City, UT 84122  
801-575-2400, toll free 800-595-2442  
801-575-2991, Environmental  
POC: Karen Rasmussen  
801-575-2977  
<http://www.slcairport.com/>**

The research team contacted this office about the Salt Lake AAB Gunnery Range during WWII. They researched their archives and have maps from that time frame but nothing on the range.

#### **A.1.12 Tooele Army Depot North**

**62nd Ordnance Company (EOD)  
Building 150  
Tooele, UT  
POC: SGT Perry, Operations NCO  
435-833-2950**

The research team reviewed the Explosive Ordnance Incident Reports between FY1995 and FY 2002 and most of them for FY1991 and FY1992 for and incidents relating to Fort Douglas and Salt Lake AAB Gunnery Range from the unit's files.

#### **A.1.13 University of Utah – Campus Design and Planning**

**1795 East South Campus Drive**

**238 University Service Building, Suite 201**

**Salt Lake City, UT, 84112-9403**

**POC: Connie Walters, Construction Documents Manager**

**801-581-5675**

The research team reviewed the contents of two map file drawers within the the drawing vault that included general site maps of Fort Douglas. They made copies of selected maps and drawings. The maps at this location do **not** duplicate the holdings at the university's library or the Fort Douglas Museum. The maps will eventually be sent to the library/archives of the University for preservation and safe keeping, with copies to remain on site. No maps concerning the SLCAABGR were found.

#### **A.1.14 University of Utah - J. W. Marriott Library**

**295 South 1500 East**

**Salt Lake City, UT, 84112-0860**

**POC: Stan Larson, [Special Collections](#)**

**801-581-8863**

**<http://www.lib.utah.edu/>**

The University of Utah is on landed transferred from Fort Douglas and hence the library has an extensive collection of documents and maps on the subject, however none that directly related to the Salt Lake Army Air Base.

#### **A.1.15 Utah Air National Guard, 151<sup>st</sup> Civil Engineers**

**1000 North 2270 West, Building 301**

**Salt Lake City, Utah 84116**

**POC: LTC Leon Jones, Civil Engineer**

**POC: MJR Don Lindner, Civil Engineer**

**801-245-2431**

**<http://www.utsalt.ang.af.mil/>**

The Utah Air National Guard occupies the east side of the Salt Lake International Airport, which includes most of the cantonment area of the Salt Lake Army Air Base during WWII. The research team met with the civil engineering group concerning the historic maps they have on site from the SLCAAB. They reviewed their holdings but they only have utility drawings and didn't have any of the Gunnery Range to the west.

#### **A.1.16 Utah State Archives and Records Service**

**PO Box 141021**

**State Capitol, Archives Building**

**Salt Lake City, UT 84114-1021**

**801-538-3012**

**Fax: 801-538-3354**

**<http://www.archives.state.ut.us/>**

**Research Center Hours: 8:00 am - 4:30 pm, Monday - Friday**

The research team reviewed the following holdings at this repository:

**[Series 6308, Utah National Guard, Adjutant General's Records, 1895-1965](#)**

Boxes 1-4

**[Series 6347, Utah National Guard Duty Performed Reports.](#)**

Reel 1 of 1

Series 10327, Utah National Guard World War II Records, 1941-1945

Reel 1 of 1

Series 10347, Utah National Guard Biennial Reports, 1896-1956

Reel 1 of 2

Reel 2 of 2

#### **A.1.17 U.S. Army Military History Institute (USAMHI)**

**Carlisle Barracks**

**22 Ashburn Drive, Upton Hall**

**Carlisle PA 17013**

**POC: Richard Summers**

**717-245-3601**

**<http://carlisle-www.army.mil/usamhi/>**

The research team consulted [CATS](#), the local on-line electronic catalog and the [Fort, Post, Installations Reference Bibliographies](#) and did not find any relevant references to the Salt Lake City Army Air Base, except those relating to Fort Douglas.

#### **A.1.18 U.S. Army Corps Of Engineers - Sacramento District**

**Real Estate Division**

**1325 J St., 13<sup>th</sup> Floor**

**Sacramento, CA 95814-2922**

**POC: Lucille (Lucy) Ono, Cadastral Section**

**916-557-5312**

**POC: Laura Gerrity**

**916-557-6938**

The research team reviewed the final audit files in Cadastral Section's on in hardcopy and microfiche (5 military drawers, listed alphabetically by site name) for the subject sites, finding information on the following specific projects:

Army 2 of 2

Salt Lake Army Air Base  
Salt Lake AAB Gunnery Range

**A.1.19 U.S. Army Corps Of Engineers - Sacramento District  
Information Management Division, Records Management  
1325 J St., 9<sup>th</sup> Floor  
Sacramento, CA 95814-2922  
POC: Danny Durkee  
916-557-7080**

The research team reviewed the Records Management Microsoft Access database based on the Record Locator SF 135s for the Sacramento District's temporary Records Holding Area (formerly held at Capital Records Management and the Bryte Yard Records Holding Area). They reviewed the SF 135 tables for the following CESPCK elements:

Real Estate Division  
Map Files  
Planning Division  
Construction Operations Division  
Engineering Division  
Environmental Division

Based on these lists they reviewed the following boxes: 67184, 67857, 67997, 72362, 132064, and 160332.

**A.1.20 U.S. Army Corps Of Engineers - Sacramento District  
Engineering Division, DERP-FUDS  
1325 J St., 12<sup>th</sup> Floor  
Sacramento, CA 95814-2922  
POC: Gerald Vincent, Program Manager  
916-557-7452  
POC: Maria Parks  
916-557-7654**

The research team reviewed the INPRs for the following sites to see how they related to the subject site:

J08UT095101 Salt Lake City Army Air Base Gunnery Range

**A.1.21 U.S. Army Soldier Biological Chemical Command (SBCCOM)**

**Historical Office**

**Bldg. E-5027, Blackhawk**

**Aberdeen Proving Ground Edgewood Area, MD 21010-5423**

**POC: Jeff Smart and Cathy Ciolfi**

**410-436-4430**

The research team consulted the SBCCOM History Office Finding Aid - Areas Used by the Chemical Warfare Service During the 1900s for the subject sites and looked up the noted references within the SBCCOM collection. They also reviewed the state and WWII drawers in the file cabinets for related material.

**A.2 AERIAL PHOTOGRAPHY REPOSITORIES**

The following repositories were consulted for aerial imagery of the site. Note historical imagery that exceeded 1:40,000 scale was not considered for acquisition. The **yellow shading** indicates historical imagery that is planned for purchase.

**A.2.22 National Archives at College Park, Cartographic & Architectural Branch**

**8601 Adelphi Road**

**College Park, MD 20740**

**POC: Henry Gwiazda, RG 71**

**301-713-7040**

The research team consulted the aerial photo coverage overlays in Record Group 373 (Records of the U.S. Defense Intelligence Agency) for imagery at a scale of 1:40,000 or better covering the area. They pulled the index sheet for N40 W112.

<b>Date</b>	<b>RG</b>	<b>Scale</b>	<b>Old Can</b>	<b>New Can</b>	<b>IM/NUS#</b>	<b>Frames</b>	<b>Total Frames</b>
6/27/44	373	1:19,000	H12563 H12562 H12564	006417 006416 006418	10198553 10198554 10198552	VV 48-51 (vertical) VV 48-51 (left obl.) VV 48-51 (right oblique) (partial, together they provide coverage of eastern edge)	12
10/03/52	373	1:36,000	H14114	084036	10205206	VV 35-38, 39-44 (partial, western half)	10
9/12/53	373	1:28,000	G7005	005984	10198480	VV 1-3 (partial, western edge)	3
8/29/55	373	1:12,000	E11862	004133	10212148	RSV 25-31 (partial, eastern edge)	7

Date	RG	Scale	Old Can	New Can	IM/NUS#	Frames	Total Frames
8/29/55	373	1:12,000	E11869	004140	10212141	RSV 28-36 (partial, eastern portion, just west of above flight line)	9
8/30/55	373	1:12,000	E11871	004142	10212139	RSV 22-26 (partial, SE corner)	5
8/30/55	373	1:12,000	E11865	004136	10212145	RSV 18-20 LSV 18-20 (partial, SE corner)	6
8/31/55	373	1:12,000	E11864	004135	10212146	RSV 17-30 (partial, eastern half)	14
8/31/55	373	1:12,000	E11873	004144	10212137	RSV 11-20 LSV 1-10 (partial, most of site except SW corner)	20
6/06/59	373	1:10,000	G8147	006093	10198374	V 1-3, 29-31, 26-28, 54-56 (partial, eastern portion)	12

The research team also consulted *Aerial Photographs in the National Archives-Special List 25*, dated 1990, for available imagery from:

Record Group 57 (Records of the U.S. Geological Survey)

Record Group 95 (Records of the U.S. Forest Service)

Record Group 114 (Records of the Soil Conservation Service)

*Record Group 145 (Records of the Agriculture Stabilization and Conservation Service)*

The team located the following imagery in Record Group 145:

Date	RG	Scale	New Can	IM/NUS#	Frames	Total Frames
8/17/46	145	1:20,000	4320	N/A	AAL-2B 79-82, 91-94	8
8/18/46	145	1:20,000	4320	N/A	AAL-2B 125-129, 144-147 (with frames from 8/17/46, complete coverage)	9
9/20/53	145	1:20,000	ON40477 ON40478 ON40484	10276431 10276430 10276424	AAL-5K 104-107, 190-193 AAL-6K 137-141 AAL-14K 18-21	25

Date	RG	Scale	New Can	IM/NUS#	Frames	Total Frames
			ON40485	10276423	AAL-16K 88-93	
			ON40486	10276422	AAL-17K 170, 171	

**A.2.23 U.S. Geological Survey - EROS Data Center**  
**Sioux Falls, South Dakota 57198**  
**POC: Kimberly Kringen**  
**605-594-6151 ext. 2075**

CEMVS-ED-S tasked a contractor to perform an initial search of available imagery for the Salt Lake City Army Air Base Gunnery Range, Salt Lake County, Utah. The contractor identified the following imagery that covers the site.

Date	Program	Scale	Film Type	Roll Number	Flight Line	Frames	Frame Quantity
8/10/50	N/A	1:37,400	BW	N/A	LH	1 17-20 2 46-48	7
5/05/66	N/A	1:24,000	BW	N/A	VBIV	1 222-225 1 142-145	8
10/07/71	N/A	1:38,000	BW	N/A	VCTY	1 85-88	4

**A.2.24 U.S. Department of Agriculture - Aerial Photography Field Office**  
**2222 W 2300 S**  
**Salt Lake City, Utah 84119-2020**  
**POC: Sharon McGiff**  
**801-975-3503**

CEMVS-ED-S tasked a contractor to perform an initial search of available imagery for the Salt Lake City Army Air Base Gunnery Range, Salt Lake County, Utah. The contractor identified the following imagery that covered the site.

<b>Year</b>	<b>Scale</b>	<b>Program</b>	<b>Film Type</b>	<b>Index File</b>	<b>Flight Line</b>	<b>Frames</b>	<b>Total Frames</b>
1959	1:20,000	FSA	BW	Photo Center Index	AAL 1W	6-9, 59-62	8
1965	1:20,000	FSA	BW	Photo Center Index	AAL 1FF AAL 2FF	7-11 3-7	10
1971	1:20,000	FSA	BW	Photo Center Index	AAL 2MM	86-90, 143-148	11
1987	1:40,000	NAPP	CIR	Photo Center Index	359	31-33	3
1995	1:40,000	NAPP	BW	Photo Center Index	5907	191-193	3
1997	1:40,000	NAPP	BW	Photo Center Index	10093	216-218	3

**APPENDIX B**

**REFERENCES AND ABSTRACTS**

*The following list of references only represents the items cited in preparation of this report, and does not illustrate all the documents reviewed or copied for the backup files (see Reference Sources and Records Reviewed Appendix A for further details). Source listings for locating each underlined reference are noted and printed portions are included in the noted Appendix of this ASR, as well as being hyperlinked to scanned images of the backup documents on the digital version of this report on disc. An exception to this is made for large general, non-site specific references which are only included on the disc. References that are not underlined are generally available and not reproduced for this report.*

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<sup>1</sup> Section 1.3 Purpose

Corps of Engineers Safety Office (CESO)

2000 [ER 385-1-92, Safety - Safety and Occupational Health Requirements for Hazardous, Toxic, and Radioactive Waste \(HTRW\) Activities](#), 1 September 2000.

Section 2.0 PREVIOUS INVESTIGATIONS

<sup>2</sup> U.S. Army Corps of Engineers – Sacramento

1992 [Site Survey Summary Sheet For DERP FUDS Site No. J08UT095100, Inventory Project Report Salt Lake City Army Air Base Gunnery Range](#), Salt Lake County, UT, July 1992, prepared by Dynamac Corporation.  
Appendix E-1

<sup>3</sup> Section 3.2 CLIMATIC DATA

Federal Climate Complex Asheville, NC.

Air Force Combat Climatology Center. June 2000 Summary. Climatic Data Summaries from: <http://www.afccc.af.mil/> and <http://www.ncdc.noaa.gov/oa/ncdc.html>

<sup>4</sup> Sections 3.4.1 GEOLOGY AND PHYSIOLOGY

Thornbury, William D.

1965 *Regional Geomorphology of the United States*. Department of Geology, Indiana University, John Wiley & Sons, Inc., New York.

<sup>5</sup> Chronic, Halka

1990 *Roadside Geology of Utah*. Mountain Press Publishing Co., Missoula, Montana.

<sup>6</sup> Chronic, Halka

1991 *Roadside Geology of Utah*. Mountain Press Publishing Co., Missoula, Montana.

<sup>7</sup> Section 3.4 SURFACE WATER HYDROLOGY

U.S. Geological Survey

1972 *Saltair Quadrangle, Utah, 7.5 Minute Series (topographic)*, dated 1972.

U.S. Geological Survey

<http://waterdata.usgs.gov/nwis/sw>

<sup>8</sup> Sections 3.5.2 GROUND WATER

Gates, Joseph S., and Bedinger, M. S.

1988 *Ground-Water Flow Systems of Western Utah*. AWRA Monograph Series No. 14, AWRA, Bethesda, MD.

<sup>9</sup> Section 3.6 NATURAL RESOURCES

U.S. Fish and Wildlife Service (USFWS) West Valley City, Utah

2003 Official correspondence dated 19 February 2003.

State of Utah, Department of Natural Resources, Division of Wildlife Resources

2003 Official correspondence dated 26 February 2003.

<sup>10</sup> Section 3.7.2 Historic Cultural Resources

Utah State Historical Society, Deputy State Historical Preservation Officer – Archeology (James Dykmann)

2003 Letter *RE: DERP of FUDS – Fort Douglas and Salt Lake City Army Air Base Gunnery Range*, 29 July 2003.

<sup>11</sup> Section 3.7.1 Demographics

U.S. Department of Commerce - Bureau of the Census

<http://quickfacts.census.gov/qfd>, downloaded information 21 August 2003

<sup>12</sup> Section 4.1 CHRONOLOGICAL SITE SUMMARY (cited references only)

Hibbard, Charles G.

1999 [\*Fort Douglas, Utah A Frontier Fort 1862-1991\*](#). Vestige Press, Fort Collins, CO. p.179-185.

Appendix E-2

War Department

1940 Letter: [\*Designation of Military Reservation, 23 October 1940\*](#). RG 18, Entry 295A, Box 1736, Folder 680 Misc. NARA-College Park, MD.

Appendix E-3

Salt Lake City Army Air Base, Headquarters

1942 Letter: [Information on Post Reports](#). 15 December, 1942, Accession 342-48A-5044, Box 5, Folder: History of Post, NPRC (MRC) – St. Louis, MO.  
Appendix E-4

<sup>13</sup> Headquarters Ninth Service Command

1942 [Letter from Captain Fortress to the Chief of Engineers, 30 December 1942](#). Corps of Engineers Boxes, Box Salisburg-Salt Lake 02042930—02042962, Folder 121 2 Salt Lake City Airfield, UT. U.S. Air Force Historical Research Agency, Maxwell AFB, Montgomery, AL.

Eighteenth Replacement Wing

1942 [History 18th Replacement Wing, 15 June 1942 to 31 December 1942 \(Inclusive\) Volume I](#). Microfilm Roll C0184. U.S. Air Force Historical Research Agency, Maxwell AFB, Montgomery, AL.  
Appendix E-6

<sup>14</sup> Salt Lake City Army Air Base, Headquarters

1942 Letter: [Information on Post Reports](#), 15 December, 1942, Accession 342-48A-5044, Box 5, Folder: History of Post, NPRC (MRC) – St. Louis, MO.  
Appendix E-4

Salt Lake City Army Air Base

1943 [General Layout Plan Army Air Base Salt Lake City Utah](#), 1 July 1943, RG 18, Entry 2A, Box 2332, Folder Buildings and Grounds Utah 686 1944, NARA-College Park, MD.  
Appendix G-1

<sup>15</sup> Assistant Chief Air Staff

1943 [Letter: Moving Target Ranges and Rifle Range, Army Air Base, Salt Lake City, Utah, 26 July 1943](#). RG 18, Entry 292A, Box 1572, Folder 600 Misc SLCAAB, Utah. NARA-College Park, MD.  
Appendix E-7

U.S. Army Corps of Engineers

1944 Letter: [Construction Directive for Poorman Type Range, Salt Lake City, Utah, 22 January 1944](#). Corps of Engineer Records, Box 02042980-02042994, Folder 614 Salt Lake City Airfield. U.S. Air Force Historical Research Agency, Maxwell AFB, Montgomery, AL.  
Appendix E-8

War Department

1943 Letter: [\*Acquisition of Land, 4 October 1943\*](#). RG 18, Entry 292A, Box 1572, Folder 600 Misc SLCAAB, UT. NARA-College Park, MD.

Appendix E-9

U.S. Army Corps of Engineers, Area Engineer, Salt Lake City

1943-44 Series of OCE Form No 290: [\*Transfer of New Construction A.A. Base, Salt Lake City, Utah\*](#), 16 November 1943-8 April 1944, Accession 342-48A-5044, Box 1, Folder: Transfer of Buildings, NPRC (MRC) – St. Louis, MO.

Appendix E-10

Post Engineer, 294<sup>th</sup> AAF Base Unit (standby)

1944 OCE Form No 290: [\*Transfer of New Construction, Surplus of Real Estate Directive Pacific Division No. 482, Gunnery Range, Army Air Base, Salt Lake City, Utah\*](#), 4 May 1944, Accession 342-48A-5044, Box 1, Folder: Transfer of Buildings, NPRC (MRC) – St. Louis, MO.

Appendix E-11

<sup>16</sup> U.S. Army Corps of Engineers, Pacific Division

1944 [\*Surplus of Real Estate Directive Pacific Division No. 482\*](#), 22 April 1944, Accession 342-48A-5044, Box 3, Folder: 601.53, NPRC (MRC) – St. Louis, MO.

Appendix E-12

Army Air Forces Headquarters, Office of Flying Safety

1944 Letter: [\*Standby Status, Salt Lake City AAB \(municipal Airport No. 1 and Blythe AAF, Blythe, Calif.\*](#) 15 May 1944, RG 18, Entry 292A, Box 1572, Folder 600 Misc SLCAAB, Utah. NARA-College Park, MD.

Appendix E-13

<sup>17</sup> Secretary of War

1943 [\*Letter: CE 601.53 Salt Lake Army Air Base GR. Gn, Range, Utah \(U.S. vs Agnes R. Douse, et al.\) SPELE\*](#), 30 May 1944, RG 107, Entry 102, Box 132, Folder Army Air Base Salt Lake City, Utah. NARA-College Park, MD.

Appendix E-14

Corps of Engineers, South Pacific Division

1951 [\*Real Estate Salt Lake City Army Air Base Gunnery Range, Audited Project No. 2385\*](#), 2 December 1948, revised 9 January 1951, Real Estate Division, Cadastral Section, Microfiche Drawer : Army 2 of 2, Section: Salt Lake Army Air Base, U.S. Army Corps Of Engineers – Sacramento, CA.

Appendix G-2

<sup>18</sup> Section 4.2 HISTORIC MILITARY MUNITIONS USAGE (cited references only)

Assistant Chief Air Staff

1943 [Letter: Moving Target Ranges and Rifle Range, Army Air Base, Salt Lake City, Utah, 26 July 1943.](#) RG 18, Entry 292A, Box 1572, Folder 600 Misc SLCAAB, Utah. NARA-College Park, MD.

Appendix E-7

Chief of Engineers, War Department

1943 [Letter: Additional Ranges, Salt Lake City Airdrome,](#) 9 September 1943, Corps of Engineer Box 15, Salt Lake 02042980. U.S. Air Force Historical Research Agency, Maxwell AFB, Montgomery, AL.

Appendix E-15

<sup>19</sup> War Department, HQ Army Air Forces

1943 Letter: [Clearance Request for Ground Gunnery Range for Salt Lake City Army Air Base, Salt Lake City, Utah, 18 August 1943.](#) RG 18, Entry 292A, Box 1572, Folder 600 Misc. SLCAAB, UT, NARA-College Park, MD.

Appendix E-16

<sup>20</sup> U.S. Army Corps of Engineers

1944 Letter: [Construction Directive for Poorman Type Range, Salt Lake City, Utah,](#) 22 January 1944, Corps of Engineer Records, Box 02042980-02042994, Folder 614 Salt Lake City Airfield. U.S. Air Force Historical Research Agency, Maxwell AFB, Montgomery, AL.

Appendix E-8

War Department

1944 Letter: [Revocation of Directive Consecutive No. A19272, 14 March 1944.](#) Corps of Engineer Records, Box 02042980-02042994, Folder 614 Salt Lake City Airfield. U.S. Air Force Historical Research Agency, Maxwell AFB, Montgomery, AL.

Appendix E-17

U.S. Army Corps of Engineers, Area Engineer, Salt Lake City

1943-44 Series of OCE Form No 290: [Transfer of New Construction A.A. Base, Salt Lake City, Utah,](#) 16 November 1943-8 April 1944, Accession 342-48A-5044, Box 1, Folder: Transfer of Buildings, NPRC (MRC) – St. Louis, MO.

Appendix E-10

U.S. Army Corps of Engineers, Pacific Division

1944 [Surplus of Real Estate Directive Pacific Division No. 482](#), 22 April 1944, Accession 342-48A-5044, Box 3, Folder: 601.53, NPRC (MRC) – St. Louis, MO.

Appendix E-12

<sup>21</sup> U.S. Army Corps of Engineers, Area Engineer, Salt Lake City

1943-44 Series of OCE Form No 290: [Transfer of New Construction A.A. Base, Salt Lake City, Utah](#), 16 November 1943-8 April 1944, Accession 342-48A-5044, Box 1, Folder: Transfer of Buildings, NPRC (MRC) – St. Louis, MO.

Appendix E-10

Post Engineer, 294<sup>th</sup> AAF Base Unit (standby)

1944 OCE Form No 290: [Transfer of New Construction, Surplus of Real Estate Directive Pacific Division No. 482, Gunnery Range, Army Air Base, Salt Lake City, Utah](#), 4 May 1944, Accession 342-48A-5044, Box 1, Folder: Transfer of Buildings, NPRC (MRC) – St. Louis, MO.

Appendix E-11

<sup>22</sup> War Department, HQ Army Air Forces

1943 Letter: [Clearance Request for Ground Gunnery Range for Salt Lake City Army Air Base, Salt Lake City, Utah, 18 August 1943](#). RG 18, Entry 292A, Box 1572, Folder 600 Misc. SLCAAB, UT. NARA-College Park, MD.

Appendix E-16

<sup>23</sup> 294<sup>th</sup> AAF Base Unit (standby)

1944 Letter: [Real Property Utilization Report](#), 3 June 1944, Accession 342-48B-5044, Box 1, Notebook NPRC (MRC) – St. Louis, MO.

Appendix E-18

<sup>24</sup> Department of the Army

1950 Letter: [Office of the Chief of Engineers and the Director of the Bureau of Land Management](#), 30 January 1950. Real Estate Division, Cadastral Section, Microfiche Drawer-Army 2 of 2. U.S. Army Corps of Engineers, Sacramento Division, CA.

Appendix E-19

<sup>25</sup> Section 5.0 CONFIRMED FUDS

U.S. Army Corps of Engineers, South Pacific Division

1952 [\*Real Estate Salt Lake City Army Air Base Gunnery Range, Audited Project No. 2385\*](#), 2 December 1948, revised 9 January 1951, Real Estate Division, Cadastral Section, Microfiche Drawer : Army 2 of 2, Section: Salt Lake Army Air Base, U.S. Army Corps Of Engineers – Sacramento, CA.

Appendix G-2

<sup>26</sup> U.S. Army Corps of Engineers, South Pacific Division

1951 [\*Real Estate Salt Lake City Army Air Base Gunnery Range, Audited Project No. 2385\*](#), 2 December 1948, revised 9 January 1951, Real Estate Division, Cadastral Section, Microfiche Drawer : Army 2 of 2, Section: Salt Lake Army Air Base, U.S. Army Corps Of Engineers – Sacramento, CA.

Appendix G-2

U.S. Army Corps of Engineers, Pacific Division

1944 [\*Surplus of Real Estate Directive Pacific Division No. 482\*](#), 22 April 1944, Accession 342-48A-5044, Box 3, Folder: 601.53, NPRC (MRC) – St. Louis, MO.

Appendix E-12

<sup>27</sup> U.S. Army Corps of Engineers – Sacramento

1992 [\*Site Survey Summary Sheet For DERP FUDS Site No. J08UT095100, Inventory Project Report Salt Lake City Army Air Base Gunnery Range\*](#), Salt Lake County, UT, July 1992, prepared by Dynamac Corporation.

Appendix E-1

**APPENDIX C**

**ABBREVIATIONS, ACRONYMS,  
AND BREVITY CODES**

## **ABBREVIATIONS, ACRONYMS AND BREVITY CODES**

The following list contains abbreviations, acronyms and brevity codes within this ASR, as well as typical others.

AA	Anti-Aircraft
AAB	Army Air Base
AAF*	Army Air Field
ACGIH	American Conference of Governmental Industrial Hygienist
AEC	Army Environmental Center
AFB	Air Force Base
AGO	Adjutant General's Office
ANSI	American National Standards Institute
AP	Armor Piercing
APDS	Armor Piercing Discarding Sabot
APERS	Anti-Personnel
AP-T	Armor Piercing-Tracer
ASR	Archive Search Report
AT	Anti-Tank
Aux	Auxiliary
BD	Base Detonating
BD/DR	Building Demolition/Debris Removal
BE	Base Ejection
BGR	Bombing and Gunnery Range
BLM	Bureau of Land Management
BRAC	Base Realignment and Closure
CADD	Computer-Aided Drafting and Design
CAIS	Chemical Agent Identification Set
cal	Caliber
CBDA	Chemical and Biological Defense Agency
CBDCOM	Chemical and Biological Defense Command
CE	Corps of Engineers
CEHNC	Corps of Engineers, Huntsville Engineering and Support Center
CEMVS	Corps of Engineers, Mississippi Valley-St. Louis District
CEMVK	Corps of Engineers, Mississippi Valley-Vicksburg District
CEP	Circular Error of Probability
CERCLA	Comprehensive Environmental Response, Compensation and Liability Act
CERFA	Community Environmental Response Facilitation Act
CESO	Corps of Engineers Safety Office
CFR	Code of Federal Regulations
cfs	Cubic Feet Per Second
CN	Chloroacetopheno
COE	Chief of Engineers

COMP	Composition
ctg	Cartridge
CSM	Chemical Surety Material
CSM	Command Sergeant Major
CWM	Chemical Warfare Materials
CWS*	Chemical Warfare Service
CX	Center of Expertise
DA	Department of the Army
DARCOM	Development and Readiness Command
DEET	Diethyltoluamide
DERA	Defense Environmental Restoration Account
DERP	Defense Environmental Restoration Program
DoD	Department of Defense
DOE	Department of Energy
DOI	Department of Interior
EE/CA	Engineering Evaluation/Cost Analysis
EIS	Environmental Impact Statement
EM	Engineer Manual
EOD	Explosive Ordnance Disposal
EPA	Environmental Protection Agency
ERDA	Environmental Restoration Defense Account
ETL	Engineering Technical Letter
FDE	Findings and Determination of Eligibility
FFMC	Federal Farm Mortgage Corporation
FGDC	Federal Geographic Data Committee
FM	Field Manual
FS	Feasibility Study
FUDS	Formerly Used Defense Sites
GIS	Geographic Information System
GPM	Gallons Per Minute
GPS	Global Positioning System
GSA	General Services Administration
HAZWOPER	Hazardous Waste Operations
HBX	high blast explosives; mixtures of RDX, TNT and aluminum
HE	High Explosive
HEAT	High Explosive Anti-Tank
HEI	High Explosive Incendiary
HEP	High Explosive Plastic
HMX	cyclotetramethylenetetranitramine (a type of high explosive)
HTRW	Hazardous Toxic and Radioactive Waste
HTW	Hazardous and Toxic Waste
IAS	Initial Assessment Study
IATCB	Interdepartmental Air Traffic Control Board
ILLUM	Illuminating

INPR	Inventory Project Report
IRP	Installation Restoration Program
LD	Lyme Disease
MCX	Mandatory Center of Expertise
MEC	Munitions and Explosives of Concern
MG	Machine Gun
MG	Major General
mm	Millimeter
MMR	Military Munitions Response
MR	Molasses Residuum
MRC	Military Records Center
MT	Mechanical Time
MTSQ	Mechanical Time Super Quick
NARA	National Archives and Records Administration
NAVSEA	Naval Sea Systems Command
NAAS*	Naval Auxiliary Air Station
NAS*	Naval Air Station
NCDC	National Climatic Data Center
NCP	National Contingency Plan
n.d.	No Date
NDAI	No DoD Action Indicated
NEW	Net Explosive Weight
NFS	National Forest Service
NG	National Guard
NGVD	National Geographic Vertical Datum
NIMA	National Imagery and Mapping Agency
NIOSH	National Institute for Safety and Health
NMAS	National Map Accuracy Standards
NOAA	National Oceanic and Atmospheric Administration
NOFA	No Further Action
NPL	National Priorities List
NPRC	National Personnel Records Center
NRC	National Records Center
NWS	National Weather Service
OCE	Office Chief of Engineers
OE	Ordnance and Explosives
OEW	Ordnance and Explosive Waste
OP	Ordnance Pamphlet
OSHA	Occupational Safety and Health Administration
PA	Preliminary Assessment
PAE	Preliminary Assessment of Eligibility
PD	Point Detonating
PE	Professional Engineer
PETN	pentaerythritol tetranitrate (a type of high explosive)

PIBD	Point Initiating, Base Detonating
PL	Public Law
PM	Project Manager
PPE	Personal Protective Equipment
QASAS	Quality Assurance Specialist, Ammunition Surveillance
RA	Removal Action
RAC	Risk Assessment Code
RD	Remedial Design
RDX	cyclotrimethylenetrinitramine; also known as cyclonite or hexogen (a type of high explosive)
RG	Record Group
RI	Remedial Investigation
RI/FS	Remedial Investigation/Feasibility Study
SARA	Superfund Amendments and Reauthorization Act
SCS	Soil Conservation Service
SEP	Spherical Error of Probability
SHPO	State Historic Preservation Office
SLCAABGR	Salt Lake City Army Air Base Gunnery Range
SLD	St. Louis District, Corps of Engineers
SOP	Standing Operating Procedures
SPB*	Surplus Property Board
SSHO	Site Safety and Health Officer
SSHP	Site Safety and Health Plan
SWMU	Solid Waste Management Units
TCRA	Time Critical Removal Action
TECOM	Test Evaluation Command
TEU	United States Army Technical Escort Unit
TM	Technical Manual
TNT	Trinitrotoluene
TP	Target Practice
USA	United States of America
USACE	U.S. Army Corps of Engineers
USADACS	U.S. Army Defense Ammunition Center and School
USAED	U.S. Army Engineer District
USAESCH	U.S. Army Engineering and Support Center, Huntsville, Alabama
USAFHRA	U.S. Air Force Historical Research Agency
USATCES	U.S. Army Technical Center for Explosive Safety
USATHMA	U.S. Army Toxic and Hazardous Materials Agency
USC	United States Code
USCG	United States Coast Guard
USDA	U.S. Department of Agriculture
USFWS	U.S. Fish and Wildlife Service
USGS	U.S. Geological Survey
UST	Underground Storage Tank

UXO	Unexploded Ordnance
WAA*	War Assets Administration
WAGE	Wide Area GPS Enhancemen
WBGR	Wendover Bombing and Gunnery Range
WD	War Department
WGS	World Geodetic System
WNRC	Washington National Records Center
WW I	World War I
WW II	World War II

\* designates an historic acronym

**APPENDIX D**

**ORDNANCE TECHNICAL DATA SHEETS**

## **ORDNANCE TECHNICAL DATA SHEETS**

<u>Page No.</u>	<u>Ordnance Technical Data Sheets<sup>1</sup></u>
D-3	Small-Arms Ammunition

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<sup>1</sup> All Ordnance Technical Data Sheets prepared by U.S. Army Corps of Engineers St. Louis District, Ordnance and Technical Services Branch-Engineering Division.

## **APPENDIX D**

### **Ordnance Technical Data Sheets Prepared by U.S. Army Corps of Engineers St. Louis District, Ordnance and Technical Services Branch-Engineering Division**

## SMALL-ARMS AMMUNITION

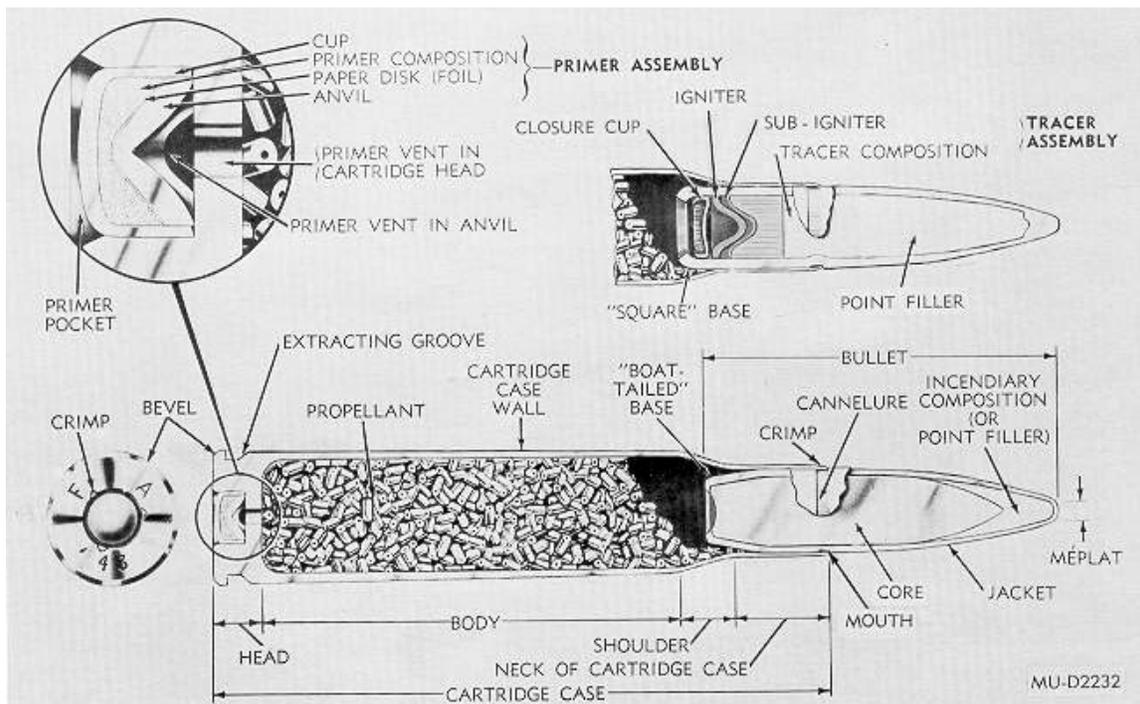


Figure 1. Typical cartridge (sectional)

*General.* Small-arms ammunition, as used herein, describes a cartridge or families of cartridges intended for use in various types of hand-held or mounted weapons through 30 millimeter. Within a caliber designation, these weapons may include one or more of the following: rifles (except recoilless), carbines, pistols, revolvers, machineguns and shotguns. For purposes of this publication, small-arms ammunition may be grouped as cartridges intended primarily for combat or training purposes (API, HEI, tracer or ball); for training purposes only (blank or dummy); or for special purposes (rifle grenade or spotter-tracer). Refer to TM 9-1306-200 for more detailed information on small-arms ammunition.

*Cartridges.* In general, a small-arms cartridge is identified as an assembly of a cartridge case, primer, a quantity of propellant within the cartridge case, and a bullet or projectile. Blank and rifle grenade cartridges are sealed with paper closure disks in lieu of bullets. Dummy cartridges are composed of a cartridge case and a bullet. Some dummy cartridges contain inert granular materials to simulate the weight and balance of live cartridges. A typical cartridge and the terminology of its components are shown in figure 1.

*Case.* Although steel, aluminum, zinc and plastic materials have been used experimentally, brass, a composition of 70 percent copper and 30 percent zinc, is the most commonly used material for cartridge cases. Steel, as well as brass, is an approved material for caliber .45 cartridge cases. Brass, paper and plastic are used for 12 gage shotshell bodies. Aluminum is used for military-type .410 gage shotshell bodies. Configurations of cartridges and bullets are illustrated in figures 2 through 9.

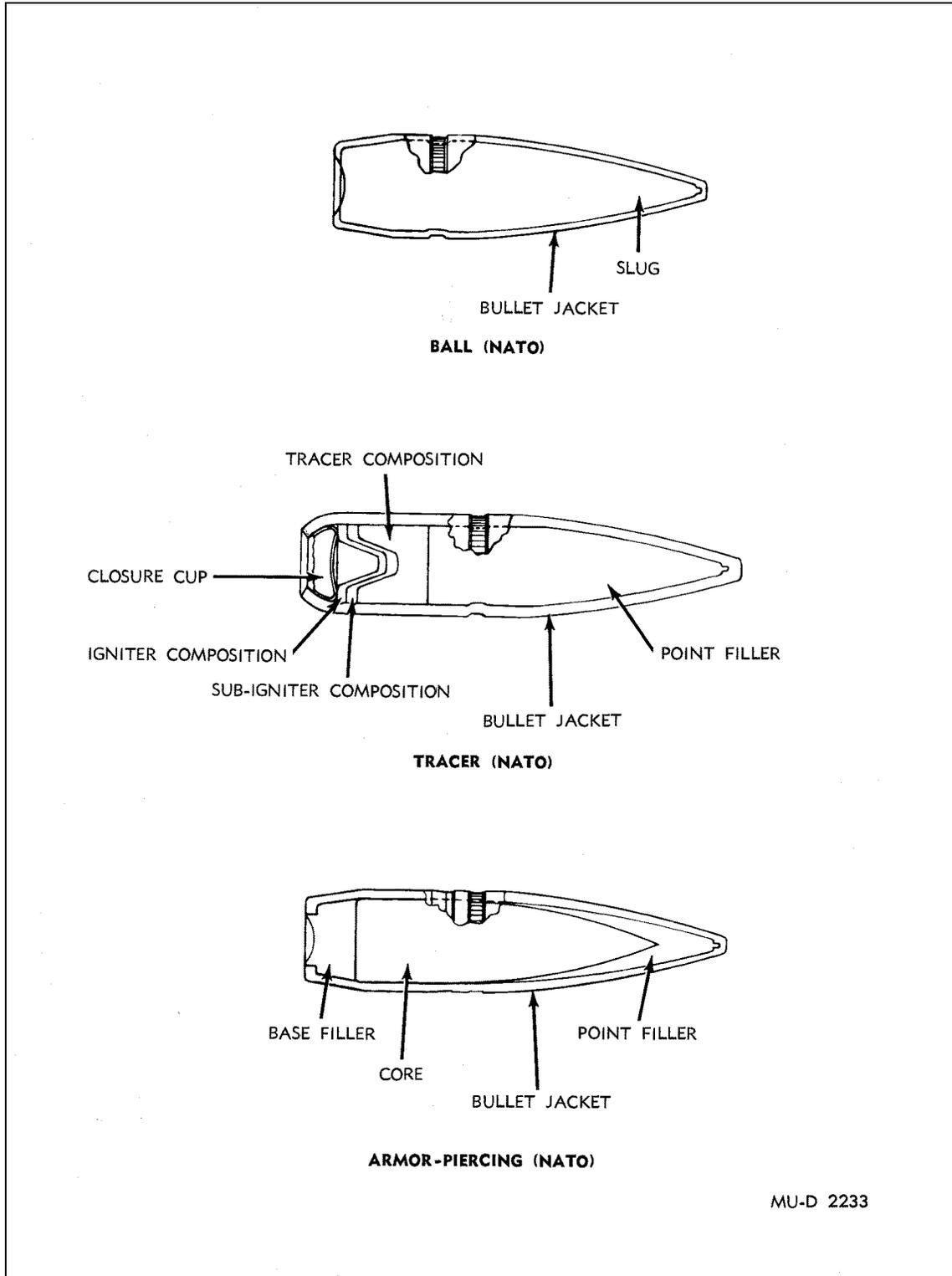


Figure 2. 7.62 mm bullets (sectional)

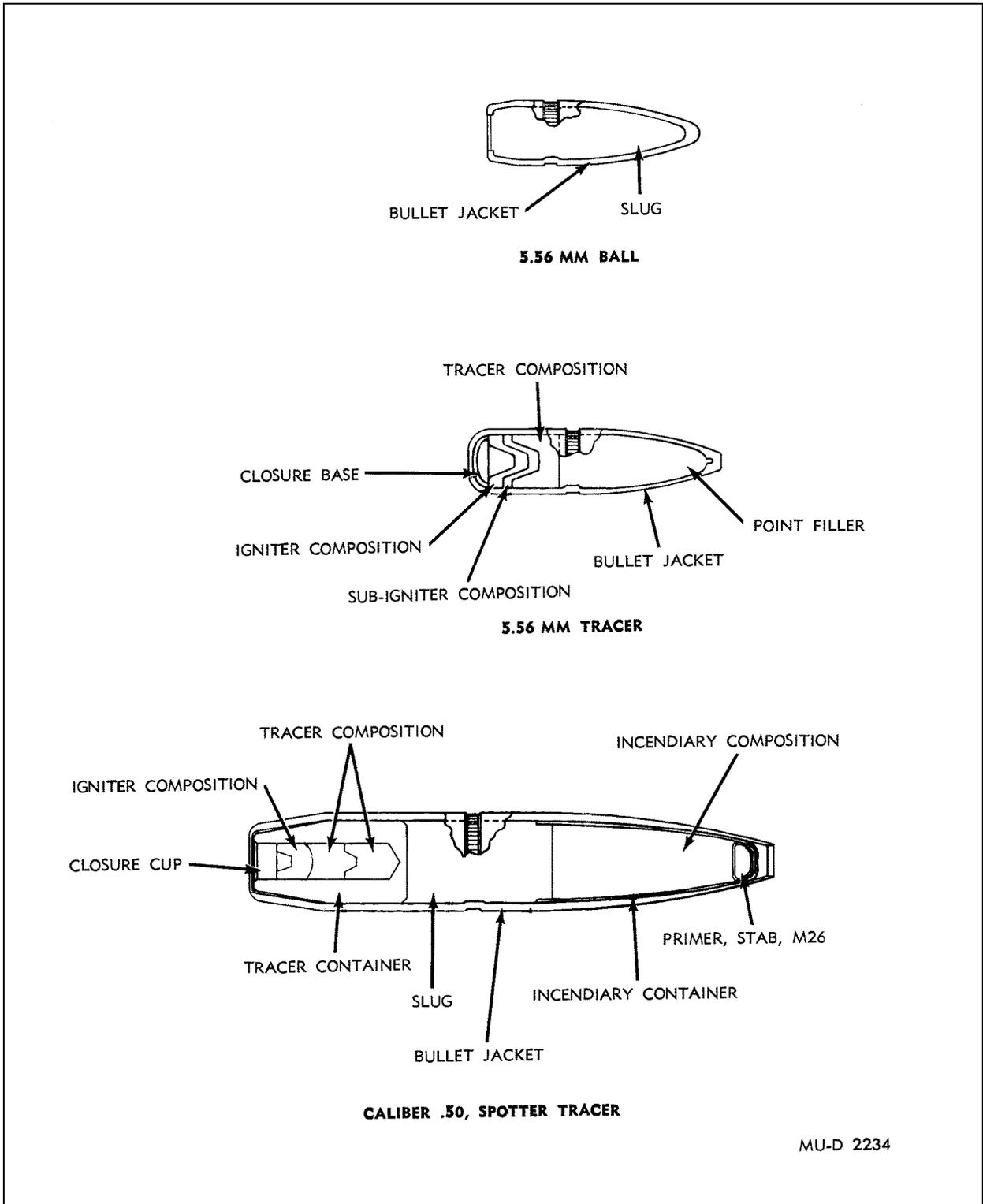


Figure 3. 5.56mm and caliber .50 spotter tracer bullets (sectioned)

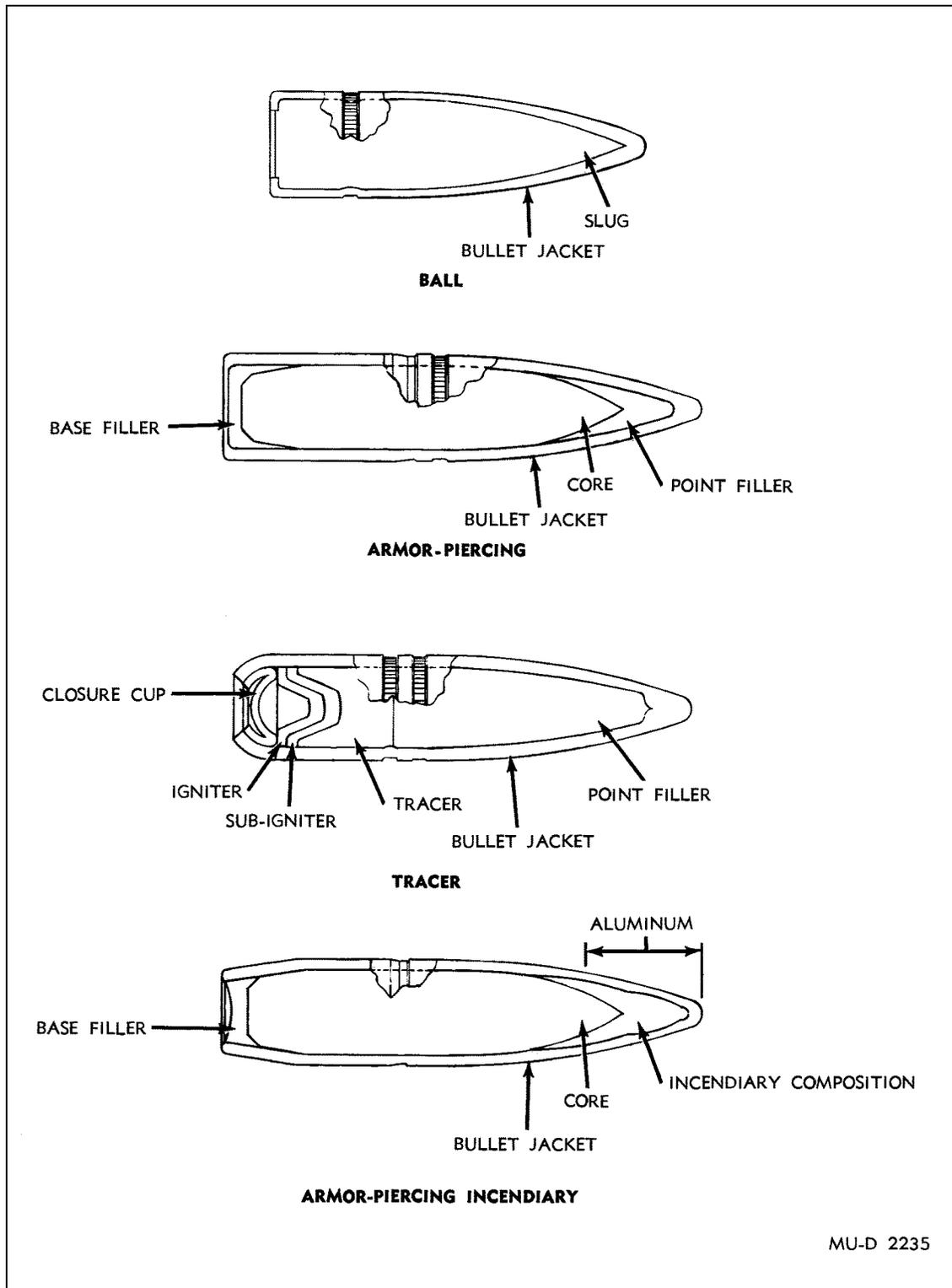


Figure 4. Caliber .30 bullets (sectional)

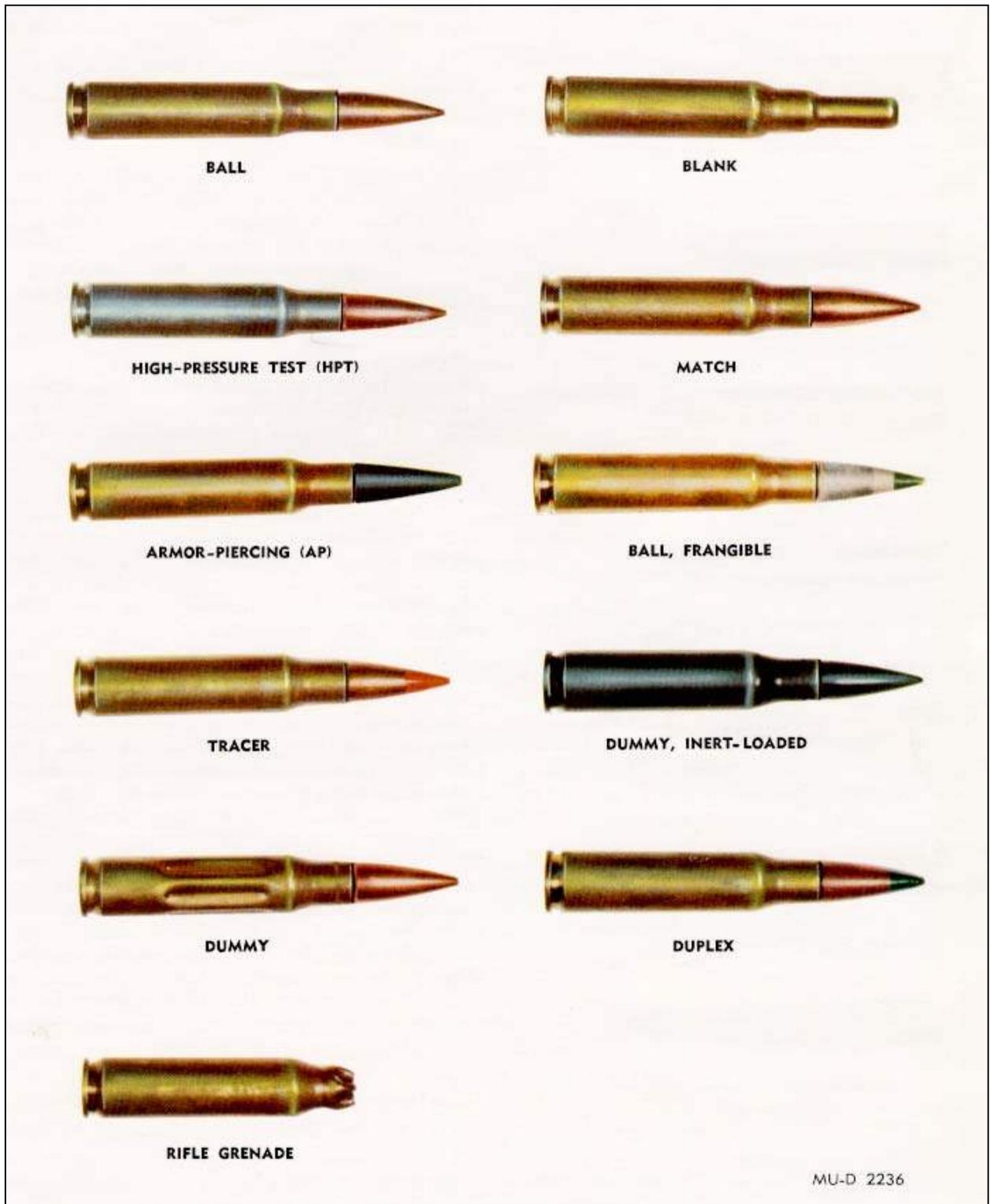


Figure 5. 7.62mm cartridges



Figure 6. 5.56mm cartridges

*Propellant.* Cartridges are loaded with varying weights of propellant. This is to impart sufficient velocity (within safe pressures) to the projectile to obtain the required ballistic performance. These propellants are either of the single-base (nitrocellulose) or double-base (nitrocellulose and nitroglycerine) type. The propellant grain configuration may be cylindrical with a single, lengthwise perforation, spheroid (ball) or flake. Most propellants are coated with a deterrent (to assist in controlling the rate of combustion) and with a final coating of graphite (to facilitate flow of propellant and eliminate static electricity in loading cartridges).

*Primer.* Small-arms cartridges contain either a percussion or electric primer. The percussion primer consists of a brass or gilding metal cup that contains a pellet of sensitive explosive material secured by a paper disk and a brass anvil. The electric primer consists of an electrode button in contact with the priming composition, a primer cup assembly and insulator. A blow from the firing pin of the weapon on the center of the percussion primer cup base compresses the primer composition between the cup and the anvil. This causes the composition to explode. The function of the electric primer is accomplished by a firing pin with electrical potential, which contacts the electrode button. This allows current to flow through the energy-sensitive priming composition to the grounded primer cup and cartridge case, exploding the priming composition. Holes or vents in the anvil or closure cup allow the flame to pass through the primer vent in the cartridge case and ignite the propellant. Rimfire ammunition, such as the caliber .22 cartridge, does not contain a primer assembly. Instead, the primer composition is spun into the rim of the cartridge case and the propellant is in intimate contact with the composition. On firing, the firing pin strikes the rim of the cartridge case, compressing the primer composition and initiating its explosion.

*Bullet.* With few exceptions, bullets through caliber .50 are assemblies of a jacket and a lead or steel core. They may contain other components or chemicals which provide the terminal ballistic characteristics of the bullet type. The bullet jacket may be either gliding metal, gliding-metal clad steel, or copper plated steel. Caliber .30 and 7.62mm frangible bullets are molded of powdered lead and a friable plastic which pulverizes into dust upon impact with the target. The pellets used in the shotgun shells are spheres of lead alloys varying from 0.08 inch to 0.33 inch in diameter.

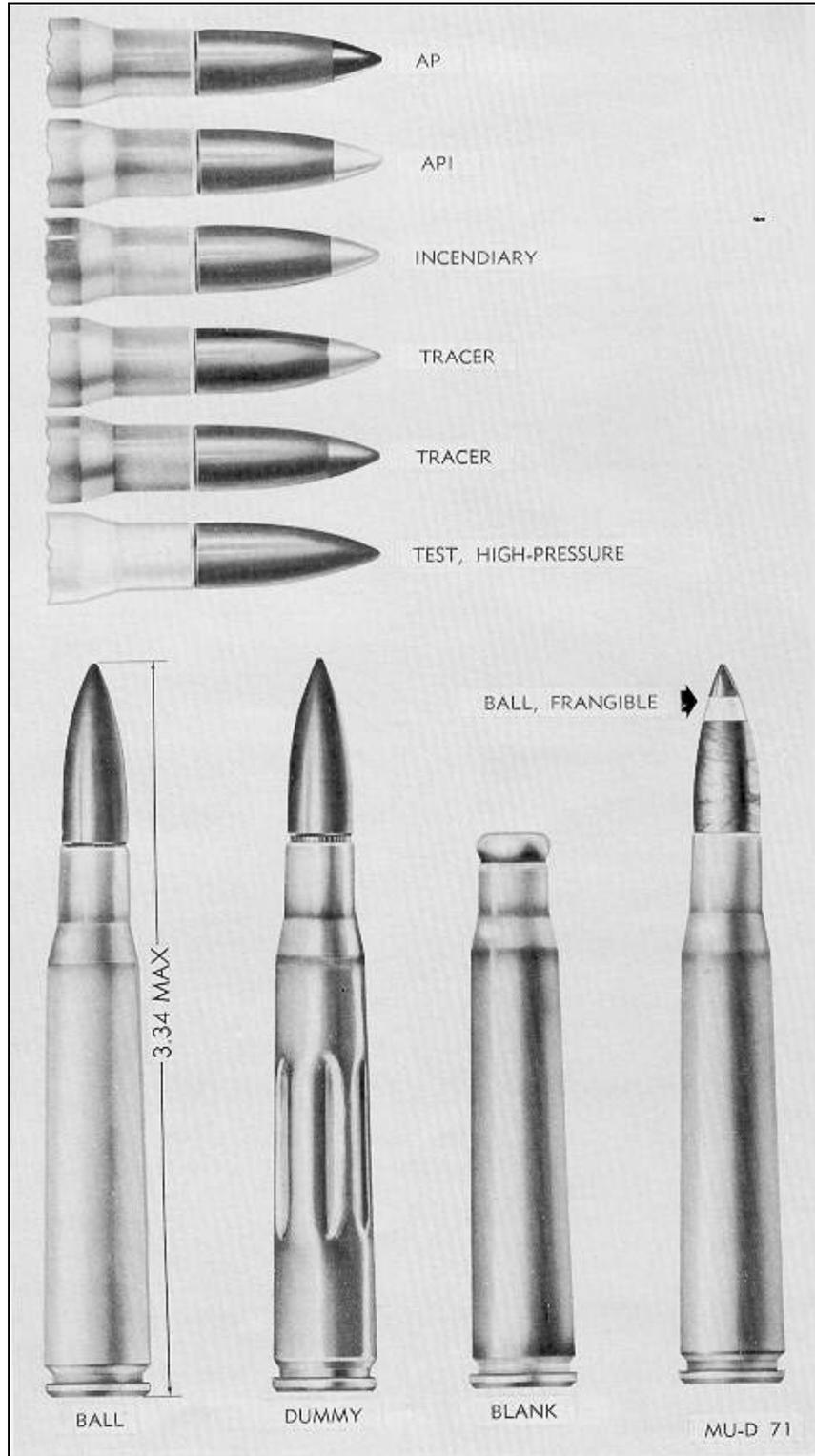


Figure 7. Caliber .30 cartridges

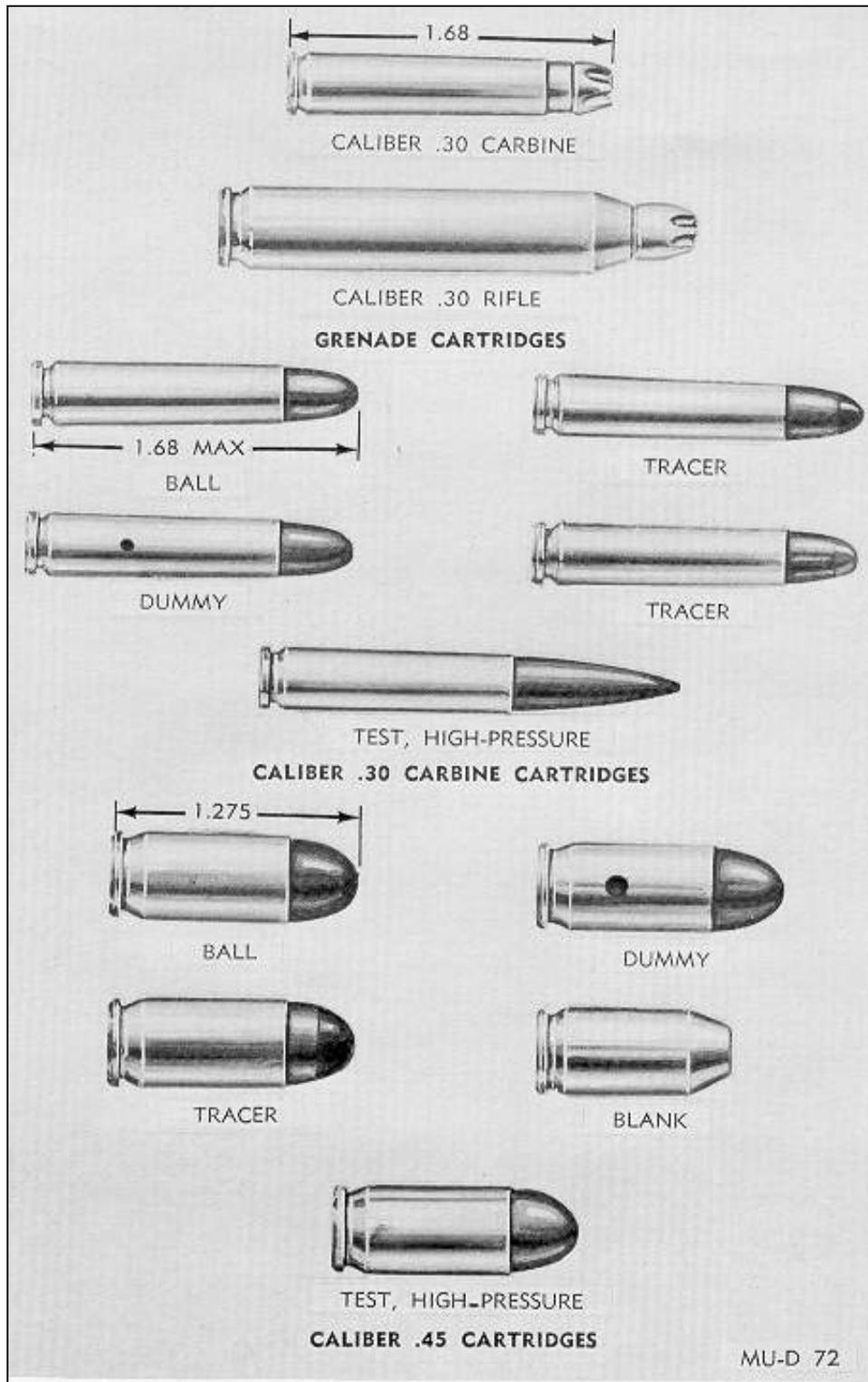


Figure 8. Caliber .30 carbine and caliber .45 cartridges



Figure 9. Caliber .50 cartridges

*Ball Cartridge.* The ball cartridge is intended for use in rifles, carbines, pistols, revolvers and/or machineguns against personnel and unarmored targets. The bullet, as designed for general purpose combat and training requirements, normally consists of a metal jacket and a lead slug. Caliber .50 ball bullet and 7.62-mm, Ball M59 bullet contain soft steel cores.

*Tracer Cartridge.* By means of a trail of flame and smoke, the tracer cartridge is intended to permit visible observation of the bullet's in-flight path or trajectory and the point of impact. It is used primarily to observe the line of fire. It may also be used to pinpoint enemy targets to ignite flammable materials and for signaling purposes. The tracer element consists of a compressed, flammable, pyrotechnic composition in the base of the bullet. This composition is ignited by the propellant when the cartridge is fired. In flight, the bullet emits a bright flame which is visible to the gunner. Trace burnout occurs at a range between 400 and 1,600 yards, depending upon the caliber of ammunition.

*Match Cartridge.* The match cartridge is used in National and International Match Shooting competitions. The bullet consists of a gliding-metal jacket over a lead slug. The cartridges are identified on the head face with the designation NM (National Match) or Match.

*Armor-Piercing Cartridges.* The armor-piercing cartridge is intended for use in machine-guns or rifles against personnel and light armored and unarmored targets, concrete shelters, and similar bullet-resisting targets. The bullet consists of a metal jacket and a hardened steel-alloy core. In addition, it may have a base filler and/or a point filler of lead.

*Armor-Piercing-Incendiary Cartridge.* The armor-piercing-incendiary cartridge is used in rifles or machineguns as a single combination cartridge in lieu of separate armor-piercing and incendiary cartridges. The bullet is similar to the armor-piercing bullet, except that the point filler is incendiary mixture instead of lead. Upon impact with the target, the incendiary mixture burst into flame and ignites flammable material.

*Armor-Piercing-Incendiary Tracer Cartridge.* The bullet of the armor-piercing- incendiary-tracer cartridge combines the features of the armor-piercing, incendiary, and tracer bullets and may be used to replace those cartridges. The bullet consists of a hard steel core with compressed pyrotechnic mixture in the cavity in the base of the core. The core is covered by a gilding-metal jacket with incendiary mixture between the core point and jacket. This cartridge is for use in caliber .50 weapons only.

*Duplex Cartridge.* The duplex cartridge contains two special ball type bullets in tandem. The front bullet is positioned partially in the case neck, similarly to a standard ball bullet. The rear bullet, positioned completely within the case, is held in position by a compressed propellant charge. The base of the rear bullet is angled so that in flight, it follows a path slightly dispersed from that of the front bullet.

*Spotter-Tracer Cartridge.* The spotter-tracer cartridge is intended for use in coaxially mounted caliber .50 spotting rifles. The bullet trajectory closely approximates that of 106mm projectiles. Thus, this cartridge serves as a fire control device to verify weapon sight settings before firing 106mm weapons. The bullet contains an impact detonator and incendiary composition which identify the point of impact by flash and smoke.

*Blank Cartridge.* The blank cartridge is distinguished by absence of a bullet. It is used for simulated fire, in training maneuvers, and for saluting purposes. It is fired in rifles and machineguns equipped with blank firing attachments.

*Grenade Cartridge.* The grenade cartridge is used to propel rifle grenades and ground signals from launchers attached to rifles or carbines. All rifle grenade cartridges are distinguished by the rose petal (rosette crimp) closure of the case mouth.

*Frangible Cartridge.* The caliber .30 frangible cartridge, designed for aerial target training purposes, is also used in rifles and machineguns for target shooting. Caliber .30 and 7.62mm frangible cartridges are used in tank machineguns, firing single shot, for training in tank gunnery. At its normal velocity, the bullet, which is composed of powdered lead and friable plastic, will completely disintegrate upon striking a 3/16-inch aluminum alloy plate at 100 yards from the muzzle of the gun. These cartridges are not to be used on any but well ventilated indoor ranges to preclude buildup of toxic bullet dust. Inhalation of bullet dust may be injurious to health.

*Incendiary Cartridge.* The incendiary cartridge was designed for aircraft and ground weapon use to ignite combustible targets (e.g., vehicular and aircraft fuel tanks). The bullet contains a compressed incendiary mixture which ignites upon impact with the target. The incendiary cartridge has been superseded by the API and APIT cartridges because of their improved terminal ballistic effects.

### ***Special Purpose Cartridge***

*Cartridges of various calibers.* (figures. 10 through 12), which consist of different types of projectiles and bullets, are used for training and special purposes. They include the following:

- (1) Caliber .22 long rifle and caliber .38 and .45 wad-cutter cartridge for target shooting.
- (2) Caliber .45 blank cartridges fired in exercises to condition dogs to gun fire.
- (3) Caliber .22 hornet and .410 shotgun cartridges for firing in Air Force combination (survival) weapons for hunting purposes.
- (4) Caliber .45 line-throwing cartridges for firing in caliber .45 line-throwing rifles. The Navy uses these for throwing lines from ship-to-ship. The Army Signal Corps uses these for projecting signal wires over elevated terrain.

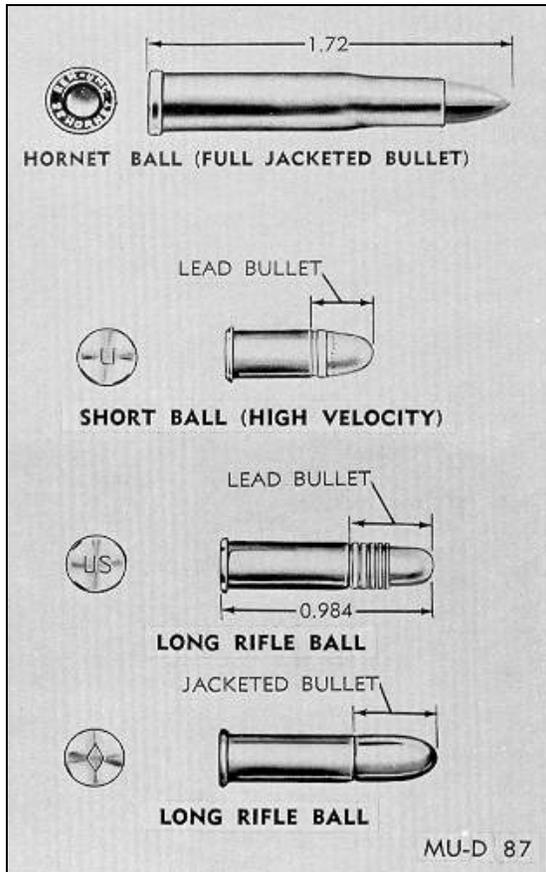


Figure 10. Caliber .22 cartridges

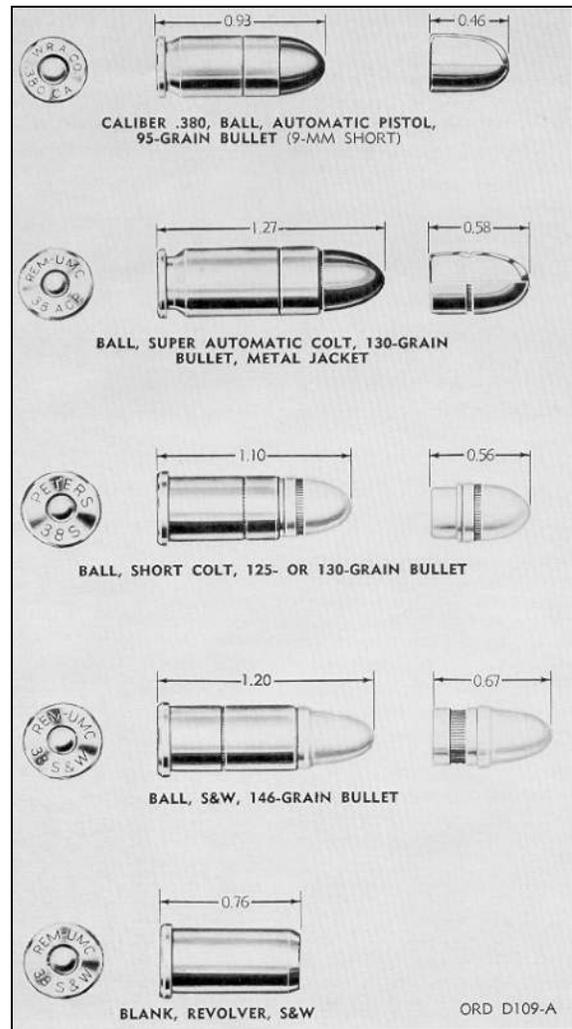


Figure 11. Caliber .38 cartridges

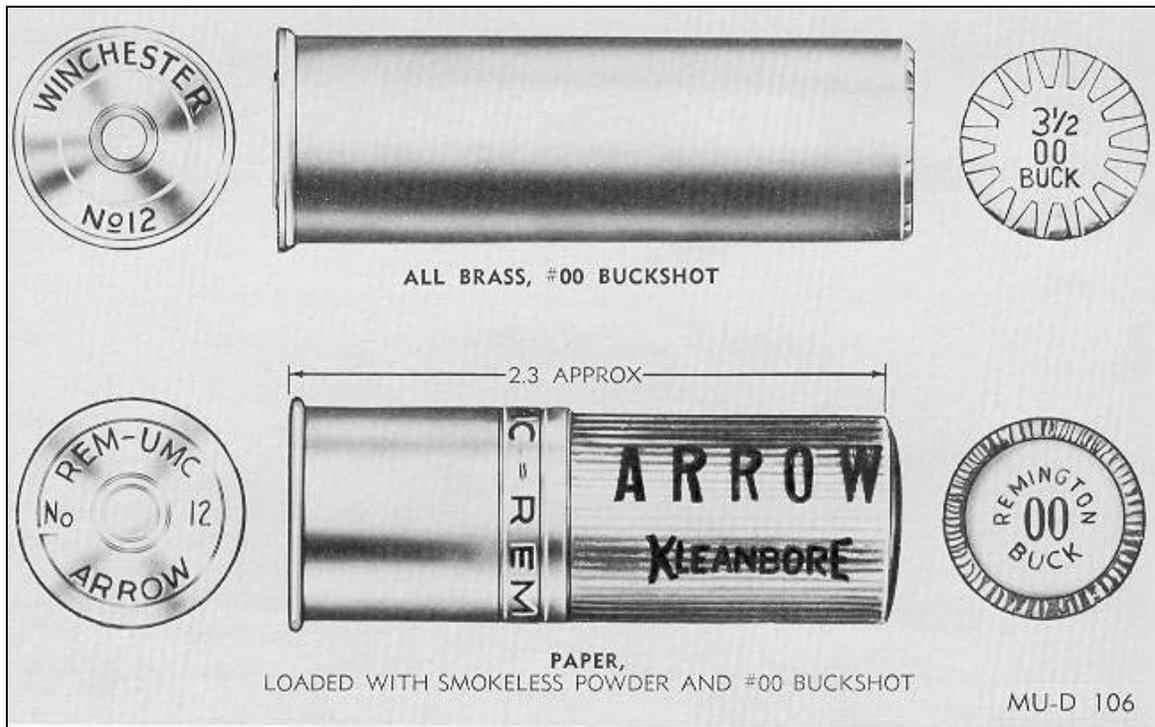


Figure 12. 12 gage shotgun shells

(5) Shotshells containing the designated shot sizes as required for the following:

- 12 gage #00 Buck for guard duty
- 12 gage #4 Buck for guerrilla purposes.
- 12 gage #6, 7½ and 8 shot for clay target shooting for training purposes.
- .410 gage #7 shot for caliber .22/.410 survival weapons maintained by aircraft

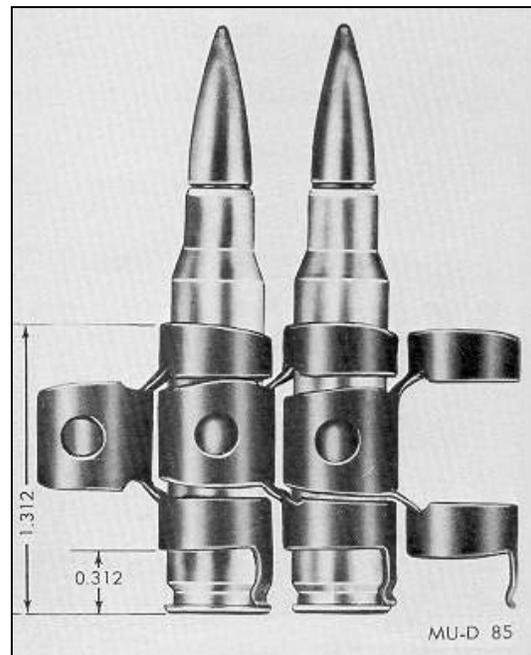


Figure 13. Linked 7.62-mm cartridges

Special purpose cartridges also include the following types of military cartridges:

(1) *Dummy*. The dummy cartridge is used for practice in loading weapons and simulated firing to detect flinching of personnel when firing weapons. It consists of a cartridge case and a ball bullet. Cartridge identification is by means of holes through the side of the case or longitudinal corrugations in the case and by the empty primer pocket.

(2) *Dummy inert-loaded*. This cartridge consists of a cartridge case, a ball bullet and inert granular material in the case simulating the weight and balance of a live cartridge. The exterior of the cartridge is identified by a black chemical finish and by the absence of a primer. This cartridge is used by installations for testing weapon function, linkage and feed chutes.

(3) *High-pressure test*. High-pressure test ammunition is specially loaded to produce pressures substantially in excess of the maximum average or individual pressures of the corresponding service cartridge. This cartridge is not for field issue. It is used only by armorers and weapons mechanics for proof firing of weapons (rifles, pistols, machine guns) at place of manufacture, test and repair. Because of excessive pressures developed by this type of ammunition, and the potential danger involved in firing, proofing of weapons is conducted only by authorized personnel from fixed and shielded rests by means of a lanyard or other remote control methods.

### **Metallic Links and Clip**

*Metallic links*. (figures. 13 and 14) are used with caliber .30, caliber .50, 5.56mm, 7.62mm and 20mm cartridges in machine guns. The links are made of steel, surface treated for rust prevention. They are used to assemble cartridges into linked belts of 100 to 750 cartridges per belt. The links must meet specific test and dimension requirements to assure satisfactory ammunition feed and functioning in the machine gun under all training and combat service conditions.

*Different configurations of cartridge clips*. These permit unitized packages of ammunition. This facilitates transfer of cartridges to appropriate magazines for caliber .30, 7.62mm and 5.56mm rifles. The caliber .30 eight-round clip feeds eight cartridges as a unit into the receiver of the rifle. The caliber .45 clip feeds three cartridges as a unit into the revolver cylinder. Five-round and eight-round clips are used with caliber .30 cartridges; five-round clips with 7.62mm cartridges; ten-round clips with caliber .30 carbine and 5.56-mm cartridges; and three-round clips with caliber .45 cartridges.

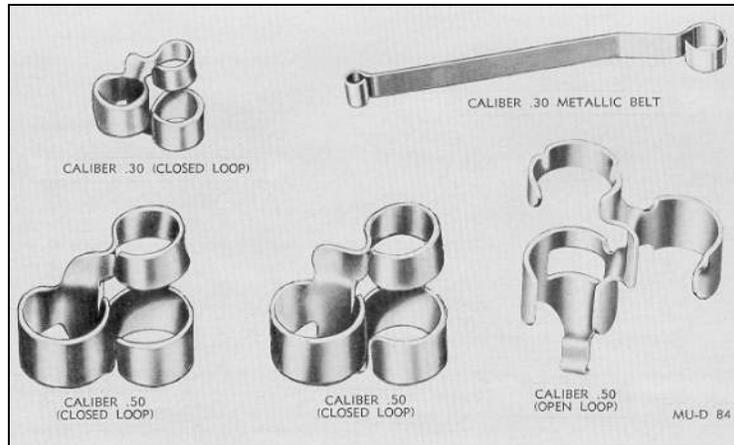


Figure 14. Links for caliber .30 and caliber .50 ammunition

*Identification Markings.* Each outer shipping container and all inner containers are fully marked to identify the ammunition. Wire-bound boxes are marked in black and ammunition boxes are painted olive drab, with markings in yellow. When linked ammunition is functionally packed, component lot numbers are replaced by a functional lot number. Typical packing and identification markings are illustrated in figures 15 through 17.

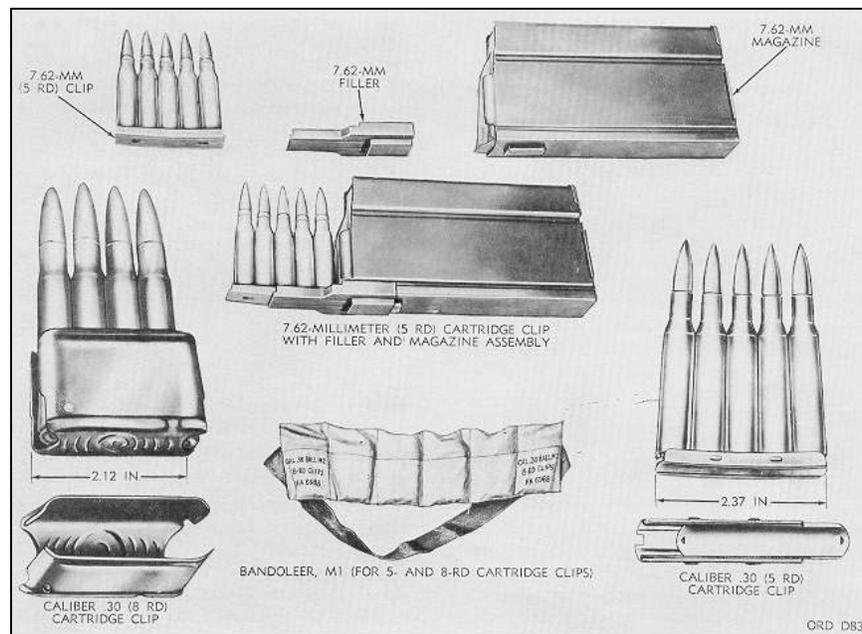


Figure 15. Cartridges, links, belt, cartons, bandoleers and ammunition box

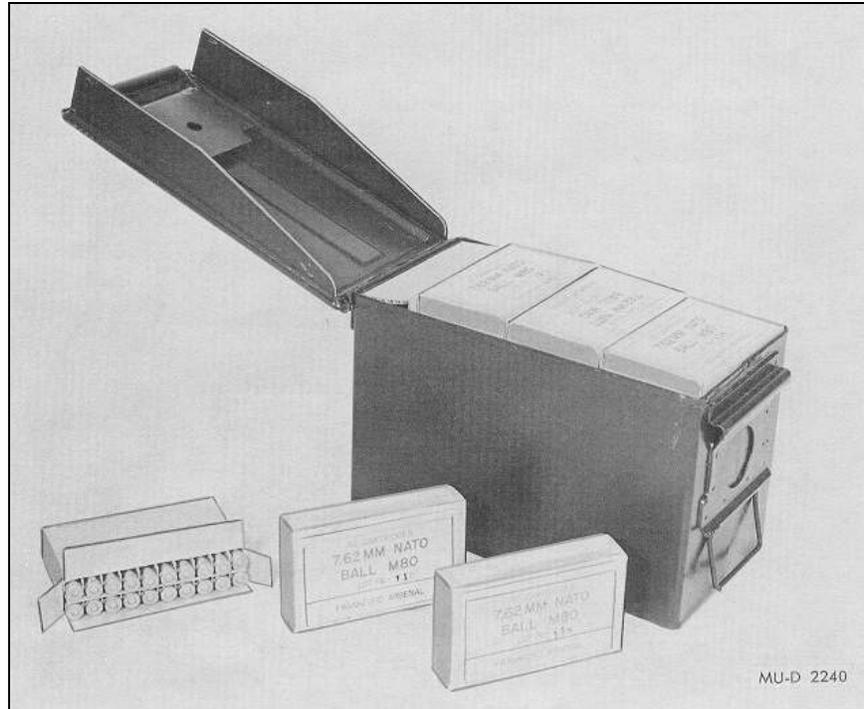


Figure 16. Cartridges, link belt, cartons, bandoleers and ammunition box

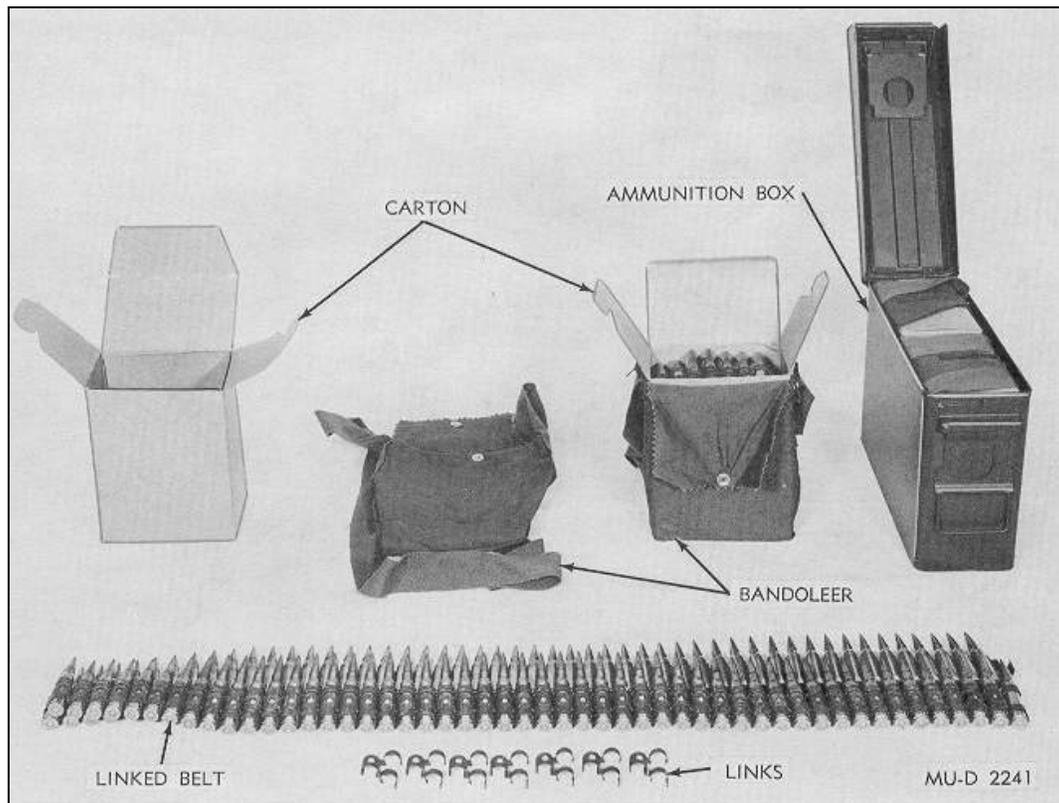


Figure 17. Cartridges, link belt, cartons, bandoleers and ammunition box

***Care, Handling and Preservation***

Small-arms ammunition is comparatively safe to handle. It is packed to withstand transportation, handling and storage conditions normally encountered in the field. However, consideration should be given to general handling precautions pertaining to ammunition and explosives.

**Reference:** This data is a reprint of Chapter 3, TM 9-1300-200, *Ammunition General*, October 1969

**APPENDIX E**

**TEXTUAL REFERENCES**

## TEXTUAL REFERENCES

- | <u>Section No.</u> | <u>Reference</u>   |
|--------------------|--|
| E-1                | U.S. Army Corps of Engineers - Sacramento<br>1992 <a href="#"><u>Site Survey Summary Sheet For DERP FUDS Site No. J08UT095100, Inventory Project Report Salt Lake City Army Air Base Gunnery Range.</u></a> Salt Lake County, UT, July 1992, prepared by Dynamac Corporation.  |
| E-2                | Hibbard, Charles G.<br>1999 <a href="#"><u>Fort Douglas, Utah A Frontier Fort 1862-1991.</u></a> Vestige Press, Fort Collins, CO. p.179-185.   |
| E-3                | War Department<br>1940 Letter: <a href="#"><u>Designation of Military Reservation, 23 October 1940.</u></a> RG 18, Entry 295A, Box 1736, Folder 680 Misc. NARA-College Park, MD.   |
| E-4                | Salt Lake City Army Air Base, Headquarters<br>1942 Letter: <a href="#"><u>Information on Post Reports,</u></a> 15 December, 1942, Accession 342-48A-5044, Box 5, Folder: History of Post, NPRC (MRC) – St. Louis, MO.  |
| E-5                | Headquarters Ninth Service Command<br>1942 <a href="#"><u>Letter from Captain Fortress to the Chief of Engineers, 30 December 1942.</u></a> Corps of Engineers Boxes, Box Salisburg-Salt Lake 02042930—02042962, Folder 121 2 Salt Lake City Airfield, UT. U.S. Air Force Historical Research Agency, Maxwell AFB, Montgomery, AL. |
| E-6                | Eighteenth Replacement Wing<br>1942 <a href="#"><u>History 18th Replacement Wing, 15 June 1942 to 31 December 1942 (Inclusive) Volume I.</u></a> Microfilm Roll C0184. US Air Force Historical Research Agency, Maxwell AFB, Montgomery, AL.   |
| E-7                | Assistant Chief Air Staff<br>1943 <a href="#"><u>Letter: Moving Target Ranges and Rifle Range, Army Air Base, Salt Lake City, Utah, 26 July 1943.</u></a> RG 18, Entry 292A, Box 1572, Folder 600 Misc SLCAAB, Utah. NARA-College Park, MD.  |

<u>Section No.</u>	<u>Reference</u>
E-8	U.S. Army Corps of Engineers 1944 Letter: <a href="#"><u>Construction Directive for Poorman Type Range, Salt Lake City, Utah, 22 January 1944</u></a> . Corps of Engineer Records, Box 02042980-02042994, Folder 614 Salt Lake City Airfield. US Air Force Historical Research Agency, Maxwell AFB, Montgomery, AL.
E-9	War Department 1943 Letter: <a href="#"><u>Acquisition of Land, 4 October 1943</u></a> . RG 18, Entry 292A, Box 1572, Folder 600 Misc SLCAAB, UT. NARA-College Park, MD.
E-10	U.S. Army Corps of Engineers, Area Engineer, Salt Lake City 1943-44 Series of OCE Form No 290: <a href="#"><u>Transfer of New Construction A.A. Base, Salt Lake City, Utah</u></a> . 16 November 1943-8 April 1944, Accession 342-48A-5044, Box 1, Folder: Transfer of Buildings, NPRC (MRC) – St. Louis, MO.
E-11	Post Engineer, 294 <sup>th</sup> AAF Base Unit (standby) 1944 OCE Form No 290: <a href="#"><u>Transfer of New Construction, Surplus of Real Estate Directive Pacific Division No. 482, Gunnery Range, Army Air Base, Salt Lake City, Utah</u></a> , 4 May 1944, Accession 342-48A-5044, Box 1, Folder: Transfer of Buildings, NPRC (MRC) – St. Louis, MO.
E-12	U.S. Army Corps of Engineers, Pacific Division 1944 <a href="#"><u>Surplus of Real Estate Directive Pacific Division No. 482</u></a> , 22 April 1944, Accession 342-48A-5044, Box 3, Folder: 601.53, NPRC (MRC) – St. Louis, MO.
E-13	Army Air Forces Headquarters, Office of Flying Safety 1944 Letter: <a href="#"><u>Standby Status, Salt Lake City AAB (municipal Airport No. 1 and Blythe AAF, Blythe, Calif.</u></a> 15 May 1944, RG 18, Entry 292A, Box 1572, Folder 600 Misc SLCAAB, Utah. NARA-College Park, MD.
E-14	Secretary of War 1943 <a href="#"><u>Letter: CE 601.53 Salt Lake Army Air Base GR. Gn, Range, Utah (U.S. vs Agnes R. Douse, et al.) SPELE</u></a> , 30 May 1944, RG 107, Entry 102, Box 132, Folder Army Air Base Salt Lake City, Utah. NARA-College Park, MD.

<u>Section No.</u>	<u>Reference</u>
E-15	Chief of Engineers, War Department 1943 <a href="#">Letter: <i>Additional Ranges, Salt Lake City Airdrome</i></a> , 9 September 1943, Corps of Engineer Box 15, Salt Lake 02042980. US Air Force Historical Research Agency, Maxwell AFB, Montgomery, AL.
E-16	War Department, HQ Army Air Forces 1943 Letter: <a href="#">Clearance Request for Ground Gunnery Range for Salt Lake City Army Air Base, Salt Lake City, Utah, 18 August 1943</a> . RG 18, Entry 292A, Box 1572, Folder 600 Misc. SLCAAB, UT, NARA- College Park, MD.
E-17	War Department 1944 Letter: <a href="#">Revocation of Directive Consecutive No. A19272, 14 March 1944</a> . Corps of Engineer Records, Box 02042980-02042994, Folder 614 Salt Lake City Airfield. US Air Force Historical Research Agency, Maxwell AFB, Montgomery, AL.
E-18	294 <sup>th</sup> AAF Base Unit (standby) 1944 Letter: <a href="#">Real Property Utilization Report</a> , 3 June 1944, Accession 342-48B-5044, Box 1, Notebook NPRC (MRC) – St. Louis, MO.
E-19	Department of the Army 1950 Letter: <a href="#">Office of the Chief of Engineers and the Director of the Bureau of Land Management</a> , 30 January 1950. Real Estate Division, Cadastral Section, Microfiche Drawer-Army 2 of 2. US Army Corps of Engineers, Sacramento Division, CA.

## **SECTION E-1**

### **U.S. Army Corps of Engineers – Sacramento**

***Site Survey Summary Sheet For DERP FUDS Site No. J08UT095100, Inventory Project Report Salt Lake City Army Air Base Gunnery Range***, Salt Lake County, UT, July 1992, prepared by Dynamac Corporation.

**DEFENSE ENVIRONMENTAL RESTORATION PROGRAM  
FORMERLY USED DEFENSE SITES**

**SALT LAKE CITY ARMY AIR BASE GUNNERY RANGE  
SALT LAKE COUNTY, UTAH**

**SITE NO. JOSUT095100**

**Prepared for:**

**SACRAMENTO DISTRICT, CORPS OF ENGINEERS  
1325 J Street  
Sacramento, CA 95814-4794**

**Prepared by:**

**DYNAMAC CORPORATION  
10365 Old Placerville Road  
Suite 230  
Sacramento, CA 95827**

**July, 1992**

SITE SURVEY SUMMARY SHEET  
FOR  
DERP-FUDS SITE NO. J08UT095100  
SALT LAKE CITY ARMY AIR BASE GUNNERY RANGE

SITE NAME(S): Salt Lake City Army Air Base Gunnery Range, also known as Salt Lake Aerial Gunnery Range.

LOCATION: Located 10 miles west of Salt Lake City, Salt Lake County, Utah. See attached Figure 1.

SITE HISTORY: Salt Lake City Army Air Base Gunnery Range consisted of 40.0 acres (public, land) acquired by transfer from the Department of the Interior, 6,212.57 acres by lease, and 24.24 acres easement by donation totaling 6,276.81 acres acquired between 1943 and 1944. The property was used by the Department of the Air Force as a gunnery range. Improvements included concrete gun placements at three separate gunnery ranges, eight support buildings, and latrines. All of the 6,276.81 acres comprising Salt Lake City Army Air Base Gunnery Range were declared surplus on April 22, 1944 and disposed of in the following manner: the 40.0 acres of public lands were relinquished to the Department of Interior on January 30, 1950; the lease of the 6,212.57 acres was terminated in May 1944; and the 24.24 acres easements were quitclaimed to the original owners on July 26, 1950. The Corps of Engineers determined on January 30, 1950 that no restoration nor decontamination work was necessary.

SITE VISIT: A site visit was conducted on the 10th and 11th of June 1992 by Ms. Margaret Berry and Mr. Jack Sutton of Dynamac Corporation. Before visiting the site, they obtained copies of aerial photographs detailing areas of interest from Intermountain Aerial Surveys.

The visual inspection revealed concrete foundations for approximately fifty to sixty gun mounts in three separate shooting ranges. (See Figures 3 through 5) The size and layout of the gun mounts indicate that a variety of artillery was used at the site. The gun mounts were lined up in a east-west direction extending approximately 1½ miles. The target area was most likely north of the mounts. Building foundations were located near each of the three shooting areas. Some of the foundations were concrete slabs while others consisted of raised concrete blocks. Three of the concrete slab foundations, roughly 8' x 12', had 4' x 8' x 4' deep concrete-lined holes in the center. The bottoms of the holes were covered with debris and dirt. It could not be determined if the bottom of the holes were concrete. Two-inch diameter pipes protruded vertically into either end of the hole and presumably joined via a 90 degree bend to the pipes projecting horizontally through the concrete at either end of the foundation. These foundations were possibly open-pit latrines.

The aerial photographs, dated 1960, indicate a grid pattern from one-half to one mile north of the gun mounts. The 1960 photograph also included a pattern on Sections 20, 28 and 29 that may indicate detonation impacts. The survey team visually inspected the likely areas of impact. The grid pattern was determined to be a series of canal-like ridges. Each grid line consisted of two ridges approximately three to four feet high and three to four feet apart. The grid lines were approximately thirty feet apart. The area was covered with tall grass and scrub brush, and had evidence of recent livestock grazing. No evidence of ordnance fragments or detonation patterns was found during the actual site inspection of Section 20. The only ordnance evidence consisted of one .50 caliber bullet tip found at the eastern-most artillery range (Section 28), and numerous plastic shotgun shells found throughout the site. The shotgun shells are most likely from recent activity.

Two large triangular-shaped earthen berms are located in Section 29. The berms are 6'-10' high, approximately 900' long on each side. Dirt roads run along the base of the berms, both inside and outside of the triangles. Each triangle has openings on two of the corners for roadways. Debris located within the bermed areas appeared to have been left within the last 5-10 years, including eight empty 55-gallon drums, a car battery, shotgun shells, clay pigeons, and other miscellaneous debris. Broken concrete blocks, 12" x 18", were littered throughout the area. The aerial photograph from 1960 revealed little or no vegetation in or around the berms. The area appears to have been scraped to obtain the dirt to construct the berms.

The Spring 1980 photograph indicated the return of vegetation, with vehicle tracks restricted to the roadways along the berms. Two structures are visible in the southern part of the eastern triangle in the 1980 photograph. These structures are rectangular and appear to be 20 to 50 feet long.

Ms. Megan Anderson of Bothwell and Swaner, owners of the west quarter of Section 29, was contacted via telephone on 2 July 1992. She was familiar with the triangular berms and reported that they were built by the Army in the 1940's. It was her understanding that the "bunkers" were used as a target area for artillery mounted on vehicles. She said that many spent copper shells have been found inside the bunkers.

Ms. Anderson also mentioned cleanup actions undertaken by Atlas Powder Company in 1989. She was not sure of the exact location, but thought it might have been north of the western bunker. She referred to this site as an "ammo dump".

Mr. Gary Fry and Mr. Don Lien of Western States Energy, a subsidiary of Atlas Powder, were contacted on 6 July 1992, regarding the site. Mr. Fry stated that a company named Wycoff utilized the site in the 1940's for dynamite and blasting cap storage. Wycoff changed names to Western States Energy, which was then taken over by a Canadian company and then by Atlas Powder (ICI). In the 1970's, two permanent storage buildings were built in the western bunker. When the Canadian company took over the site, they leased the western bunker to Buckley Powder, who was acquired by IRERCO Chemicals (SLC). Western States used the eastern bunker until the 1980's. All of the buildings were

reportedly burned down in 1985 by the current owner. Neither Mr. Fry or Mr. Lien reported any evidence of underground storage tanks or other hazards left behind by the DOD. They stated that .30 caliber bullets have been found in the bunkers, but no live ammunition was ever found. Mr. Lien has been with the company since the 1950's and Mr. Fry, since 1983.

Mr. David Hinkley, a local rancher, was contacted on 6 July 1992. Mr. Hinkley has lived in the immediate vicinity since 1939 and has leased portions of the project site since 1972 for annual spring livestock grazing. Mr. Hinkley stated that the bunkers were used to protect vehicles pulling machine gun practice targets on top of the berms. He thought that the largest firearms used on the site were .50 caliber machine guns. He has never found live ammunition or casings, just spent bullets. He said that his family hauled garbage from the site during DOD use, to feed pigs. No disposal sites were located onsite to his knowledge. He stated that the grid patterns seen on the aerial photographs were most likely from tile drains installed in the 1920's and 1930's to drain low areas for agriculture. He thought that Dupont had leased the bunkers for explosive storage for mining operations, and that they had removed the buildings and explosives when they left.

Two additional areas of interest were found: a concrete building foundation in the southeast corner of the site (Figure 6), and a series of concrete slabs in the southwest corner of the site (Figure 2). An aerial photograph examined at the County Records office, dated Spring 1980, showed a cleared area with possible building foundations in the southeastern corner of the site. The cleared area is bisected by a recently constructed farm road, running NW-SE. One building foundation was found at this location during the site visit. There was no evidence of underground storage tanks associated with this foundation, or with any of the foundations, at the site.

In the southwestern corner of the site, a series of small (roughly 5' x 5') concrete slabs were found (see Figure 2). The slabs were arranged to form a series of three semicircular patterns. The semicircles are defined by weathered dirt berms, approximately four feet wide by three feet high. Concrete blocks with tie-downs are located along the semicircles. Wood debris is strewn around the area. The exact use of this area could not be determined.

Thirteen water wells are located on the site, according to records obtained from the Utah Department of Water Resources on 12 June 1992. All of the wells are listed as irrigation, domestic, or stockwatering. One abandoned well is located in Section 29. The well records indicate that all of the wells are flowing wells. No record of contamination was found during a search of the County's computerized well tracking system.

Mr. Garth Marner of the Salt Lake City County Health Department was contacted on 10 June 1992 regarding underground storage tanks or hazardous waste problems at the site. He was not aware of any problems in the vicinity of the site.

Mr. Ray Dallings of the Utah State Police was contacted on 6 July 1992, regarding ordnance on the site. He did not have any record of complaints concerning munitions or explosives at the site.

CATEGORY OF HAZARD: OEW

PROJECT DESCRIPTION: OEW. Refer to CEHND for evaluation and determination of further action.

AVAILABLE STUDIES AND REPORTS: None

PA POC: Larry Bergmooser, CESPK-ED-E, US Corps of Engineers, Sacramento District, 916-557-7671.

DEFENSE ENVIRONMENTAL RESTORATION PROGRAM  
FORMERLY USED DEFENSE SITES  
FINDINGS AND DETERMINATION OF ELIGIBILITY  
SALT LAKE CITY ARMY AIR BASE GUNNERY RANGE  
SALT LAKE CITY, UTAH  
SITE NO. JOBUT095100

FINDINGS OF FACT

1. Salt Lake City Army Air Base Gunnery Range consisted of 40.0 acres (public land) acquired by transfer from the Department of the Interior, 6,212.57 acres by lease, and 24.24 acres easement by donation totaling 6,276.81 acres acquired between 1943 and 1944.
2. Salt Lake City Army Air Base Gunnery Range, also known as Salt Lake Aerial Gunnery Range. Improvements included concrete gun placements at three artillery ranges, supporting buildings, and latrines. The property was used by the Department of the Air Force as a gunnery range.
3. All of the 6,276.81 acres comprising Salt Lake City Army Air Base Gunnery Range were declared surplus on April 22, 1944 and disposed of in the following manner: The 40.0 acres of public lands were relinquished to the Department of Interior on January 30, 1950, the 6,212.57 acres of leases were terminated in May 1944, and the 24.24 acres easements were quitclaimed to the original owners on July 26, 1950. The Corps of Engineers determined on January 30, 1950 that no restoration nor decontamination work was necessary.

DETERMINATION

Based on the foregoing findings of fact, the Salt Lake City Army Air Base Gunnery Range has been determined to be formerly used by the Department of Defense (DOD). Therefore, it is eligible for funding under the Defense Environmental Restoration Program for Formerly Used Defense Sites established under 10 U.S.C: 2701 et seq.

\_\_\_\_\_  
DATE

\_\_\_\_\_  
MILTON HUNTER  
Brigadier General, U.S. Army  
Commanding

PROJECT SUMMARY SHEET  
FOR  
DERP-FUDS OEW PROJECT NO. J08UT095101  
SALT LAKE CITY AIR BASE GUNNERY RANGE  
SITE NO. J08UT095100

PROJECT DESCRIPTION: The site consists of a large gunnery range. Remnants of gun mounts indicate that a variety of ordnance was used on site.

PROJECT ELIGIBILITY: The gunnery range was initiated and operated by the Department of the Army during World War II.

POLICY CONSIDERATION: There are no policy considerations regarding this site.

PROPOSED PROJECT: Refer to CEHND for evaluation and determination of further action.

RAC WORKSHEET: Attached.

PA POC: Larry Bergmooser, CESPK ED-E, US Army Corps of Engineers, Sacramento District, 916-557-7671..

**PHOTOGRAPHIC LOG**

**SUBJECT:** Defense Environmental Restoration Program (DERP)  
SLC Army Air Base Gunnery Range

**SITE #:** J08UT095100

<u>PHOTO NO:</u>	<u>DESCRIPTION</u>
1	One of two triangular shaped berms, showing construction of the dirt road entryway. View N from the western corner of the eastern triangle. Located in Section 29.
2	View along SW leg of the eastern triangle. View SE. The berm ridge is 6 - 10' high. Roads are located along the berms, both inside and outside the triangles.
3	Long concrete foundation for possible gun mounts. Support bolts and pipes are located along the strip. Located in Section 29, see Figure 4.
4	Close-up of support on foundation in photo #3.
5	Concrete foundation 4 ½' x 8' with six-inch raised lip and rusted bolts. Concrete tie-downs, possibly for an antenna, are in the background. Located in Section 29, on the western end of the shooting range in Figure 4. View W.
6	Concrete foundation with 4' x 8' x 9' deep cut out. Possibly a latrine. Located in Section 29, see Figure 4.
7	Concrete pad, 15' square, with mounting bolts and one 2" pipe. One of 35 pads, see Figure 4.
8	Canal-like ridges, seen in aerial photo in Section 20. Two 3-4' high ridges, 3-4' apart. View N.
9	Canal-like ridges, Section 20. View W.

- 10 Five large rusted pipe sections, 10-12' diameter located in the NW portion of the site, just south of the gauging station. View N.
- 11 Concrete foundation 12' x 12' with 4' x 8' x 4' deep pit. Located in Section 27 in the area divided by a recently installed farmroad. Possible latrine. Concrete-block type building foundation visible in the background. View S.
- 12 Close-up of foundation in Photo 11, showing 2" pipe extending vertically up through slab and horizontally into the pit. View SW.
- 13 Concrete-block foundation mentioned in Photo #11 description. View S.
- 14 Row of 20 gun mounts in Section 28, consisting of 4" dia x 2' tall pipes mounted in concrete. Strips of concrete with wood remnants are visible between the pipes. View NE.
- 15 Close-up of gun mount in photo #14.
- 16 Bullet tip found approximately 300' North of the gun mounts in Photo #14.
- 17 Concrete foundation 12' x 12' with 4' x 5' x 4' deep hole, located NW of the above gun mounts. Three-inch diameter pipe, approximately 3' high is visible. View NNE.
- 18 Concrete foundation slab, approximately 5' x 8' with raised concrete post, trapezoidal in cross-section, with two mounting bolts protruding from the sides. Part of three semicircular arrangements of concrete slabs, pipes set in concrete, wood posts, and a earthen berm. Located in the SE corner of Section 30, see Figure 2. View W.
- 19 Concrete slab, 5' x 5', with wood remnants. View SW.
- 20 Concrete slab 5' x 5'. Four-inch pipe with hook-eye bolt located to the left of the slab. Slab from Photo #19 faintly visible to the left of the car. View SE.

- 21 Concrete slab, 5' x 5' with 3' dia., 1' deep circular depression. Located in SW corner of Section 29, (see Figure 3). One of five slabs. View W.
- 22 Four-inch diameter pipe, 4 ½' tall. Cap marked "Plugged and Abandoned 2/23/75". Located approximately 200' NNW of gun mounts in Photo #21. View E.
- 23 Concrete-block foundation south of gun mounts in Photo #21.
- 24 Concrete foundation, approximately 24' x 57' located S of gun mounts in Photo #21.



PHOTO 1

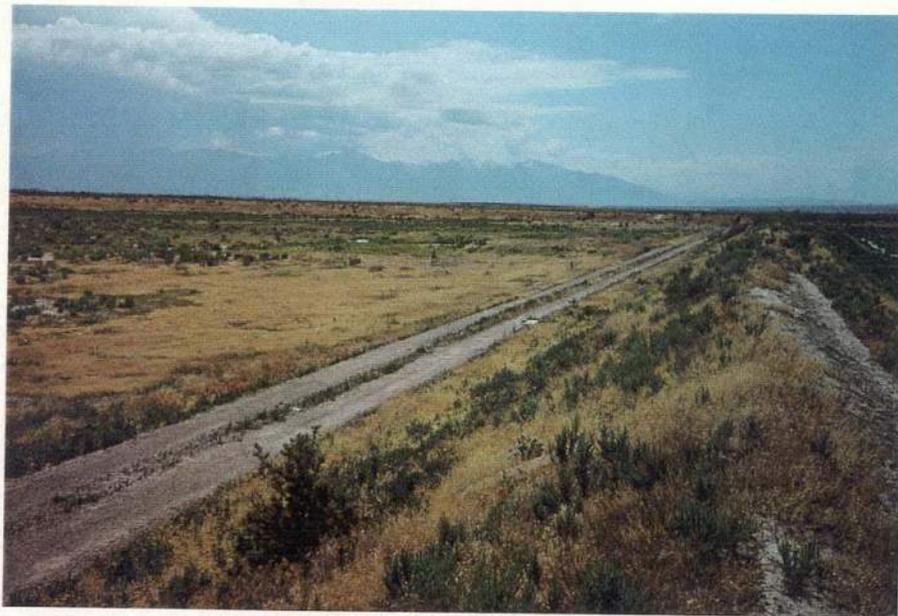


PHOTO 2

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DERP-FUDS  
11,12 JUNE 1992

SLC ARMY AIR BASE GUNNERY RANGE



PHOTO 3



PHOTO 4

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DERP-FUDS  
11,12 JUNE 1992

SLC ARMY AIR BASE GUNNERY RANGE



PHOTO 5



PHOTO 6

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DERP-FUDS  
11,12 JUNE 1992

SLC ARMY AIR BASE GUNNERY RANGE



PHOTO 7



PHOTO 8

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DERP-FUDS  
11,12 JUNE 1992

SLC ARMY AIR BASE GUNNERY RANGE



PHOTO 9



PHOTO 10

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DERP-FUDS  
11,12 JUNE 1992

SLC ARMY AIR BASE GUNNERY RANGE

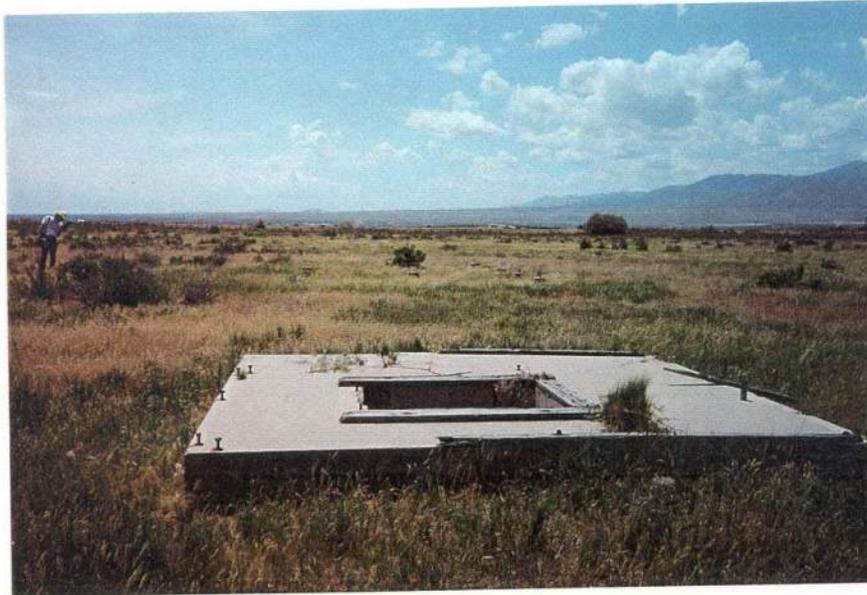


PHOTO 11



PHOTO 12

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DERP-FUDS  
11,12 JUNE 1992

SLC ARMY AIR BASE GUNNERY RANGE

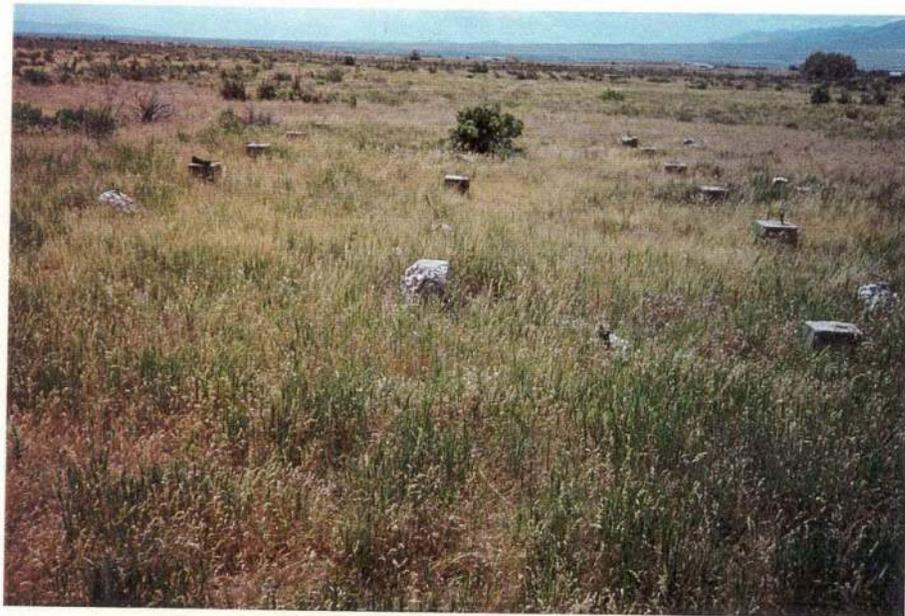


PHOTO 13

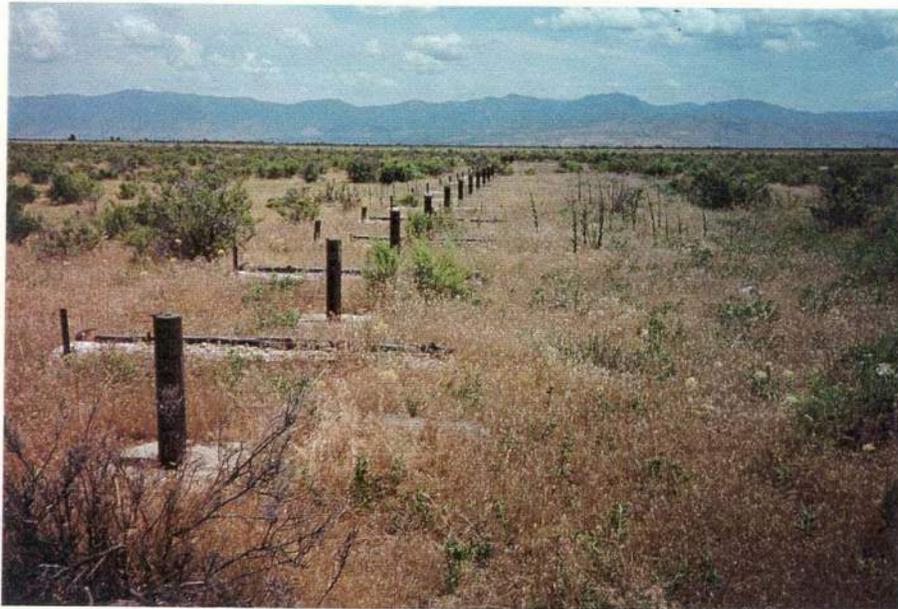


PHOTO 14

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DERP-FUDS  
11,12 JUNE 1992

SLC ARMY AIR BASE GUNNERY RANGE



PHOTO 15



PHOTO 16

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DERP-FUDS  
11,12 JUNE 1992

SLC ARMY AIR BASE GUNNERY RANGE



PHOTO 17



PHOTO 18



PHOTO 19



PHOTO 20



PHOTO 21



PHOTO 22

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DERP-FUDS  
11,12 JUNE 1992

SLC ARMY AIR BASE GUNNERY RANGE



PHOTO 23

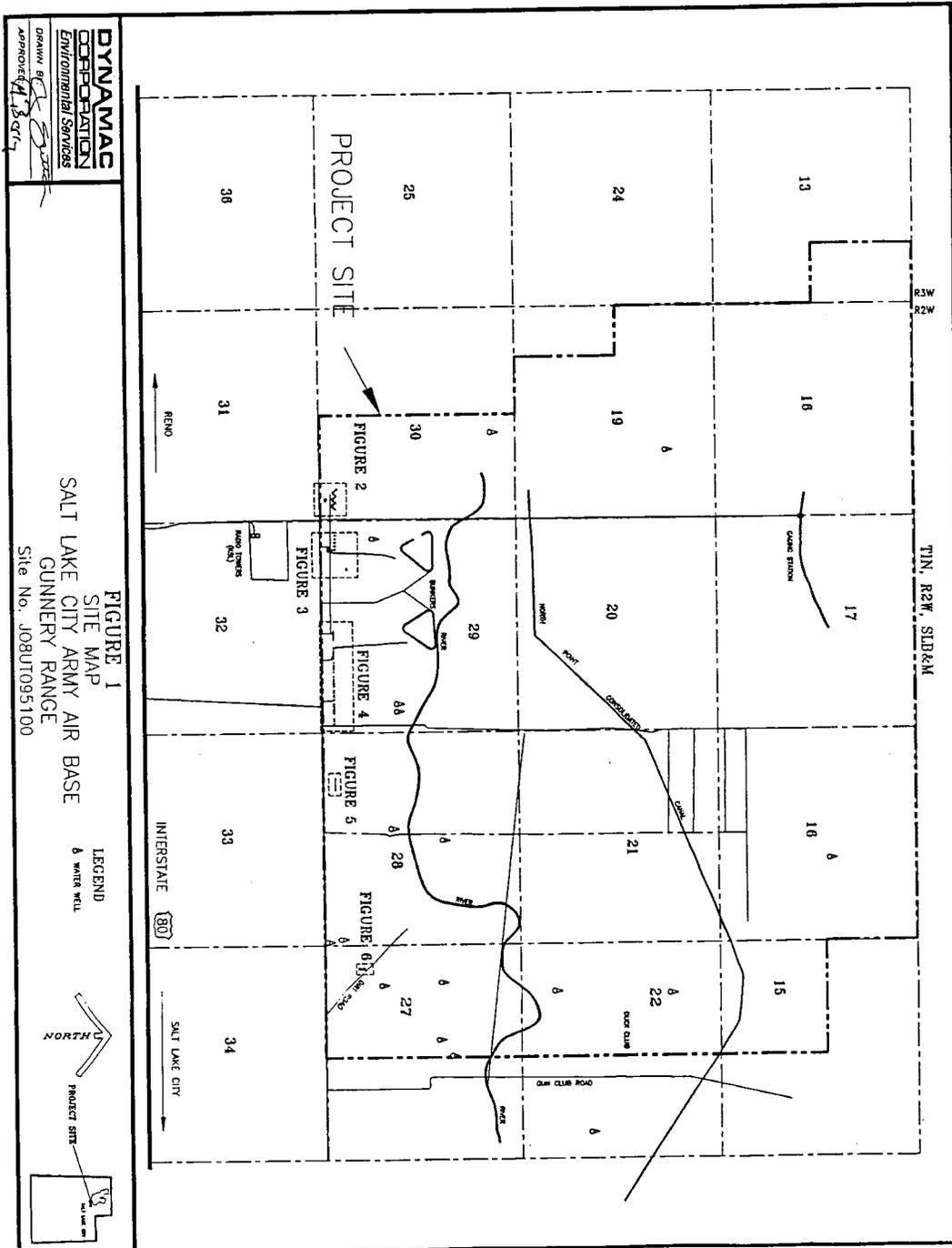


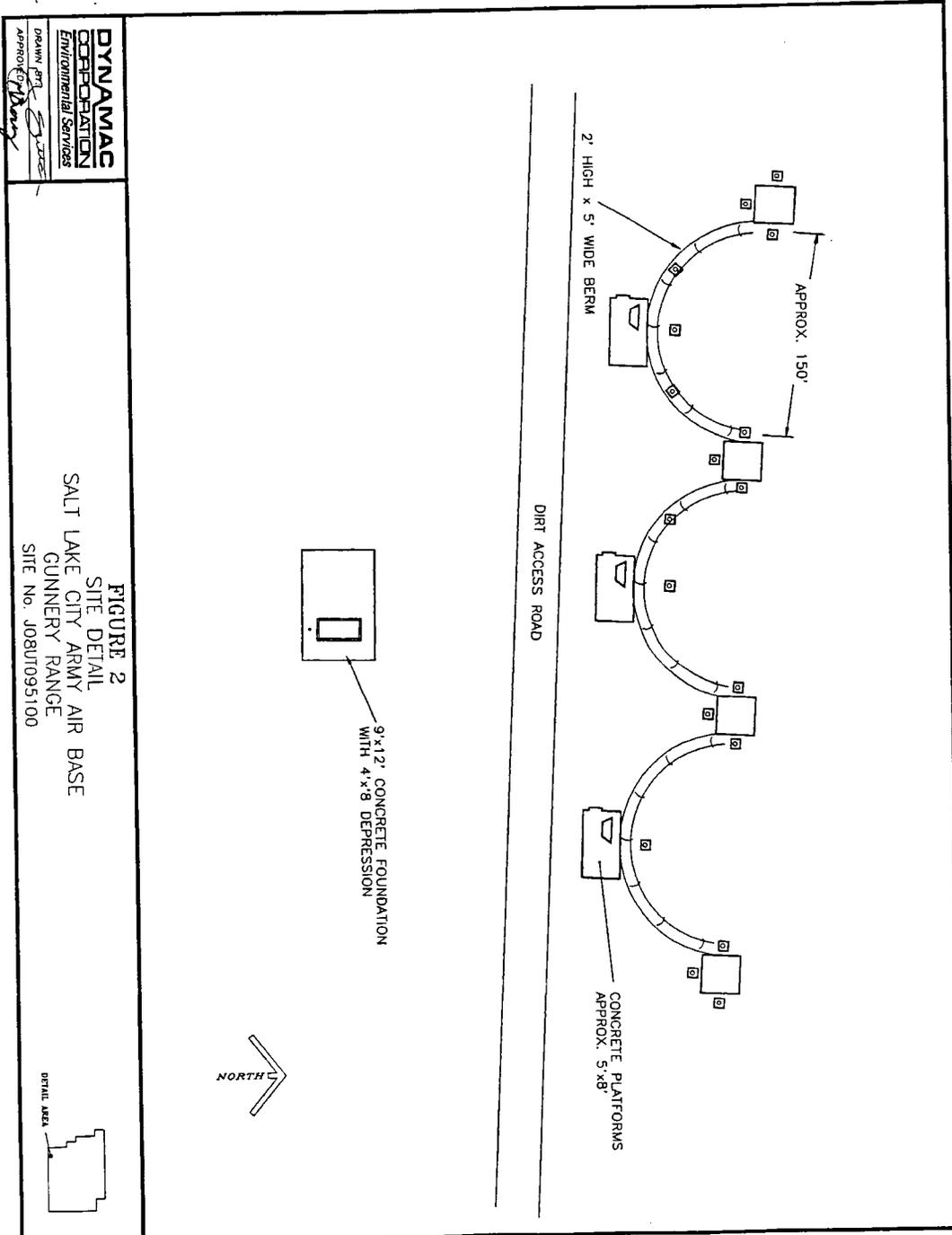
PHOTO 24

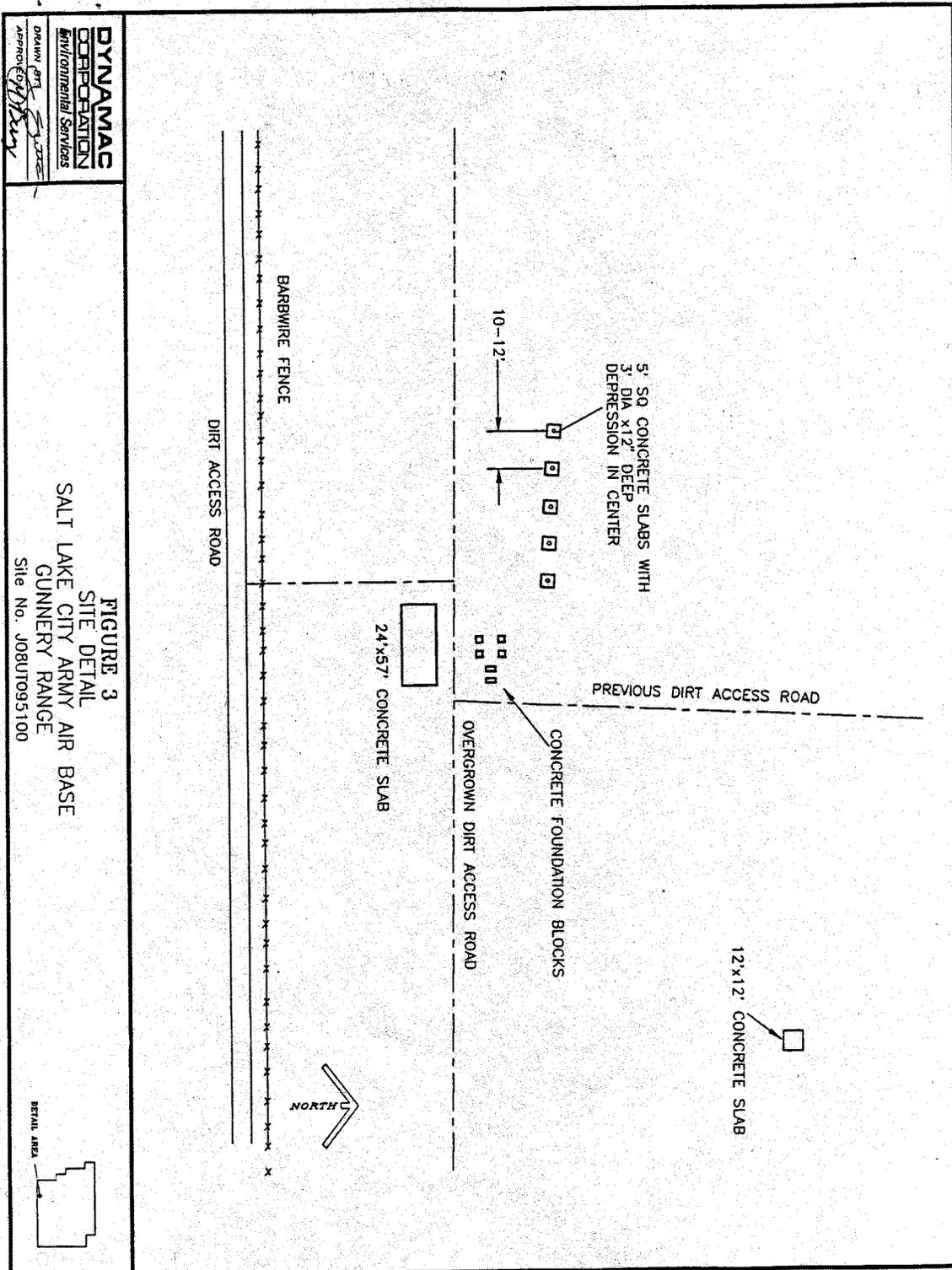
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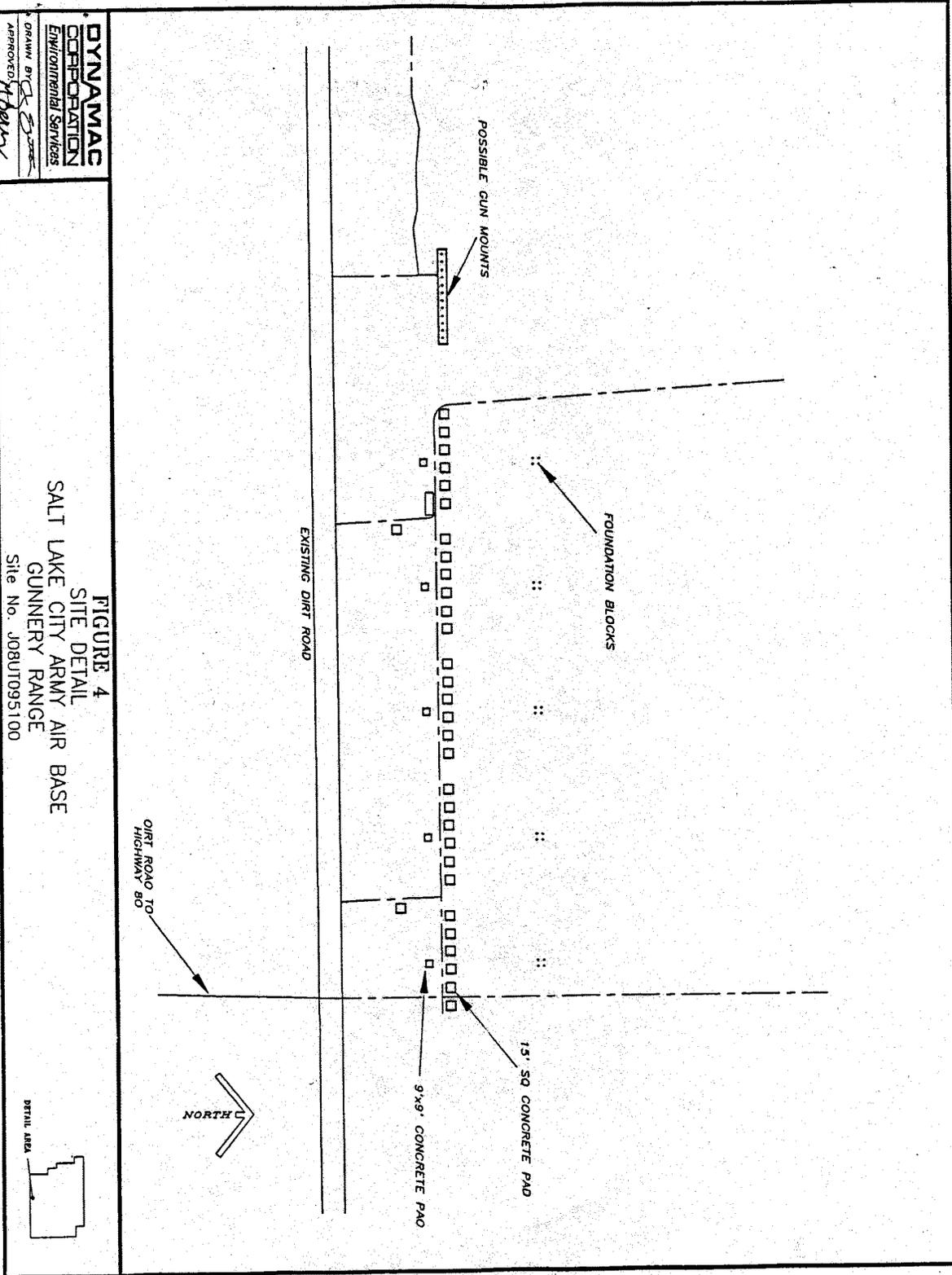
DERP-FUDS  
11,12 JUNE 1992

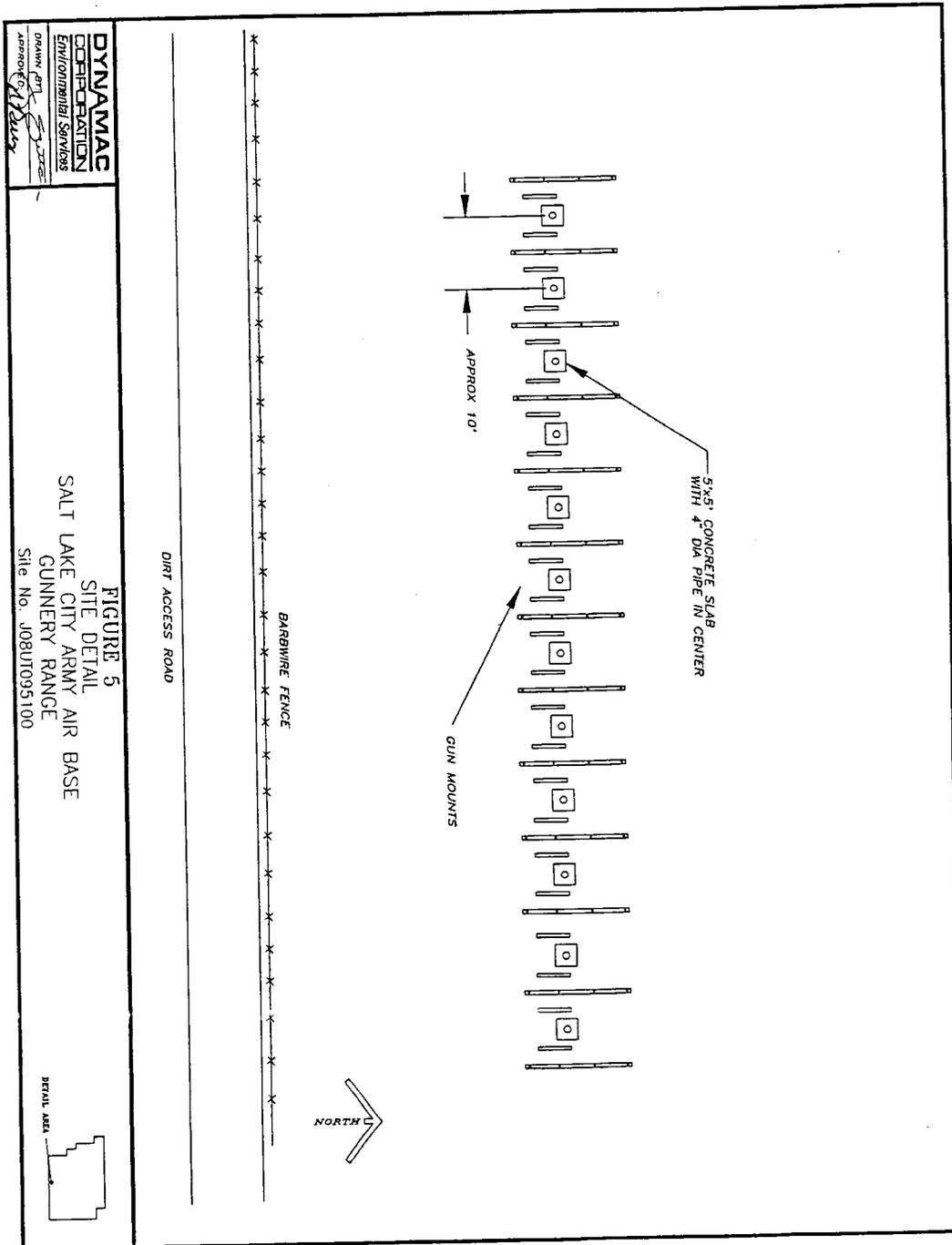
SLC ARMY AIR BASE GUNNERY RANGE

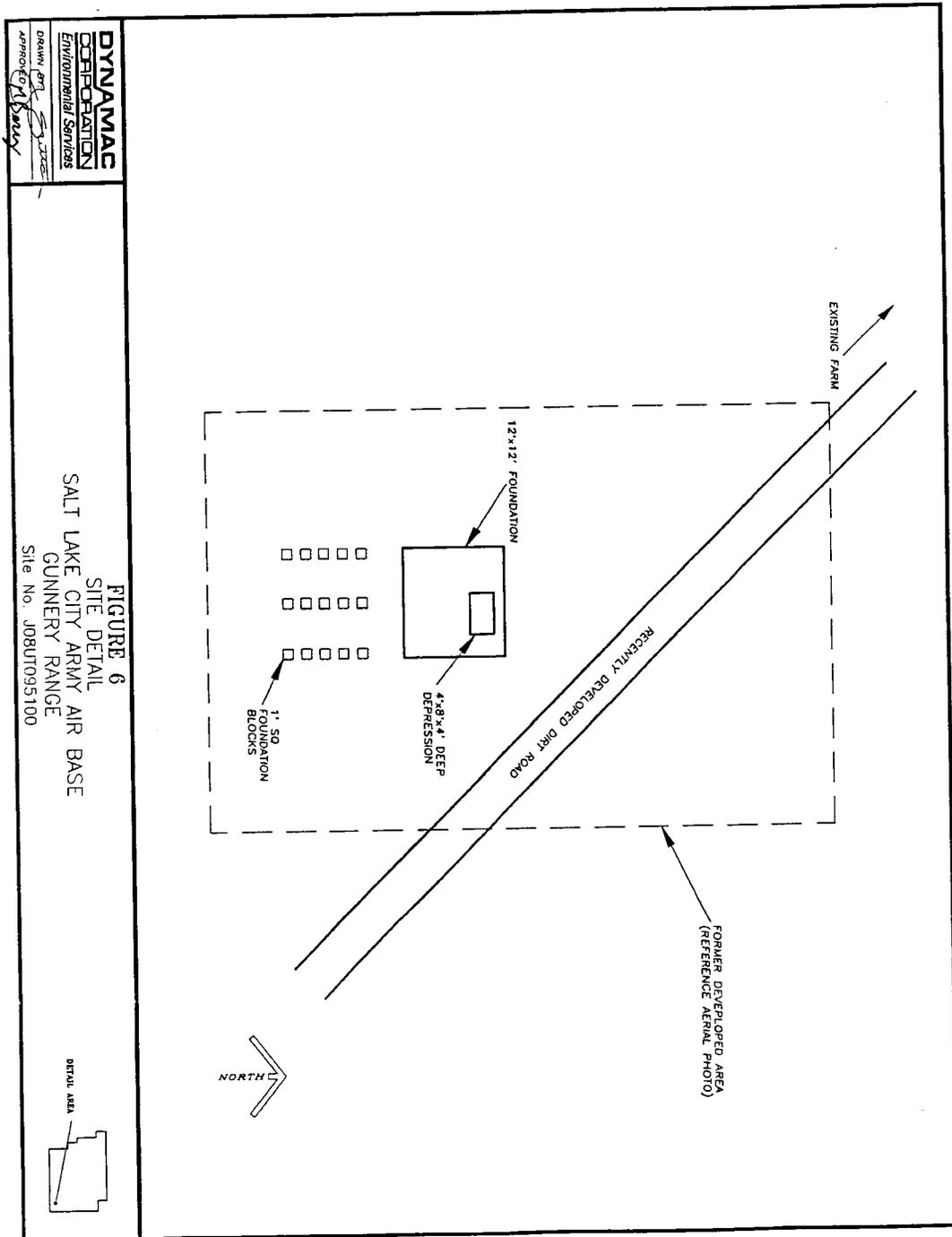












## **SECTION E-2**

**Hibbard, Charles G.**

**Fort Douglas, Utah A Frontier Fort 1862-1991. Vestige  
Press, Fort Collins, CO. p.179-185.**

**FORT DOUGLAS, UTAH  
1862 — 1991  
A FRONTIER FORT**

**- The Civil War to Desert Storm -**

**By**

**Charles G. Hibbard**

Vestige Press  
Fort Collins, Colorado, USA

**Published by VESTIGE PRESS**

908 Lochview Court  
Fort Collins, Colorado 80524  
Phone 970-490-2137

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Rodd R. Wagner

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History of Fort Douglas.  
Charles G. Hibbard. 1st ed.  
Appendix, End Notes, Bibliography, and Index  
1. Fort Douglas. 2. Military History. 3. Utah History. 4. California History.  
5. Colorado History. 6. Arizona History. 7. New Mexico History.  
8. Nevada History. 9. Spanish American War. 10. World War I. 11. World War II.  
I. Hibbard, Charles G. II. Title.

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MOVING THE FUTURE.....THROUGH PRESERVING THE PAST

## **Chapter XII**

### **WORLD WAR II: NEW MISSIONS**

Fort Douglas was witness to one of the earliest recorded flights in Utah during the summer of 1883 when Professor Park Van Tassell flew a balloon over Salt Lake City. He took off from Washington Square as more than 8,000 people gazed upward and rose to a height of 15,000 feet. The balloon drifted slowly eastward, eventually landing in Red Butte Canyon. It would be 33 years before Fort Douglas welcomed another flying machine when an aircraft landed in March 1916 on a short gravel strip south of the main post. The small airstrip was occasionally used for training, but Fort Douglas was not a suitable spot for an airport since the area was small and close to the mountains.<sup>1</sup>

The Postal Service began airmail service shortly after World War I and contracted with the airlines to carry the mail. In 1934 a Senate investigating committee charged that the Post Office favored large airlines, awarding them lucrative mail routes illegally. As a result, President Franklin D. Roosevelt asked Maj. Gen. Benjamin Foulois, Commander of the Army Air Corps, if the Army could assume the job of flying the airmail. General Foulois replied in the affirmative and the President cancelled all civil air mail contracts and the Army Air Corps began flying the mail on 19 February. The route structure was divided into Eastern, Central, and Western Zones and Lt. Col. Henry "Hap" H. Arnold was given command of the Western Zone. He set up his headquarters in the Newhouse Hotel in Salt Lake City and established a depot at the Municipal Airport to provide facilities for servicing airmail aircraft.

Flying the air mail was nearly a total disaster for the Army Air Corps. The aircraft were obsolete, the pilots were not trained for all-weather flying, and the weather was particularly bad that winter. A number of accidents with several deaths resulted and air mail service was suspended until new safety rules could be implemented. After the new safety rules were established and with the arrival of new airplanes, service was resumed. Performance improved but the President realized that the Air Corps could not continue flying the air mail indefinitely. Mail service was again put up for bids and Army fliers made their last postal flight on 7 May 1934.<sup>2</sup>

In 1935 the Wilcox-Wilson Bill (Public Law 263) provided for "the location of additional permanent Air Corps stations and depots in strategic areas of the United States...." and by 1938 substantial funds had been appropriated. As war loomed ever nearer, the Army Air Corps intensified its search for locations for new airbases and large isolated areas suitable for bombing and gunnery ranges. The salt flats 120 miles west of Salt Lake City were ideal; it was a very isolated area with scant population, the land was of little



**Major Ralph Royce, center, Commander 1st Pursuit Group in 1930's  
Commander 20th Bomb Wing in 1940**

value for farming, and it was served by a transcontinental railroad and highway. Salt Lake City had a fine airport and nearby Fort Douglas was available for personnel housing and administration. Maj. Gen. (General of the Army) Arnold, Chief of the Army Air Corps, was familiar with Salt Lake from his airmail days and considered it an ideal site for an airbase or depot.<sup>3</sup>

Germany invaded Poland on 1 September 1939 and World War II quickly engulfed most of western Europe as both England and France, in accordance with their mutual defense treaties, declared war on Germany. The acceleration of events forced the U. S. Government to act quickly and in February 1940 Congress appropriated funds for the acquisition of land for bombing and gunnery range sites. Wendover, Utah, was selected as a site in April and the Army Air Corps began negotiating with the Department of Interior for some three million acres. Local ranchers protested the selection, claiming that it would "wipe out one hundred outfits." Their opposition was brushed aside, but the Department of Interior would only approve 1,560,000 acres and an agreement was reached in September. Despite the reluctance of the Department of Interior, President Roosevelt authorized an additional 262,200 acres for administrative and person-

nel facilities in February 1941, and the total acreage of 1,822,200 made Wendover the largest gunnery range in the world.

The War Department allocated \$558,900 in September for construction of targets, temporary and operating facilities at Wendover and work began in early November 1940. Temporary facilities as three runways (150' by 8,000'), ramps, taxiways, and runway areas were soon under construction. An additional \$1 million was authorized in May of the next year and barracks, administrative maintenance buildings, warehouses, a power house, ordnance warehouses, ammunition storage pensary, and a theater quickly began to rise from the desert.<sup>4</sup>

A Bombing and Gunnery Range Detachment with a mission of maintaining the range at Wendover was activated at Fort Douglas in July and attached to the 6th Air Base Squadron. Bombing and gunnery had already been set up earlier in the year by personnel from Fort Douglas and practice bombing was underway by Christmas 1940. Wendover Field was established as a sub-post of Fort Douglas when a cadre of two officers and ten enlisted men from the Bombing and Gunnery Detachment moved to the remote base. Early in the month, 35 men from the detachment were sent to the range to perform maintenance on the targets.<sup>5</sup> The range was located about 60 miles north of the base in the middle of the desert and it is still a very desolate area. Private Byron Dussler, a member of the detachment, wrote to his cousins:

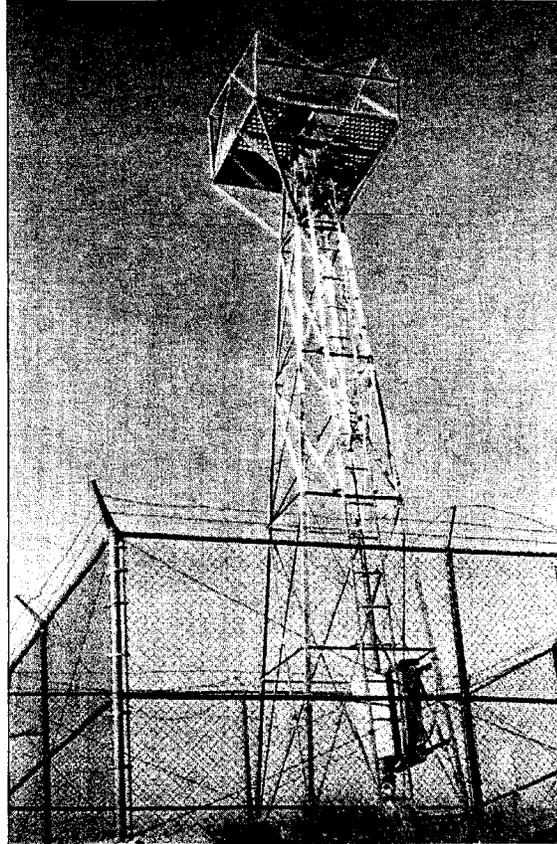
To reach the targets we drove where there weren't any roads....The low flat surface sand and salt glare in the sunlight, and on them nothing grows....We worked several hours filling flares with kerosene which outline the night targets, and spreading used crankcase oil in an enormous circle to outline a day target. There were broken and twisted practice bombs scattered everywhere, but as we worked, the world around us was silent. The only sounds we heard were those of our voices or our footsteps on sand and salt.<sup>6</sup>

The desert base was officially activated as Wendover Field on 28 March 1942, and thereafter was no longer assigned to Fort Douglas. Wendover Field performed an important part in the training of heavy bomb groups which saw service in both the Pacific and European theaters of war. The most famous unit trained at Wendover was the highly secret 509th Composite Group which arrived in September 1945. Its mission was to train with B-29s in preparation for dropping atomic bombs on Japan. In addition, the group assembled bombs filled with concrete to test the aerodynamics of proposed atomic bombs as they were called. During the 509th Group's stay, Wendover was a very secret place and its true role in World War II has never been fully revealed.<sup>7</sup>

Meanwhile, events at Salt Lake City Municipal Airport were moving equally fast and it was designated an Army Air Corps base by order of the Secretary of War on 2 August 1940. Ord construction of a hangar (140' X 300'), barracks for 800 to 900 men, runway, warm-up strip, apartment houses and administrative buildings were issued less than a week later. The field comprised 1,000 acres on the east side of Salt Lake airport and construction began in mid-August. Many of these buildings remain and belong to the Salt Lake National Guard. At the same time, orders were sent to Hanford, California, to transfer three officers and 100 enlisted men to Fort Douglas to relieve the few members of the 38th Infantry.<sup>8</sup>

#### **Fort Douglas: An Airbase**

The Seventh Bomb Group (Heavy) was then transferred to Fort Douglas and Colonel Robert C. Commander, arrived from Hamilton Field on 20 August, preceding the arrival of the group. Four days later Colonel Shepley W. Fitzgerald arrived with some 100 men to assume command of Fort Douglas. He relieved the remaining members of the 38th Infantry who then departed for Fort Sam Houston to



Airplane Beacon platform, raised by mules in 1930.

regiment. On 2 September the Adjutant General's Office forwarded a letter to the commanding officer of Fort Douglas notifying him that the Fort was transferred to GHQ Air Force. Fort Douglas was now an Army Air Base with flying facilities at Salt Lake Army Air Base, the municipal airport, some five miles west of the fort.<sup>9</sup>

The third of September was a gala day for Salt Lake City as the 7th Bomb Group and the 88th Reconnaissance Squadron arrived from Hamilton Field, California. A large crowd witnessed the flyover and the people of Salt Lake City greeted Colonel Ralph Royce, Commander of the Seventh, with enthusiasm as he stepped from the huge Flying Fortress. He and his crews were warmly welcomed by Governor Henry W. Blood of Utah, who said in greeting, "This is a thrilling moment for any Utah citizen. We welcome you to our state. May you remain long enough to become acquainted with the real hospitality of the people of the state of Utah, to become one of us." An "Open House" was held that afternoon and the public was able to examine the new aircraft.<sup>10</sup>

The remainder of the Seventh Bombardment Group arrived a few days later with an additional 112 officers and 600 enlisted men. Lineage of the Seventh dated back to 1919 when it was organized as the First Army Observation Group. Inactivated in 1921, the group was redesignated 7th

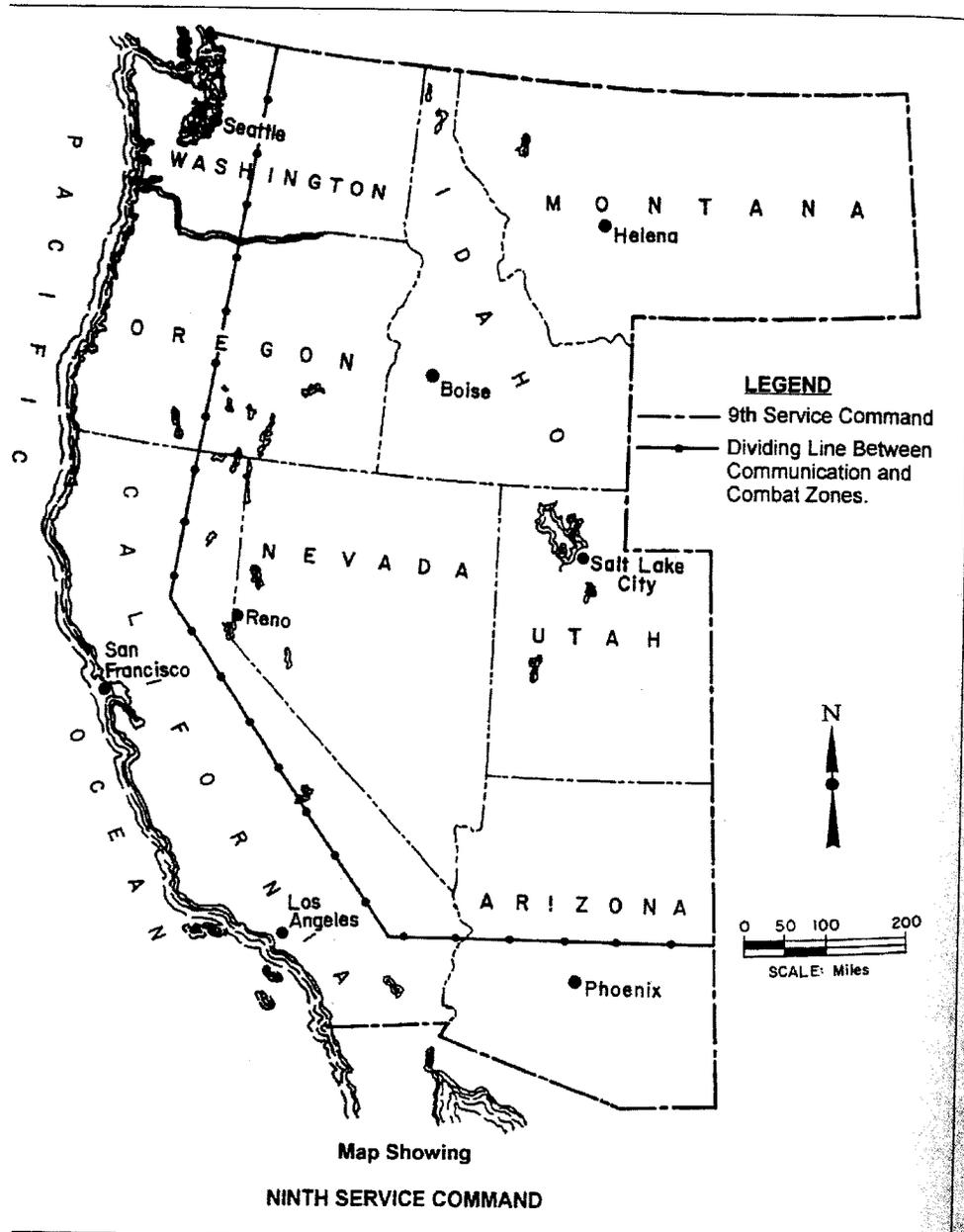
Bombardment Group in 1923 and activated again five years later at Rockwell Field, Calif. The Group served at several fields in California during the 1930s, the last stop was Rockwell Field in 1937, remaining there until it was transferred to Fort Douglas in September 1941. The 20th Bombardment Wing which was activated at Fort Douglas in January 1941. The 20th directed the training of three bomb groups until it was inactivated in September 1941. It was later reactivated in 1942 at MacDill, Florida, and served overseas during the war.<sup>11</sup>

A week after the arrival of the 7th Bomb Group, the War Department authorized an additional \$1,000,000 for aviation facilities at Salt Lake Air Base and the 1941-1942 military construction budget provided additional funds for Fort Douglas Army Air Base. The Salt Lake Recruit and Reception Center was authorized \$121,775 for four barracks and other quarters, providing facilities for 500 new recruits. WPA funds also provided \$227,679 for construction and maintenance and a building for housing new recruits.<sup>12</sup>

An Air Base Squadron was activated at Fort Douglas on 15 September with two officers and 100 enlisted men and by the end of October all four flying squadrons were at the Fort: the 88th Reconnaissance Squadron, and the 9th, 11th, and 22nd Bombardment Squadrons, a total of 1,982 officers and 10,000 enlisted men. The bomb squadrons were initially assigned ten Douglas two-engine B-18 medium bombers, eleven B-17 four-engine B-17 heavy bombers, and the reconnaissance squadron six Northrop single engine aircraft. Ultimately, the B-18s were replaced by B-17s for a total of thirty-four "Flying Fortresses". The men lived at Fort Douglas but the aircraft were based at the Salt Lake Air Base. Housing for typical World War II wooden barracks, was completed in November at Fort Douglas. Some barracks, considered temporary at the time, are still in use by the University. Training was given and on 6 October with the arrival of Maj. Gen. Arnold to inspect the 7th Bomb Group and 5th Air Force. Unfortunately, tragedy marred an eventful month the next day when an A-17, attached to the 88th Bomb Squadron crashed in Little Cottonwood Canyon, killing the pilot, Lieutenant James E. Private Homer C. Lloyd. A day later another plane was forced down at Lake Point, heavily damaged aircraft, but no one was injured.<sup>13</sup>

Fort Douglas was a very busy base in the months before Pearl Harbor so abruptly ended activities; training of the 7th Bomb Group was only a part of the activities. In the fall of 1940 Roosevelt proposed to Congress that a draft law be enacted and, after much debate, a Selective Training and Service Act was passed in October. The new recruits, as in World War I, began their military career at Fort Douglas. In 1941, mentioned earlier, a Recruit Reception Center was authorized and construction began in November 1941 and included a number of two-story barracks, an administration building, hospital ward, and a Post Exchange, all built at a cost of \$270,179. E. J. Chytraus, General Contractors of Salt Lake City, was the primary contractor. In 1942 the reception center was expanded with additional hospital, a maintenance building, fire station, and service club. The Post was then large enough to house 1,000 men and the reception center was capable of inducting 1,000 men a month. A Record of Equipment and Buildings report was submitted in July 1941 and listed base population as 245 officers, 7,000 enlisted men, 1,784 animals, and 3,623 motor vehicles, while the hospital was expanded from 60 to 119 beds. These totals do not include the men temporarily residing in the Reception Center.<sup>14</sup>

By the end of November 1940, Fort Douglas comprised three very busy, separate bases: the Salt Lake Airbase, and the Wendover Bombing and Gunnery Range. The men of the 20th Wing were based at Fort Douglas but were flying aircraft off Salt Lake City Army Air Base and were practicing at the Wendover Bombing and Gunnery Range. In late November 24 B-17s and B-18s of the 7th Bombardment Group and the planes of the 88th Reconnaissance Squadron flew to March Field, California, on their way to the Philippines.



Map Showing  
NINTH SERVICE COMMAND  
World War II Combat Zone and Service Command - 1942

maneuver outside of Utah. When they returned to Salt Lake on 2 December, the group carried out their first night bombing practice mission at Wendover Bombing Range.

Construction at Salt Lake Air Base had proceeded far enough by January 1941 so that bomb squadrons could begin moving to the new airbase. The 9th Bomb Squadron moved on the thirteenth and the other squadrons completed their moves at three-day intervals. This transfer made facilities available at Fort Douglas and the 20th Bombardment Wing was activated on 15 January and Brig. Gen. W. H. Frank assumed command of the Wing and Fort Douglas on 6 February. Simultaneously, the 39th and 42nd Bombardment Groups were also activated at Fort Douglas and assigned to the 20th Bombardment Wing, giving the wing responsibility for three groups. The 39th was assigned to train in B-17 Flying Fortresses and the 42nd, initially in B-18s, switching to B-25s when they became available.

The 42nd Bomb Group moved to Boise, Idaho, in June and finally transferred to the Pacific Theater in 1943 where they participated in the Solomons and New Guinea campaigns, moving to the Philippines in 1944. The 39th moved to Geiger Field, Washington, in early July and served as a replacement training unit for two years. Receiving B-29s in 1944, the group moved overseas to Guam in early 1945 where they participated in the bombing campaign against Japan until the end of the war.

Training continued at a frantic pace with long navigation flights around the western United States and bombing and gunnery missions at Wendover. On 1 February, the 7th Bomb Group was presented the Colombian Trophy for having completed 10,000 flying hours with an accident rate of only .138 per one thousand hours. The trophy had originally been presented to GHQ Air Force in 1935 by Major Mendoz of the Colombian Army. General Arnold arrived in the middle of February to inspect Salt Lake Air Base and the 20th Bombardment Wing. Within two weeks General Frank was gone and Colonel Fitzgerald briefly assumed command of the 20th and Fort Douglas, only to be succeeded by Colonel Ralph Royce on 2 March 1941. Command again changed when Colonel Lowell H. Smith was named commander on the 6th of May with the promotion of Colonel Royce to Brigadier General.

Salt Lake Airbase was bursting at the seams with the activation of two new groups. In June the city purchased an additional 80 acres of land and with 80 acres already owned, leased the additional land to the Air Corps, doubling the size of the airbase to 326 acres. A new 25-year lease was signed with Salt Lake City at \$1 a year for maintenance of the field and \$1 a year for lease of the land.<sup>15</sup>

On a happy note, the Army Air Force authorized several Air Force bands in September 1941 and a band was formed in October, the first assigned to the Fort since the 38th Infantry departed. Fort Douglas was also assigned the job of testing the new Army "Jeep" and the unique four-wheel drive vehicles began arriving in April. Nine of the Jeeps were received initially and fifty more were eventually tested. One officer reported that he hadn't found a hill the jeep wouldn't climb, noting, "They keep going up the hill as long as the front end can stay on the ground."<sup>16</sup>

The 7th Bombardment Group departed Salt Lake Airbase in the middle of November, headed for the Philippine Islands. Everyone believed that war with Japan was imminent and that the first attack would probably be against the Philippines. President Roosevelt and the War Department were doing their best to reinforce our meager defenses in that far-off land and the B-17s of the Seventh were only a part of the military buildup, although considered a major addition. It would take several days to reach the Philippines and their first refueling stop was Hamilton Field, California, just north of San Francisco. General Arnold was on hand to wish the group "Bon Voyage" as they took off on the evening of 6 December 1941 for Hickam Field on the island of Oahu near the naval base at Pearl Harbor. There were twelve aircraft, two flights of six each, and they were flying with guns encased in grease and without ammunition to save weight on the long fourteen-hour flight to Hawaii.

The first flight of six aircraft was due to land at approximately 0800 Hawaii time and as they neared Oahu, Major Truman H. Landon observed black smoke billowing up from both Pearl Harbor and Hickam Field. At about the same time he observed several planes approaching and thought they were American



**General Truman H. Landon**

planes preparing to act as an honorary escort. He quickly realized his error and shouted, "Damn it, those are Japs." By skillful evasive tactics he avoided three Japanese Zeros which were on his tail and he and his wingman finally landed at Haleiwa Field on the north end of the island. The four other planes also attempted to land at Hickam and three were successful, but one plane piloted by Lt. Frank P. Bostrom dove to treetop level and finally landed on a golf course. The second flight of six B-17s arrived during the lull between waves of attacking Japanese planes and four were able to land safely. The fifth plane was hit by machine gun fire setting off magnesium flares, burning the tail off just as it touched down. The sixth B-17 fled eastward until the pilot sighted Bellows Field and landed on the short fighter strip, running off the

runway where the landing gear snapped and the fortress came to a stop on its belly. Only one plane of the twelve was destroyed and three were damaged, but unfortunately, one man, the flight surgeon, was killed.<sup>17</sup>

#### **Ninth Corps Area Moves to Fort Douglas**

The attack on Pearl Harbor stunned the people of the United States, and none more so than our political and military leadership. Virtual destruction of the Pacific fleet meant that the Japanese could strike anywhere, possibly even the Pacific coast. There were fearful reports of landings along the coast from California to Washington, enemy aircraft were sighted and paratroopers were being dropped inland. People were panic-stricken and the Army and Navy did not have any idea what was possible or probable. A blackout was imposed on the Pacific coast and plans were made to move vital military headquarters and depots inland.

A conference was held on 9 December in the office of the Deputy Chief of Staff and a memo was drafted for the Commanding General of Field Forces which read, "The War Plans Division therefore anticipated the probability of a new Japanese attack on Hawaii and of a Japanese move to secure a base in the Aleutian Islands. Besides making raids on shipping to the east of Hawaii, the Japanese might also stage air attacks against exposed military objectives (especially aircraft factories) on the Pacific coast and against the Panama Canal."<sup>18</sup>

On 11 December General George C. Marshall, Army Chief of Staff, designated the Western Defense Command (including Alaska) as a Theater of Operations. The Command included the Fourth Army, Second and Fourth Air Forces, and the Ninth Corps Area of California, Oregon, Washington, Nevada, Idaho, Utah and Arizona, except those areas exempted. The Eastern Theater of Operations included Newfoundland and the continental coast from Maine to the Gulf of Mexico at the Florida-Alabama line, extending inland approximately 400 miles.

The Western Theater of Operations was further subdivided into a Combat Zone and a Communications Zone by the Commanding General of the Western Defense Command and Fourth Army (dual command) on 16 December. The Combat Zone was essentially a zone running inland along the west coast and included the area west of Seattle, Washington; Portland and Klamath Falls, Oregon; Sacramento, Fresno, Bakersfield, Los Angeles, and San Bernardino, California; and, thence east to southern Arizona, including Yuma and Phoenix, to the New Mexico line. The Combat Zone was just what the name implied, a zone within which actual combat might be expected from an actual Japanese invasion, but, more probably, air raids, espionage, and sabotage could be expected.

The Communications Zone included the remainder of the Ninth Corps Area, which in turn was divided into three Defense Areas: Northeastern Washington, Oregon and all of Montana; Centraleastern California, Nevada and Utah; Southeastern California south of Death Valley, southern Nevada, and Arizona. This zone was essentially an area in which additional security was employed to forestall possible espionage and sabotage. In September 1942, the Defense Areas were abolished and Security Districts were established. The Northern District included Oregon, Washington, and Northern Idaho; the Central District, California and Reno, Nevada; the Southern District, Arizona and Clark County, Nevada (Las Vegas); and the Eastern District, Montana, Idaho south of 40 degrees north, the remainder of Nevada, and Utah. Obviously, the Army intended to be prepared for any eventuality that might occur.<sup>19</sup>

A decision to move Ninth Corps Area Headquarters from Presidio, San Francisco to Fort Douglas was made in response to this frenzied fear of Japanese bombing attacks and actual shelling by submarines. Japanese submarines arrived off the coast of California on 17 December and in the next week sank two tankers and damaged one freighter. They then returned to Japan and no more submarine activity occurred until February. While submarine activity probably reinforced the decision to move inland, it was only one factor. Salt Lake City was inland far enough to be out of range of Japanese bombers, it was centrally located with very good transportation and communication facilities, and Fort Douglas was not being utilized to its

fullest capabilities. The Army Air Forces had moved most of their training activities to the newly activated Salt Lake Airbase and Wendover Field was well under construction. In addition, Fort Douglas was not large enough to handle the expanded infantry divisions now being formed with three regiments, a total of 15,000 men and large numbers of vehicles. There was plenty of room for a headquarters, however, and so the decision was made to move Headquarters Ninth Corps Area, responsible for an area encompassing eight western states, to the fort overlooking the city of the Saints.

Ninth Corps Area moved to Fort Douglas on 3 January 1942, with Major General Jay N. Benedict in command. The headquarters was established in the newly completed barracks, Building No. 100, and downtown offices were utilized temporarily until the headquarters annex, building No. 105, could be completed. Headquarters, Ninth Corps Area, officially advised the Quartermaster General by telegram on 15 January that "...this office closes at the Presidio of San Francisco at the close of business on this date."<sup>20</sup> Colonel Rudolph E. Smyser succeeded Colonel Lowell H. Smith as commanding officer of the post and was in turn relieved by Colonel Keith K. Tatom. Colonel Tatom had served with the Civilian Conservation Corps at the Fort and was responsible for much of the landscaping and improvements completed in the 1930s. By April, both General Benedict and Colonel Tatom were gone; Major General Kenyon A. Joyce succeeded General Benedict as Ninth Corps Area Commander on 13 April 1942, and Colonel R. S. Pratt, recalled from retirement, took over as post commander.<sup>21</sup>

At the beginning of World War II the United States Army was organized into four armies and nine corps areas within the continental limits. The armies commanded most of the ground combat troops in the Zone of Interior (ZI-48 states), while the corps areas supplied, maintained and managed a majority of military posts. They were also responsible for mobilizing a civilian army under the Selective Training and Service Act of 1940. Technical service units such as the Quartermaster Corps, Ordnance Department, Corps of Engineers, Medical Department, Signal Corps and Chemical Warfare Service were independent units which reported directly to the Army Chief of Staff. With the huge expansion of the Army, such an unwieldy organization created an impossible situation for Chief of Staff, George C. Marshall, and in the interests of efficiency, he reorganized the United States Army into three major commands reporting directly to him. The three commands came into existence on 2 March 1942 and consisted of the Army Ground Forces, the Army Air Forces, and the Army Service Forces (ASF). Lieutenant General Brehon B. Somerville became Commander of Army Service Forces on 9 March.

Under the reorganization, Army Ground Forces consisted essentially of the Infantry, Cavalry, Field Artillery, and Coast Artillery. By 1940 cavalry was practically obsolete, although mules would be used in the war, but armored divisions had replaced the plumed chargers. Field Artillery was extremely important in the war—armored divisions were essentially mobile artillery—but the Coast Artillery was little used, although the Army spent hundreds of millions on coast artillery in Hawaii. Perhaps the only actual use of coast artillery was at Corregidor against the Japanese in defense of the Philippines. By 1942 the Army Air Force was almost a separate service, as they performed their own research and development, procured their own aircraft, operated their own bases, and trained the majority of their own personnel.

The commanding general of the service command was the field general manager and the chiefs of technical services and the Army Service Force divisions exercised staff supervision. Army Service Force commanders had a huge job to perform as they were responsible for services and supplies for Army Ground Forces, which included research, storage, distribution, and also included the Air Force's food, clothing and army common items. In addition, the Service Command was responsible for the Judge Advocate General (law), the Adjutant General (administration), Provost Marshall General (police), Chief of Special Services (morale and welfare), Chief of Chaplains, and Chief of Finance. The formerly independent agencies, Quartermaster Corps, Corps of Engineers, Ordnance Department, Signal Corps, Chemical Warfare Service, and the Medical Department became Operating Divisions under the Commanding General, Service of Supply. A separate Transportation Service was created in April 1942 and also came under the Services of Supply.<sup>22</sup>

## SECTION E-3

### War Department

Letter: [Designation of Military Reservation, 23 October 1940](#). RG 18, Entry 295A, Box 1736, Folder 680 Misc.  
NARA-College Park, MD.

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WAR DEPARTMENT  
The Adjutant General's Office  
Washington

AG 680.1-Salt Lake City  
Municipal Airport  
(10-3-40) M (Ret) M-C

October 23, 1940.

SUBJECT: Designation of Military Reservation.

TO: Commanding Generals of all Corps Areas  
and Departments;  
Chiefs of Arms and Services; and  
Commanding Officers of Exempted Stations.

The area under War Department lease listed below is  
designated as a military reservation and subpost of Fort Douglas,  
Utah. It will be known as "Salt Lake Airdrome Lease".

Location:

4 miles west of Salt Lake City and  
adjacent to Salt Lake City Municipal Air-  
port. Post office, railroad, express and  
telephone station, Salt Lake City, Utah.

By order of the Secretary of War:

*E. L. ...*  
Major General,  
The Adjutant General.

70 MAIL & RECORD ROOM
Date <i>10/25/40</i>
EXECUTIVE
FINANCE
INFORMATION
INSPECTION
PLANS
SUPPLY
TRAINING GROUP MEDICAL
PERSONNEL
RESERVE
TRAIN. AND OPER.
W. CO. AERO. BD.

*Copies furnished to  
all divisions. 10/26/40*

## **SECTION E-4**

### **Salt Lake City Army Air Base, Headquarters**

**Letter: [Information on Post Reports](#). 15 December, 1942, Accession 342-48A-5044, Box 5, Folder: History of Post, NPRC (MRC) – St. Louis, MO.**

ARMY AIR BASE HEADQUARTERS  
OFFICE OF THE COMMANDING OFFICER  
SALT LAKE CITY, UTAH

CE 600.9 RU-M (general)

December 15, 1942

SUBJECT: Information for Post Reports.

TO: Commanding General, Ninth Service Command, Real Estate, Repairs,  
and Utilities Division, Fort Douglas, Utah.

1. In compliance with request of your headquarters, letter November 27, 1942, subject and file number as above, the following information is submitted:

- a. Army Air Base, Salt Lake City, Utah.  
Classification and Routing Pool, Second Air Force.  
Process and ship personnel to Second Air Force Stations.
- b. Plot Plan of main Base, six (6) prints.  
Plot Plan, Sub-Base No. 1, one (1) tracing.  
Plot Plan, Sub-Base No. 2, six (6) prints.
- c. No aerial photographs of Base or Sub-Bases:
- d. Location map showing relative position of Army Air Base, Salt Lake City, Utah, and Sub-Bases No. 1 and 2, together with main roads.

e. This Base was established as bomber training station on August 16, 1940. Actual construction began September 10, 1940. In June, 1942, mission of Base was changed to a Classification and Routing Pool. The Army Air Base is located 4 miles west of Salt Lake City, Utah on land owned by the City of Salt Lake and leased to the Government on \$1.00 per year basis. Leased ground comprises 1,425 acres. Capacity of present base is 10,487. Sub-Base No. 1 (a portion of the Utah State Fairgrounds), located some  $3\frac{1}{2}$  miles from the main Base held under \$1.00 per year lease to the Utah State Fair Board, comprises some 40 buildings of various types now used to house school activities of this Base. Present capacity, 2,250. Sub-Base No. 2 at Pleasant Grove, Utah, some 36 miles distant from main Base, is a former OCC Camp on ground leased from the City of Pleasant Grove. Present use is a holding and training ground for troops from this Base. Present capacity, 300.

- 1 -

ARMY AIR BASE HEADQUARTERS

Main Apron	300' x 3400'	Concrete
Old Apron	180' x 1400'	Concrete
Connecting Apron	100' x 170'	Concrete
Parking Strip	50' x 500'	Concrete

Runway lights placed 100' apart for 3100' on North-South Runway, then 200' apart for 2400'.

Runway lights placed 200' apart on East-West and Diagonal Runways.

Boundary lights placed 300' apart.

No shops or sub-depot now at this Base.

- 5 Encls:
- Encl 1 - Prints Main Base (6).
  - Encl 2 - Tracing Sub-Base #1.
  - Encl 3 - Prints Sub-Base #2 (6).
  - Encl 4 - Prints Location Map (6).
  - Encl 5 - Sketch, Utility Yard.

FRANK W. WRIGHT,  
Colonel, Air Corps,  
Commanding.

OFFICE OF THE POST ENGINEER  
ARMY AIR BASE  
SALT LAKE CITY, UTAH

600.9

December 4, 1942

SUBJECT: Information for Post Reports

TO: Base S-4,  
Army Air Base,  
Salt Lake City, Utah

1. The following information is furnished in accordance with letter file CE 600.9 RU-M (General), Headquarters Ninth Service Command, dated November 27, 1942, Subject: "Information for Post Reports".

e. History of Post: This Post was established as a Bomber Training Station August 16, 1940, however in June, 1942, Bomber Training was discontinued and a classification and routing pool was established.

The Army Air Base is located four miles West of Salt Lake City, Utah, is owned by the City and leased by the Government for consideration of \$1.00 per year. The time of the lease being from August 16, 1940 to June 30, 1941 with the option of extension to June 30, 1965. In addition the lease covers a railroad right-of-way for an Army Spur track which connects with the Salt Lake Garfield Western Railroad. The above also grants the Government permission to utilize flying facilities at the Salt Lake Municipal Airport together with rights of way to construct such taxi strips as the Government may deem necessary.

The first contract was let to Peter Keiwi and Son's Co. for 36 buildings, actual construction began September 10, 1940.

The Utah State Fair Grounds, Salt Lake City, Utah, and the Pleasant Grove CCC Camp, Pleasant Grove, Utah, have been added as sub-bases to this post. There are 40 buildings at the Fair Grounds of various types and structures. Pleasant Grove CCC Camp has 24 frame buildings.

At present the Army Air Base proper has 143 theatre of operations buildings, 189 cantonment type structures and 232 tents, with additional construction being accomplished. A project is now under construction for 31 buildings for a hospital area of which 3 buildings have been completed.

-1-

Ltr. Office of the Post Engineer, File CE 600.9 Dec. 4, 1942, Subject:  
Information for Post Reports. (page 2)

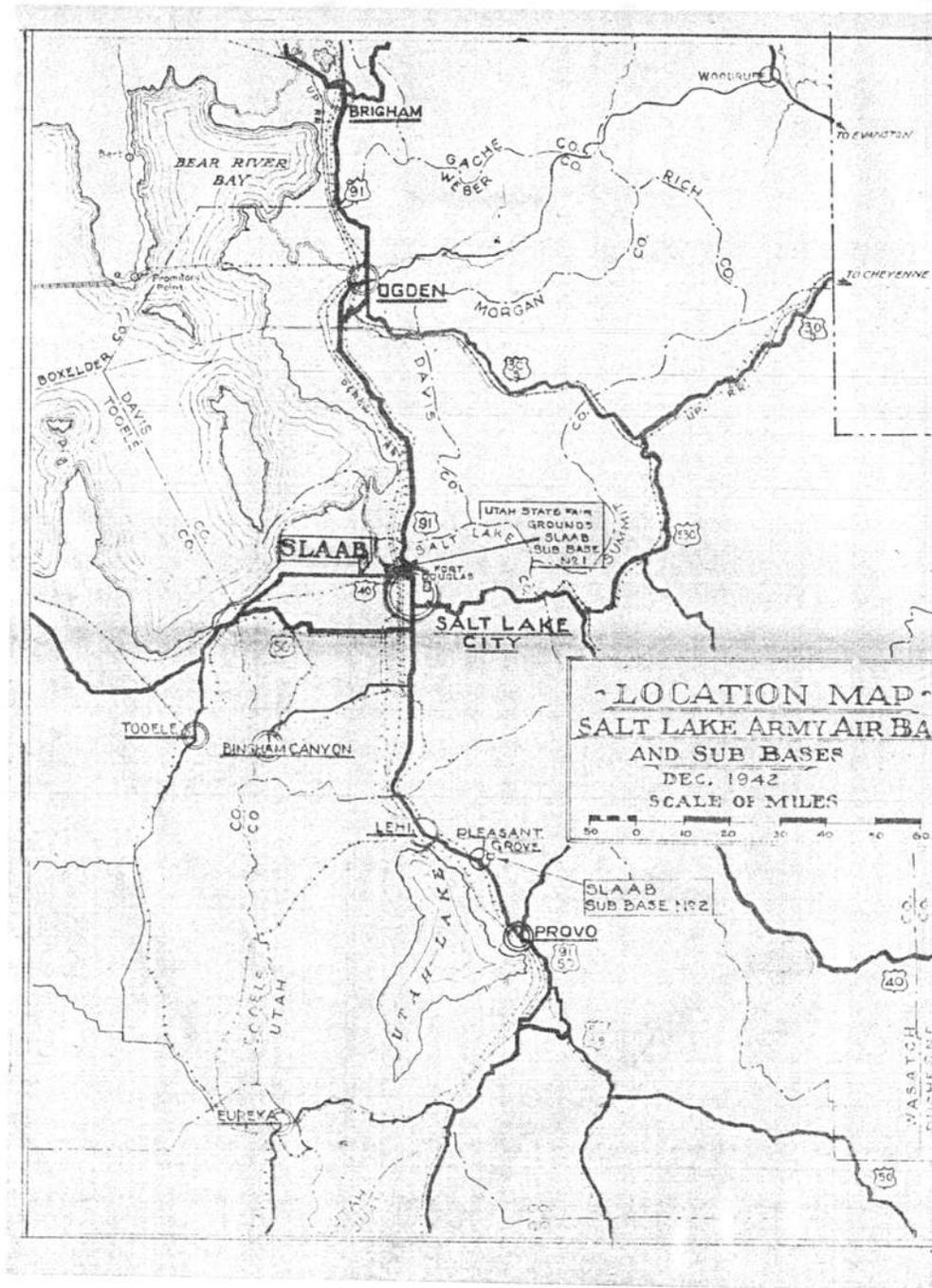
The housing capacity of this base including the two sub-bases is  
13,596.

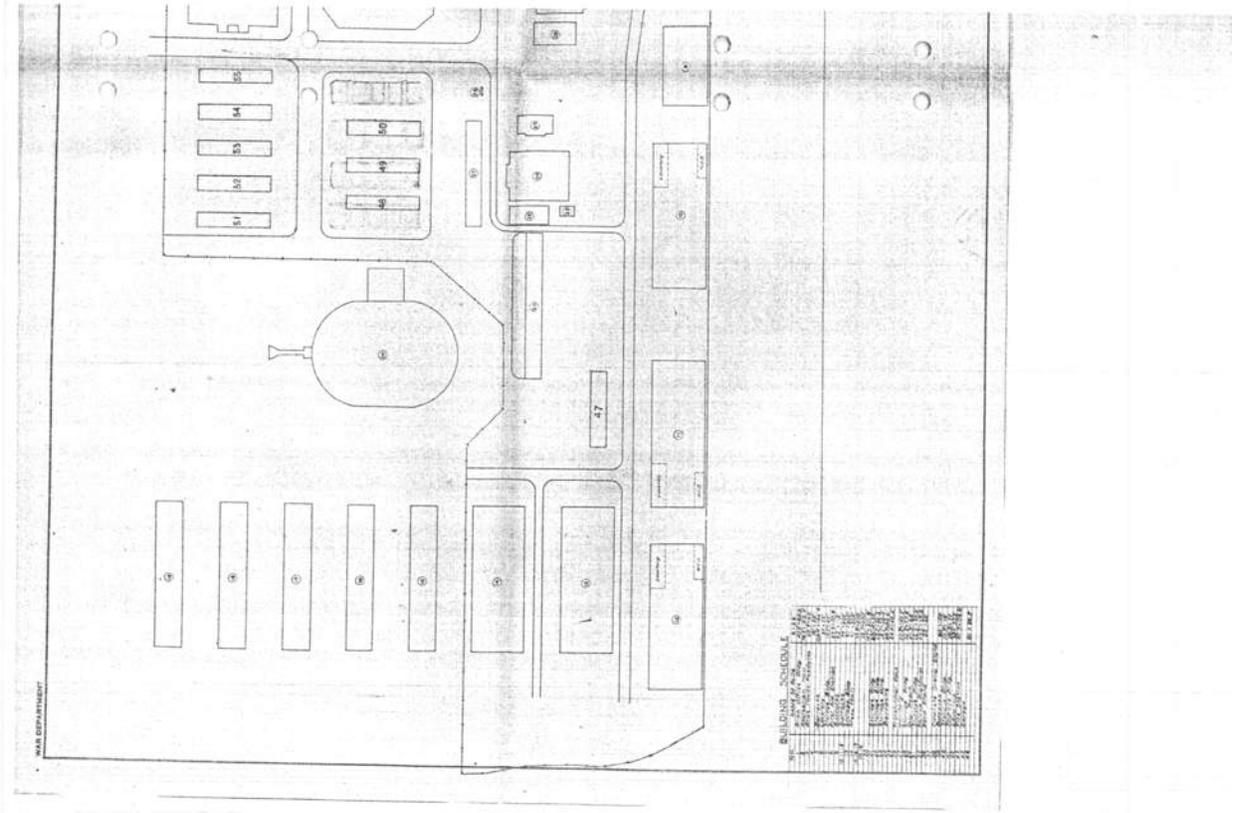
f. Civilian organizations of the Post Engineer, Army Air Base,  
Salt Lake City, Utah:

- a. Chief Clerk: Clifford S. Lowe, \$2000 per annum. Mr. Lowe  
has 6½ years of Government service. He was formerly employed  
in the Pocatello CCC Headquarters in the Quartermaster  
Department where he served as principal clerk of the Purchas-  
ing and Contracting Department, Subsistence Accounting  
Department and was later Chief Clerk of the Quartermaster  
Department. He was also employed approximately 5½ months  
in the District Engineer Office, Salt Lake District, Salt  
Lake City, Utah, until he was employed by this post.
- b. Mr. John W. Wilkins, Assistant Foreman Plumber, \$2600 per  
annum, who is in charge of the Plumbing Department, Mr.  
Fred A. Steck, Sr. Electrician, \$2300 per annum, in charge  
of electricians, Mr. Roy E. Taylor, Assistant Foreman  
Carpenter, \$2600 per annum, in charge of the carpenter  
shop, Mr. Chas. G. Wilkinson, Assistant Foreman Painter,  
\$2600 per annum, in charge of the painters, Mr. Carl H.  
Kinney, Foreman Mechanic, \$2800 per annum, in charge of  
the Maintenance Department and Mr. Wm. H. Hulse, Fire Chief,  
\$2900 per annum, in charge of the Fire Department.
- c. At present there are 129 personnel under the jurisdiction  
of the Post Engineer and an average of 229 detailed soldiers  
who are under Mr. Carl H. Kinney of the Maintenance Department,  
the Soil Erosion Control Department and the Hospital Area.
- g. The attached sketch shows the present shop and utility yard  
layout of this base. It will be noted that in principal the plan  
outlined in the R and U Manual has been followed in so far as  
the area in which the utility yard is located would permit. The  
only change in design of the shop buildings being that it is  
constructed on an angle rather than in a straight line. At  
present additional warehousing facilities are needed. It is  
estimated that present warehousing facilities provide only approxi-  
mately 1/3 of the storage space needed.

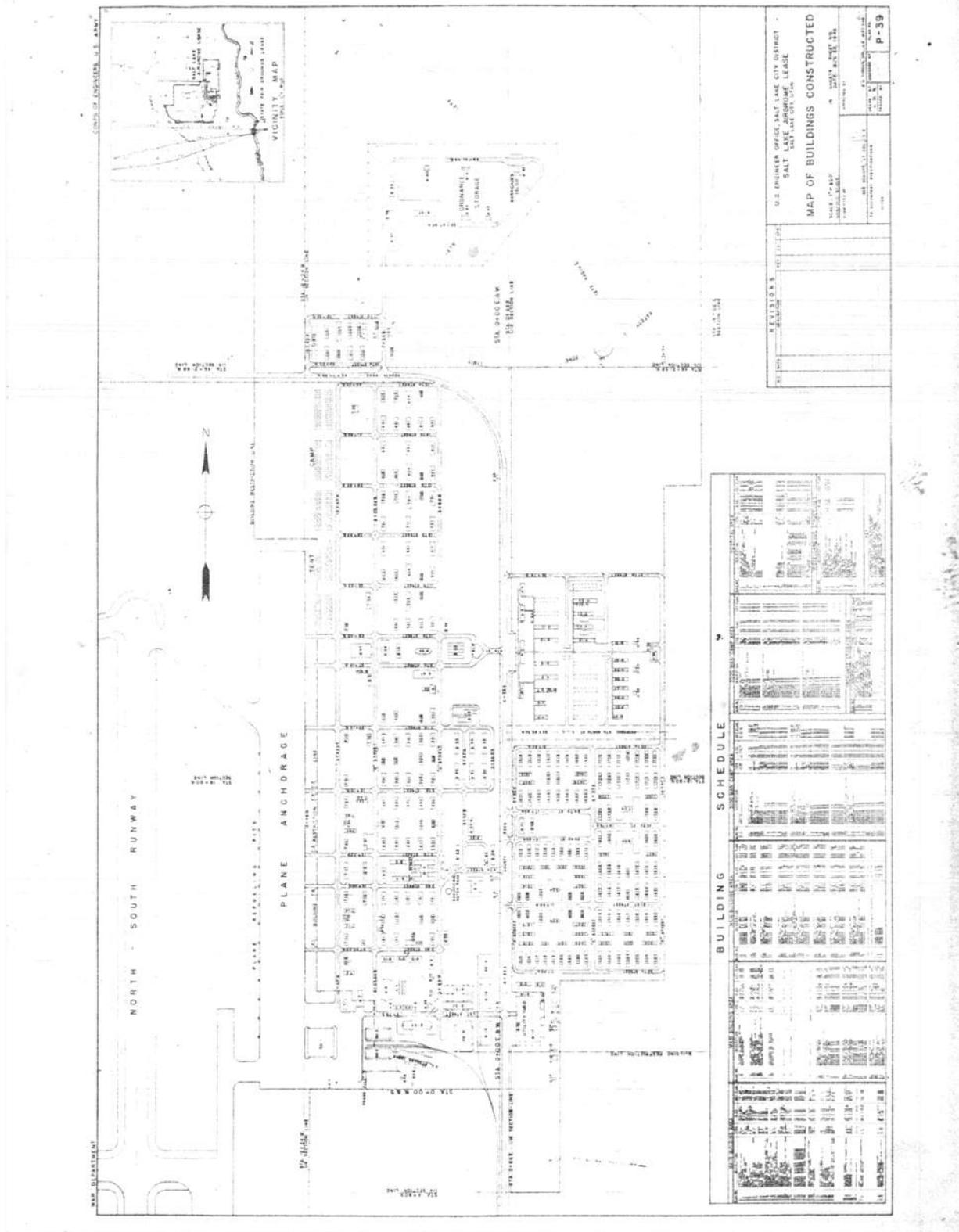
*Floyd L. Yorton*  
FLOYD L. YORTON  
Captain C. of E.,  
Post Engineer.

1 Incl. Sketch, Utilities Yard











## SECTION E-5

### Headquarters Ninth Service Command

*Letter from Captain Fortress to the Chief of Engineers,  
30 December 1942.* Corps of Engineers Boxes, Box  
Salisbury-Salt Lake 02042930—02042962, Folder 121  
2 Salt Lake City Airfield, UT. U.S. Air Force  
Historical Research Agency, Maxwell AFB,  
Montgomery, AL

120.11 SPKIP-ADM. (General) 6th Ind. ELE/gm  
HEADQUARTERS NINTH SERVICE COMMAND, Fort Douglas, Utah, December 30, 1942.

To - Chief of Engineers, Washington, D. C.

1. A check of the records at this headquarters fails to indicate source of these funds and which were available in 1941 to the Commanding Officer, Army Air Base, Fort Douglas, Utah. The Army Air Base, Fort Douglas, Utah, was moved in January 1942 to the Army Air Base, Salt Lake City, Utah, and there are no remaining personnel having knowledge of these funds.

2. This correspondence is forwarded your office with request for appropriate action.

For the Commanding General:

3 Incls. n/c

E. FORTRESS,  
Captain, F. D.  
Assistant to Director,  
Administrative Division

**SECTION E-6**  
**Eighteenth Replacement Wing**

***History 18th Replacement Wing, 15 June 1942 to 31  
December 1942 (Inclusive) Volume I.*** Microfilm Roll

**C0184. US Air Force Historical Research Agency,  
Maxwell AFB, Montgomery, AL.**

THIS PAGE IS UNCLASSIFIED

organizing, equipping and training of heavy bombardment groups and crews. The alacrity with which the growth came, created considerable difficulty for the Second Air Force. Prior to mid-June, 1942, the requisitioning and distribution of all officers and enlisted men coming to the Second Air Force from all sources, was handled by the personnel section of the Second Air Force, but with such rapid expansion, various organizations moved so briskly that it was an almost hopeless situation to discover what any particular unit required at any definite time or in any given place. The result was, since moves could not be anticipated, that the wrong men were frequently going to the wrong places. It was found that either the organization had moved or the vacancy would have been filled by the time the men had arrived. This resulted in a considerable amount of back-tracking, for frequently personnel was misrouted. Another problem for the Second Air Force, was that very little forewarning was received on incoming personnel as to type or time. This made the attempt to train the new units at a steady rate of progression, practically an impossibility. The situation was still further aggravated by the Second Air Force receiving a great number of men who had not had proper basic training, or who had not been properly classified or processed, or who had improper equipment or clothing. It was to correct these weaknesses and to make for a unified plan of action in order to insure the success of the heavy bombardment program, that a Replacement Wing was brought into existence.<sup>3</sup>

The planned details for this unit were first promulgated in a secret letter originating at Ft. George Wright, Headquarters, Second Air

<sup>3</sup>Ibid; also Second Air Force Memorandum 50-4; Second Air Force Memorandum 50-4 Annex I Part 1.

THIS PAGE IS UNCLASSIFIED

Force.<sup>4</sup> This letter established the Second Air Force Replacement Wing (Provisional) to alleviate the conditions forementioned, by establishing a Wing Headquarters and Headquarters Squadron in the city of Salt Lake City, Utah and a Classification-Routing Pool at the Salt Lake Army Air Base. It further stipulated that all personnel, both officers and enlisted men, who should hereafter enter the Second Air Force, should do so through this one point, namely Salt Lake City. The mission of this new organization, as set forth by Major General Ellis was to receive, classify, and to dispatch, personnel to all Units in the Second Air Force, which should be prepared upon their arrival to assume their assigned duties. Further purpose of the Wing was to operate training detachments and schools necessary to prepare bases for assimilation by units of the Second Air Force and still further, its duty was to form at the proper stations and at the required time, echelons and units including flight echelons, replacement combat crews, ground echelons, associate service units, air base stations complements, engineer battalions, aviation squadrons, military police companies and photographic reconnaissance and mapping units. This directive likewise set up the functional organization of the newly announced Replacement Wing, both for the Headquarters with its various sections as well as the Classification-Routing Pool. Also early training responsibilities of the unit were carefully established. On the 5th day of June, 1942, activating orders were forthcoming for the establishment of the Second Replacement Wing (Provisional) of the Second Air Force, Headquarters and Headquarters Squadron.<sup>5</sup> Twelve days later, a confidential

<sup>4</sup>Secret Letter, Hdqs. Second Air Force, 31 May, 1942, with 3 Annexes.

<sup>5</sup>Confidential G.O. 773, Hdqs. Second Air Force, 3 June, 1942.

THIS PAGE IS UNCLASSIFIED

letter from the War Department, Washington D. C.,<sup>6</sup> redesignated certain Army Air Force units, amongst these was the designation of the inactive 18th Bombardment Wing, Headquarters and Headquarters Squadron as the 18th Replacement Wing Headquarters and Headquarters Squadron, which redesignation was officially announced in the activation orders, which were issued as confidential by Ft. George Wright on the 23rd of June, 1942.<sup>7</sup>

Meanwhile the 15th of June had witnessed the official opening of the Second Replacement Wing Headquarters.<sup>8</sup> On the first of July, 1942, a confidential memorandum summarizing the letters and orders mentioned above, concerning the 18th Replacement Wing, was issued by the Second Air Force.<sup>9</sup> This memorandum, together with the secret letter of the 31st of May, serves as the foundation for the 18th Replacement Wing.

These documents summarize the mission of the 18th Replacement Wing as the following: the administration and operation of installations and organizations which are assigned to the command; the reception of military personnel for the Second Air Force from Replacement Training Centers; service and Air Force schools; and overseas theatres; the administration, housing, equipping, pay, morale, welfare, and discipline of personnel assigned to the command; the classification of personnel received by use of mental and aptitude tests and consideration of their past experience, which includes consideration of the adequacy of the qualifications of

<sup>6</sup>Confidential Letter, War Department, A.G.D., 17 June, 1942.

<sup>7</sup>Confidential C.O. #98, Headquarters, Second Air Force, 23 June, 1942.

<sup>8</sup>See news articles: The Deseret News, Salt Lake City, 15 June, 1942, The Salt Lake Tribune, Salt Lake City, 15 June, 1942 and 17 June, 1942.

<sup>9</sup>Second Air Force Memorandum 50-4, Annex I Part 2.

## SECTION E-7

### Assistant Chief Air Staff

**Letter: Moving Target Ranges and Rifle Range, Army Air Base, Salt Lake City, Utah, 26 July 1943. RG 18, Entry 292A, Box 1572, Folder 600 Misc SLCAAB, Utah. NARA-College Park, MD.**

REPRODUCED AT THE NATIONAL ARCHIVES

✓  
 AAF #17  
 DBS(2B-5)

**Subject:** Moving Target Ranges and Rifle Range, Army Air Base, Salt Lake City, Utah.

**To:** Chief of Engineers. X 020

26 JUL 1943

(M) 184 Salt Lake City, Utah

1. Reference is made to Directive Consecutive No. 15024, Job No. Kearns A(5-1), dated 30 June 1943 and to the letter from this Headquarters to your office under date of 19 July 1943, subject: "Transfer of Construction Project from Kearns, Utah to Salt Lake City Army Air Base."

2. It is requested that the "Jeep Type" moving target range authorized by the above referenced directive and transferred to the Salt Lake City Army Air Base, and one (1) additional moving target range making a total of two (2), be constructed at the Salt Lake City Army Air Base in accordance with Second Air Force plans Nos. 1 E to 12 E inclusive, prints of which were recently forwarded to your office.

3. The earth berm for protection of the jeep should be in accordance with the detail shown on Mobile District Engineers' Drawing No. F-119 instead of as shown on Second Air Force Drawing No. 1 E.

4. Buildings required for each range are one (1) Malfunctions Building, size 20' x 60', Mobile District Engineers' Drawing No. F-120 with partitions as required and separate pit latrines, one (1) Ammunition Storage Building in accordance with Second Air Force Drawing No. 3 E and one (1) Central Tower in accordance with Second Air Force Drawing No. 7 E.

5. In addition to the above, it is requested that one (1) .30 Caliber Rifle Range, thirty (30) targets with 200 yard firing position be constructed in accordance with Drawings Nos. 1600-101 and 115, utilizing log strapping or planking for target butt construction in lieu of concrete. Provide one (1) Target Storehouse, Theater of Operations construction, size 20' x 20' and pit latrines of size required.

6. Target materials will be requisitioned by the Base Ordnance Officer.

LCW/nlb

OFFICE SYMBOL	1 APDBS - B&G	2	3	4	5	6
SIGNATURE OF RESPONSIBLE OFFICER						
INTERNAL OFFICE COORDINATION						

REPRODUCED AT THE NATIONAL ARCHIVES

31931

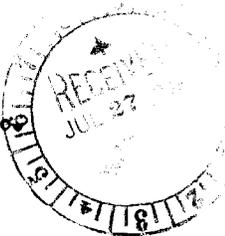
Page 2 - Ltr. to CGAF, subj: "Moving Target Range and Rifle Range, Army Air Base, Salt Lake City, Utah. dtd.

7. Access and service roads should be the minimum required and of the simplest construction possible consistent with requirements.
8. In the preparation of the layout for the ranges, the Base Ordnance Officer should be consulted and the requirements and regulations of TM 9-855 and AM750-10 complied with.
9. Construction will not be initiated until the required land has been acquired or until the location and layout plan has been approved by the Commanding General of the Second Air Force. It is requested that a copy of the approved layout plan be furnished this Headquarters for record filing.
10. Inter-departmental Air Traffic Control Board clearance will not be required inasmuch as horizontal firing only will be performed.
11. Funds for this construction are available under Project 210, Engineer Service Army, reserved for Air Forces construction. It is requested that this Headquarters be furnished a copy of the allotment of these funds.

For the Commanding General, Army Air Forces:

J. C. SHIVELY, COL., A.C.  
Buildings and Grounds Section  
Office, Ass't Chief Air Staff, M.M.D.

Info cy to: Commanding General  
Second Air Force  
Colo. Springs, Colo.



AF AF  
BUILDINGS AND GROUNDS

OF  
RES  
IN  
C

OFFICE SYMBOL	1 AFDBS - B&G	2	3	4	5	6
SIGNATURE OF RESPONSIBLE OFFICER	<i>[Signature]</i>					
INTERNAL OFFICE COORDINATION	<i>[Signature]</i>					

## SECTION E-8

### U.S. Army Corps of Engineers

Letter: [Construction Directive for Poorman Type Range, Salt Lake City, Utah, 22 January 1944](#). Corps of Engineer Records, Box 02042980-02042994, Folder 614 Salt Lake City Airfield. US Air Force Historical Research Agency, Maxwell AFB, Montgomery, AL.

Dir. Cons. No. A 19272  
Dist. Seq. No. PD Sacramento  
A 839  
Job No. Salt Lake City A.B.  
A(8-1)

CE SPENT  
*614 Salt Lake City Air Base, Utah* 22 January 1944

**SUBJECT:** Construction Directive for Poorman Type Range, Salt Lake City, Utah.

**TO:** The Division Engineer  
Pacific Division  
Corps of Engineers, U.S.A.  
222 South West Temple Street  
SALT LAKE CITY (1), UTAH

1. Construction is authorized of the project described below.
2.
  - a. Job location: Salt Lake City Air Base, Utah. Supervision by District Engineer, Sacramento, California.
  - b. Reference: 1st Indorsement, 20 January 1944, from Headquarters, Army Air Forces to Chief of Engineers, subject, "Request for Poorman Range at Salt Lake City Air Base".
  - c. Completion date of A 8 Job Series to be determined by the Division Engineer in accordance with OCE letter of 10 January 1944, subject, "Progress Reports for Minor Construction".
3. Construction authorized: One (1) "Poorman" Type target range with five (5) firing positions to be initially constructed with provision for the ultimate expansion to thirty two (32) firing positions.
4. Engineering instructions: Reference is made to Dir. Cons. No. A 18660, Div. Seq. No. PD-A-15 dated 16 December 1943. The engineering instructions contained in Paragraph 4 of reference directive are to be followed for this construction.
5. Prior to initiating construction, layout plan approval will be obtained from the Commanding General, Second Air Force.
6. If additional real estate is required, a request for acquisition should be submitted immediately, and construction will not be initiated until right of entry is obtained.

**AIR MAIL**

Dir. Conf. No. A 19272  
Dist. Sec. No. PD Sacramento A 839  
Job No. Salt Lake City A.B. A(8-1)

CE  
To: Pacific Division

SPRINT

MJF/JW

614 Salt Lake City, Airfield, Utah

7. Funds:

a. Source: Project 210, EBA 1942-44.

b. Authorized expenditure: \$5,000.

By order of the Chief of Engineers:

H. C. HILL  
Major, Corps of Engineers  
Assistant; Troop Facilities Branch  
Military Construction Division

RECORD: This directive issued in accordance with request of CGAAF contained in above referenced 1st Ind. and is in compliance with recommendation requested in letter from this office to the CGAAF quoting teletype from the Div. Engr. which recommends directive be issued. Cleared through Policy and Planning Section (Mr. Klein).

cc: District Engineer, Sacramento District (AIR MAIL)  
Area Engineer, Salt Lake City, Utah (AIR MAIL)  
CGAAF, Gravelly Point (2) w/d  
Funds & Data (2) w/d  
Tech. Inf. w/d  
WPB w/d  
Reading  
Section  
Commanding General, Second Air Force, Colorado Springs, Colorado (AIR MAIL)

**AIR MAIL**

## SECTION E-9

### War Department

Letter: [Acquisition of Land, 4 October 1943](#). RG 18,  
Entry 292A, Box 1572, Folder 600 Misc SLCAAB, UT.  
NARA-College Park, MD.

REPRODUCED AT THE NATIONAL ARCHIVES

ADDRESS REPLY TO  
CHIEF OF ENGINEERS, U. S. ARMY  
WASHINGTON, D. C.

WAR DEPARTMENT  
OFFICE OF THE CHIEF OF ENGINEERS  
WASHINGTON

REFER TO FILE NO. <sup>53</sup> CE 601.1 SALT LAKE ARMY  
AIR BASE, UTAH  
U. S. v Agnes R. Douse, et al.  
SPELR

FILED  
AAF #21

(3)

4 October 1943

SUBJECT: Acquisition of Land.

TO: Commanding General, Army Air Forces  
ATTN: Director of Base Services

1. Condemnation proceedings were filed on 2 October 1943, for the acquisition of 6240 acres of land in Salt Lake County, State of Utah, for use in connection with the Salt Lake Army Air Base, Utah.

2. Inclosed for your information and files are a description of the land, a list of the names of the purported owners and a map designating the area condemned. Possession of the land described in the inclosures was made available to the United States by court order as of 2 October 1943.

For the Chief of Engineers:

JOHN J. O'BRIEN  
Colonel, Corps of Engineers  
Chief, Real Estate Branch

2 Incls:  
1 - Desc. w/list owners (dup.)  
2 - map (dup.)

601.53 Salt Lake Army Air Base Utah



FORM 1597

## SECTION E-10

**U.S. Army Corps of Engineers, Area Engineer, Salt  
Lake City**

**Series of OCE Form No 290: Transfer of New  
Construction A.A. Base, Salt Lake City, Utah, 16  
November 1943-8 April 1944, Accession 342-48A-5044,  
Box 1, Folder: Transfer of Buildings, NPRC (MRC) –  
St. Louis, MO.**

War Department - O.C.E. Form No. 290  
 July 6, 1942

TRANSFER OF  
 NEW CONSTRUCTION **R. J. Damm**

Sheet #1 of 2  
 Post **A. A. Ross, Salt Lake City, Utah**  
 Date **16 November 1943**  
 Serial No. **1**  
 Job No. **A (1-2)**

**BUILDINGS AND STRUCTURES W-42-026-eng-30, Additional Temporary Construction**

(1) TOTAL NO. UNITS	(2) PLAN NO.	(3) DESIGNATION AND TYPE	(4) TOTAL DESIGNED CAPACITY	(5) TOTAL SQ. FT. IN FLOOR AREA	(6) BUILDING NUMBERS AND REMARKS
1	SL-40-11	Target Storage Aid Not Applicable	Not Applicable	100 sq. ft.	201 x 201
1	SL-40-19	Range Office	Not Applicable	500 sq. ft.	201 x 401
2	SL-40-18	Latrines (1x2-2)		116 sq. ft.	8 x 12 (with 618 x 3 entrance way)
30	SL-40-5	Target Markers (Small)			7-16 to
30	SL-40-5	Target Markers (Large)			T-016 - T-15 2x6
2	SL-40-5	500 yard marker			116 sq. ft.
2	SL-40-6	Score Tables			116 sq. ft.
2	SL-40-6	RIFLE RACKS			116 sq. ft.
5	SL-40-6	Large Bench			116 sq. ft.
30	SL-40-6	Small Bench			116 sq. ft.

It is certified that the copy of the construction listed hereon is in accordance with maps, plans, and specifications delivered to the undersigned engineer with the deficiencies listed on the back of this sheet, ~~submittals~~ **submittals** ACCEPTED BY: **F. B. ROSS**, Captain, Corps of Engineers, **Acting Post Engineer**

**K. W. WRIGHT**, Colonel, Air Corps, **Commanding Officer**

**BEN BEATOFF**, Major, Corps of Engineers, **Area Engineer**

CONTRACT NO. **W-12-026-ang-30**  
 WAR DEPARTMENT - O.C.E. FORM NO. 290 B  
 July 6, 1942  
 UTILITY PLANTS AND GROUNDS  
 SERIAL NO. **16**  
 DATE **16 November 1943**  
 POST **Army Air Base Salt Lake City**  
 SHEET 2 of 2

TRANSFER OF  
 NEW CONSTRUCTION

Additional Temporary Construction.....**R. J. DAUM**  
 JOB NO. **A(5-2)**

(1) FEATURE	(2) BASE DATA		(3) PLAN NO.	(4) TYPE OR REMARKS
	UNIT	QUANTITY		
CENTRAL HEATING PLANT	H.P. CAP.			
DISTRIBUTION LINES	LIN. FT.			
ICE MANUFACTURING PLANT	H.P. CAP.			
COLD STORAGE PLANT	H.P. CAP.			
ENGINE ROOMS	TONS CAP./DAY			
ROADS				
CONCRETE	SQ. YDS.			
BITUMINOUS, HIGH TYPE	SQ. YDS.			
BITUMINOUS, LOW TYPE	SQ. YDS.			
GRAVEL, STABILIZED, ETC.	SQ. YDS.	2081	SL 40 - 4	11' wide & 6" deep
PARKING AREAS	SQ. YDS.			
APRONS	SQ. YDS.			
RUNWAYS	SQ. YDS.			
BRIDGES	LIN. FT.			
CULVERTS				
TARGET BUFF RETAINING WALL	LIN. FT.	361	SL 40 - 4	Earth embankment...Flashed but wall
RAILROADS				
TRACAGE	MILES			
BRIDGES	LIN. FT.			
FIRING LINE	SQ. YDS.	328	SL 40 - 4	Sand for firing line 2' deep
WALKS	SQ. YDS.			
FIRING LINE	SQ. YDS.	217	SL 40 - 4	Earth embankment 334' x 25' x 0.7'
MAINTAINED GROUNDS	ACRES			
OTHER POST AREAS	ACRES			

It is certified that the construction listed hereon is in accordance with maps, plans, and specifications delivered to the Post ~~with~~ <sup>with</sup> the deficiencies listed on the back of this sheet, and ~~in the absence of~~ <sup>in the absence of</sup> ~~Major Yorton.~~ <sup>Major Yorton.</sup>

CERTIFIED BY  
~~TRANSMITTED BY~~

ACCEPTED BY: **F. B. KOBELL, Captain, G. of E.,**  
 Acting Post Engineer

**W. W. WRIGHT, Colonel, Air Corps.** Commanding Officer  
**BEN DENICOFF, Lt. Colonel, Corps of Engineers,** Area Engineer



Sheet 2 of 2  
 POST Army Air Base GRCU  
 DATE 2 December 1942  
 SERIAL NO. 1  
 JOB NO. A(7-2)

TRANSFER OF  
 NEW CONSTRUCTION

CONTRACT NO. W-12-026-ENG-30  
 WAR DEPARTMENT - O.C.E. FORM NO. 290 B  
 July 6, 1942  
 UTILITY PLANTS AND GROUNDS

Additional Temporary Construction... R. J. Dunn

(1) FEATURES	(2) BASE DATA		(3) PLAN NO.	(4) TYPE OR REMARKS
	UNIT	QUANTITY		
CENTRAL HEATING PLANT	H.P. CAP.			
DISTRIBUTION LINES	LIN. FT.			
ICE MANUFACTURING PLANT	H.P. CAP.			
COLD STORAGE PLANT	H.P. CAP.			
INCINERATORS	TONS CAP./DAY			
ROADS				
CONCRETE	SQ. YDS.			
BITUMINOUS, HIGH TYPE	SQ. YDS.			
BITUMINOUS, LOW TYPE	SQ. YDS.			
GRAVEL, STABILIZED, ETC.	SQ. YDS.	1446	SL 10-27 & 10-28	Gravel Roads 6'-deep D.H. 11/13/42
PARKING AREAS	SQ. YDS.			
APRONS	SQ. YDS.			
RUNWAYS	SQ. YDS.			
BRIDGES	LIN. FT.			
CULVERTS				
RAILROADS				
TRACKAGE	MILES			
BRIDGES	LIN. FT.			
WALKS	SQ. YDS.	20	SL 10-27 & 10-28	Gravel Walk - 5' wide 6'-deep
MAINTAINED GROUNDS	ACRES			
OTHER POST AREAS	ACRES			

It is certified that the construction listed hereon is in accordance with maps, plans, and specifications delivered to the Post Engineer with the deficiencies listed on the back of this sheet, and is accepted.

ACCEPTED BY: *Walter W. York*  
 Major, U.S. Army  
 Post Engineer  
 Commanding Officer

APPROVED BY: *Walter W. York*  
 Major, U.S. Army  
 Area Engineer



CONTRACT NO. W-42-086-mg-30 TRANSFER OF Sheet 2 of 2 POST Army Air Base, SLC, Utah  
 WAR DEPARTMENT - O.C.E. FORM NO. 290 B NEW CONSTRUCTION DATE 14 December 1943  
 July 6, 1942 SERIAL NO. 1  
 UTILITY PLANTS AND GROUNDS Additional Ranges JOB NO. A(7-6)

(1) FEATURE	(2) BASE DATA		(3) PLAN NO.	(4) TYPE OR REMARKS
	UNIT	QUANTITY		
CENTRAL HEATING PLANT	H.P. CAP.			
DISTRIBUTION LINES	LN. FT.			
ICE MANUFACTURING PLANT	H.P. CAP.			
COIL STORAGE PLANT	H.P. CAP.			
INCINERATORS	TONS CAP./DAY			
ROADS				
CONCRETE	SQ. YDS.			
BITUMINOUS, HIGH TYPE	SQ. YDS.			
BITUMINOUS, LOW TYPE	SQ. YDS.			
GRAVEL, STABILIZED, ETC.	SQ. YDS.			
PARKING AREAS	SQ. YDS.	1212 Sq. Yds	S.L. 40-27	Compacted Gravel 6" Deep
APRONS	SQ. YDS.			
RUNWAYS	SQ. YDS.			
BRIDGES	LN. FT.			
CULVERTS				
RAILROADS				
TRACKAGE	MILES			
BRIDGES	LN. FT.			
WALKS	SQ. YDS.	17 Sq. Yds	S.L. 40-27	5 1/2" High - 6" Deep
MAINTAINED GROUNDS	ACRES			
OTHER POST AREAS	ACRES			

It is certified that the construction listed hereon is in accordance with maps, plans, and specifications delivered to the Post Engineer with the deficiencies listed on the back of this sheet, and is accepted.

ACCEPTED BY: FLOYD L. YORSON, Major, U. of E. **CERTIFIED**  
 Post Engineer  
 Commanding Officer  
WELSH, Colonel, Air Corps. **MANAGED BY:**  
FOR: BEN BUNNICK, Lt. Colonel  
SALT LAKE Area Engineer

R. J. DAUM  
 Sub Machine Gun Range # 12A & 12B  
 CORRECTED COPY  
 O. C. E. FORM NO. 300  
 WAR DEPARTMENT  
 JULY 6, 1942

Sheet 1 of 2  
 D. V. No. D-1491

Post ARMY AIR BASE, SLAV  
 Date December 15, 1943  
 Serial No. 3  
 Job No. A (7-2)

**TRANSFER OF  
 NEW CONSTRUCTION**

**BUILDINGS AND STRUCTURES**

W-42-026-eng-30

TOTAL NUMBER UNITS (1)	PLAN No. Salt Lake Dist. (2)	DESIGNATION AND TYPE (3)	TOTAL DESIGNED CAPACITY (4)	TOTAL SQUARE FEET IN FLOOR AREA (5)	BUILDING No. AND REMARKS (6)
2	SL 40-27 40-32	Target Storehouse	144 sq. ft.	144	T-405, T-408
2	SL 40-27 40-18	Latrine Type IAF	4 men	232	T-402; T-404
2	SL 40-27 40-29	Lever Pit Sub Machine Gun	66 sq. ft.	66	

It is certified that the construction listed hereon is in accordance with maps, plans, and specifications delivered to the Post Engineer with the deficiencies listed on the back of this sheet, and is accepted.

ACCEPTED BY FLOYD L. YORTON Major, Air Corps  
 TRANSFERRED BY DUANE O. WRIGHT, Assistant Area Engineer FOR  
 POST ENGINEER  
 COMMANDING OFFICER  
 U. S. GOVERNMENT PRINTING OFFICE 16-29704-1  
 AREA ENGINEER

W.D. - O.C.E. Form No. 280 B  
 May, 1943

CORRECTED COPY

TRANSFER OF  
 NEW CONSTRUCTION

W-42-026-eng-30

D.V. No. D-1492  
 Sheet 2 of 2

Post Army Air Base, SLCU  
 Date 15 December 1943  
 Serial No. 3  
 Job No. A (7-2)

UTILITY PLANTS AND GROUNDS

(1) FEATURE	(2) BASE DATA		(3) DRAWING NO.	(4) TYPE OR REMARKS
	UNIT	QUANTITY		
CENTRAL HEATING PLANT	H.P. Cap		Salt Lake District	
Distribution Lines	Lin. Ft.			
ICE MANUFACTURING PLANT	H.P. cap			
COLD STORAGE PLANT	H.P. cap			
INCINERATORS	Tons Cap./day			
ROADS				
Concrete	Sq. Yds.			
Bituminous, High Type	Sq. Yds.			
Bituminous, Low Type	Sq. Yds.			
Gravel, Stabilized, etc.	Sq. Yds.	5334	SL 40-27	1266 cu. yds 4" deep & 2068 sq. yds 6" deep CI Gravel
Parking Areas	Sq. Yds.			
Aprons	Sq. Yds.			
Runways	Sq. Yds.			
Bridges	Lin. Ft.			
Culverts	No.			
RAILROADS				
Trackage	Miles			
Briegees	Lin. Ft.			
WALKS	Sq. Yds.	15	SL 40-27	Depth of Gravel 6"
MAINTAINED GROUNDS	Acres			
OTHER POST AREAS:	Acres			

it is certified that the construction listed hereon is in accordance with maps, drawings, and specifications listed on the back of this sheet.

ACCEPTED BY: FLOYD L. YORTON  
 Major U. S. Army  
 Post Engineer

CERTIFIED BY: DUANE O. WRIGHT, Assist Area Engineer  
 FOR Area Engineer





Sheet 2 of 3  
 POST Army Air Base, S.L.C., Utah  
 DATE 16 December 1943  
 SERIAL NO. 4  
 JOB NO. A(7-67)

TRANSFER OF  
 NEW CONSTRUCTION

R. G. Dunn, Contractor  
 CONTRACT NO. W-12-066-ang-30  
 WAR DEPARTMENT - O.C.E. FORM NO. 290 B  
 July 6, 1942

Utility Plants and Grounds  
 Cont. No. W-12-066-ang-30

(1) FEATURE	(2) BASE DATA		(3) PLAN NO.	(4) TYPE OR REMARKS
	UNIT	QUANTITY		
CENTRAL HEATING PLANT	H.P. CAP.			
DISTRIBUTION LINES	LIN. FT.			
ICE MANUFACTURING PLANT	H.P. CAP.			
COAL STORAGE PLANT	H.P. CAP.			
INCINERATORS	TONS CAP./DAY			
ROADS				
CONCRETE	SQ. YDS.			
BITUMINOUS, HIGH TYPE	SQ. YDS.			
BITUMINOUS, LOW TYPE	SQ. YDS.			
GRAVEL, STABILIZED, ETC.	SQ. YDS.	13476		0' Depth of Gravel Roads, 4 Yards to Gravel Base
PARKING AREAS	SQ. YDS.			
AERONS	SQ. YDS.			
TRONWAYS	SQ. YDS.			
BRIDGES	LIN. FT.			
WALKS	SQ. YDS.			
RAILROADS	MILES			
TRACKAGE	LIN. FT.			
BRIDGES	SQ. YDS.			
WALKS	ACRES			
MAINTAINED GROUNDS	ACRES			
OTHER POST AREAS	ACRES			

It is certified that the construction listed hereon is in accordance with maps, plans, and specifications delivered to the Post Engineer with the deficiencies listed on the back of this sheet, ~~XXXXXXXXXXXX~~

ACCEPTED BY: *Floyd J. Yonick* (for G. of E.)  
 Post Engineer  
 Commanding Officer  
 Garrison, AIR Corps.

CERTIFIED BY: ~~XXXXXXXXXXXX~~  
 Area Engineer  
 Garrison

CONTRACTOR:  
 R. J. DAUM

W.D. - O.C.E. Form No. 290  
 APRIL, 1943

TRANSFER OF  
 NEW CONSTRUCTION

Sheet 1 of 3  
 Army Air Base  
 Post Salt Lake City, Utah  
 Date: 14 December 1943  
 Serial No. 5  
 Job No. 47-5

BUILDINGS AND STRUCTURES

Contract No. W-42-026-Eng-30

(1) TOTAL NO. UNITS	(2) DRAWING NO.	(3) DESIGNATION AND TYPE	(4) TOTAL DESIGNED CAPACITY	(5) TOTAL SQ. FT. IN FLOOR AREA	(6) BUILDING NUMBERS AND REMARKS
1	SL 40-9, 40-15	Control Tower	Not Applic.		
3	SL 40-9, 40-19	Rectifier House	Not Applic.	32	4' X 8'
1	SL 40-9, 40-14	Malfunction Bldg.	Not Applic.	1200	20' X 60'
1	SL 40-9, 40-14	Ammunition Storage	Not Applic.	144	12' X 12'
1	SL 40-9, 40-16	Latrine LN-D-T	Not Applic.	160	10' X 16'
1	SL 40-9, 40-21	Sperry Lower Ball Turret			
3	SL 40-9, 40-21	Upper Sperry Turret			
3	SL 40-9, 40-22	Consolidated Tall Turret			
23	SL 40-9, 40-22	Upper Martin Turret			
24	SL 40-9, 40-21	Flexible Machine Gun Mount			
5	SL 40-26	Range Pole			

It is certified that the construction listed hereon is in accordance with maps, plans, and specifications delivered to the Post Engineers with the deficiencies listed on the back of this sheet.

ACCEPTED BY: *Frank W. Wright*  
 Frank W. Wright, Colonel, U.S. Army, U.S. Air Corps, U.S. Post Engineer

CERTIFIED BY: *Duane O. Wright*  
 Duane O. Wright, Area Engineer

92-2711  
 FRANK W. WRIGHT, Colonel, Air Corps, Commanding Officer  
 DUANE O. WRIGHT, Area Engineer

CONTRACTOR:  
**R. J. DAUM**

Sheet 2 of 3.  
 Army Air Base  
 Salt Lake City, Utah  
 Post  
 Date 19 December 1943  
 Serial No. 5  
 Job No. A(7-6)

TRANSFER OF  
 NEW CONSTRUCTION

Contract No. W-42-026-Sub-30

(1) FEATURE	(2) BASE DATA		(3) DRAWING NO.	(4) TYPE OR REMARKS
	UNIT	QUANTITY		
<b>UTILITY SYSTEMS</b>				
<b>WATER SYSTEM</b>				
Water Mains	Lin. Ft.			
Water Service Lines	Lin. Ft.			
Water Pumping Stations	1000 gals./day			
Water Filtration Plant	1000 gals./day			
<b>SEWER SYSTEM</b>				
Sanitary Sewer Mains	Lin. Ft.			
Sanitary House Laterals	Lin. Ft.			
Storm Sewer Lines	Lin. Ft.			
Sewage Pumping Stations	1000 gals./day			
Sewage Treatment Plant	1000 gals./day			
<b>ELECTRIC SYSTEM</b>				
Generating Plant	KVA Capacity			
Overhead Distr. Lines	Lin. Ft.	1047	SL 40-8	( 2-70 WP 335', 246 WP 165', 346 WP 211', ( 4-74 WP 118', 246 WP 58', 348 WP 75', ( 4-72 WP 65', 446 WP 20'
Overhead Services	No.	8	SL 40-8	
Underground Distr. Lines	Lin. Ft.	118	SL 40-8	
Underground Services	No.	12	SL 40-8	
Ext. Lighting System	No. Lights	6	SL 40-8	
Distr. Line Transformers	KVA	3	SL 40-8	242 Type B1 Increased Fiber Conduct., Floodlights on Poles, 15 KVA Transformers
Sub-station	No. Feeders		SL 40-8	
Transmission Lines	Lin. Ft.	5202	SL 40-8	2170' of 346 Steel & 2022' of 346 DC
<b>GAS DISTRIBUTION</b>				
	Lin. Ft.			

It is certified that the construction listed hereon is in accordance with maps, plans and specifications delivered to the Post Engineer with the deficiencies listed on the back of this sheet.

ACCEPTED BY: *Raymond H. Johnston*  
 Raymond H. Johnston, Major, U. S. Army  
 Post Engineer

CERTIFIED BY: *Duane O. Wilson*  
 Duane O. Wilson  
 Civil Engineer

OCE FORM A-148, 8-26-43  
 (OCE FORM 250 A)  
 92-2711

Sheet 3 of 3.

CONTRACTOR:  
**R. J. DAUM**  
W.D. - O.C.E. Form No. 290 B  
May, 1943

TRANSFER OF  
NEW CONSTRUCTION

Post **Army Air Base**  
**Salt Lake City, Utah**  
Date **17 December 1943**  
Serial No. **5**  
Job No. **A(7-6)**

UTILITY PLANTS AND GROUNDS Contract No. **W-42-026-Eng-30**

(1) FEATURE	(2) BASE DATA		(3) DRAWING NO.	(4) TYPE OR REMARKS
	UNIT	QUANTITY		
CENTRAL HEATING PLANT	H.P. Cap			
Distribution Lines	Lin. Ft.			
ICE MANUFACTURING PLANT	H.P. Cap			
COLD STORAGE PLANT	H.P. Cap			
INCINERATORS	Tons Cap./day			
ROADS				
Concrete	Sq. Yds.	1495	SL 40-9	15' X 28" PIPING LINE, 15' X 15' DEEP TURN OUT,
Bituminous, High Type	Sq. Yds.			
Bituminous, Low Type	Sq. Yds.	7269	SL 40-7	GRAVEL 6" DEEP, 11' X 16' WIDTH AT ROAD,
Gravel, Stabilized, etc.	Sq. Yds.			
Parking Areas	Sq. Yds.			
Aprons	Sq. Yds.			
Runways	Sq. Yds.			
Bridges	Lin. Ft.			
Culverts	No. Lin. Ft.	195	SL 40-10	12" Reinforced Concrete Pipe,
		6	(SL 40-25, 40-27 - to 700-3125	10' Gates, Type 700-312,
RAILROADS				
Trackage	Miles			
Bridges	Lin. Ft.			
Jeep Track	Jeep Track	1	SL 40-9, 40-10	Jeep Type Moving Range & Embankment.
WALKS	Sq. Yds.	67	SL 40-7	5' Wide X 6" Deep - Gravel Walk
MAINTAINED GROUNDS	Acres			
OTHER POST AREAS	Acres			

It is certified that the construction listed hereon is in accordance with maps, drawings, and specifications delivered to the Post Engineer with the design samples listed on the back of this sheet.

ACCEPTED BY: *Frank W. Wainwright*  
FRANK W. WAINWRIGHT, Major, U.S. Army  
Post Engineer

CERTIFIED BY: *Robert G. ...*  
ROBERT G. ...  
For the Area Engineer

92-2795





## SECTION E-11

**Post Engineer, 294<sup>th</sup> AAF Base Unit (standby)**

**OCE Form No 290: [Transfer of New Construction, Surplus of Real Estate Directive Pacific Division No. 482, Gunnery Range, Army Air Base, Salt Lake City, Utah](#), 4 May 1944, Accession 342-48A-5044, Box 1, Folder: Transfer of Buildings, NPRC (MRC) – St. Louis, MO.**

Gunnery Range  
 294th AAF Base Unit (Standby)  
 Army Air Base  
 Post Salt Lake City, Utah  
 Date 4 May 1946

O. G. E. Form No. 280  
 WAR DEPARTMENT  
 July 6, 1942

C. 1977

TRANSFER OF  
 NEW CONSTRUCTION

Surplus Real Estate Directive Pacific Division No. 402 Job No.

BUILDINGS AND STRUCTURES

(1) TOTAL NUMBER UNITS	(2) PLAN No.	(3) DESIGNATION AND TYPE	(4) TOTAL DESIGNED CAPACITY	(5) TOTAL SQUARE FEET IN FLOOR AREA	(6) BUILDING No. AND REMARKS
8728 Lin. Ft.	700-5125	Pen-E-M Fence	40' High	Not Applicable	at gunnery ranges
2	SL 40-27 40-31	Target Storehouse	144 Sq. Ft.	144	T-406; T-408 ✓
2	SL 40-27 40-18	Latrine Type Lat	4 men	232	T-402; T-404 ✓
2	SL 40-24 40-29	Laver Pit-1 (Mod) Sub Machine Gun	86 Sq. Ft.	86	
1	SL 40-31	Target Storage House	72 Sq. Ft.	72 Sq. Ft.	Blag # T-311, 6x12 used for Eng. 11A9
1	SL 40-18	Lat 2 (Mod)	4 Men	116 Sq. Ft.	Pit Type, Bldg. #T-310
54	SL 40-28	Target Markers	Not Applicable	Not Applicable	
108	SL 40-28	Stake Tables	Not Applicable	"	
60	SL 40-28	Target Frame Holders	"	"	
1	SL 40-27	Gun Shelter	3600 Sq. Ft.	3600 Sq. Ft.	Range No. 9-Maintenance Bldg. #T-406
1	SL 40-18	Lat-2 (Mod)	4 Men	116 Sq. Ft.	Pit Type, Bldg. No. T-401
24	SL 40-27 40-31	Machine Gun Mount, 24 Guns	24 Guns	Not Applicable	
1	SL 47-1 47-3	Turret Trainer Bldg. 7500 Sq. Ft. Type - MFT Modified	7500 Sq. Ft.	7500	
5	SL 40-25 40-30	Towers	Not Applicable	Not Applicable	
3	SL 40-25 40-18	Lat - 2	"	"	
15	SL 40-25 40-21	Sperry Upper Turret Stands	"	"	
15	SL 40-25 40-22	Martin Upper Turret Stands	"	"	
5	SL 40-25 40-30	Target Release & Rectifier House	"	"	
3	SL 40-25 40-24	Scoring House	Not Applicable	"	
6	SL 40-25 40-24	Blindors	"	"	
1	SL 40-25 40-24	Low Trap House	"	"	
3	SL 40-25 40-24	High Trap House	"	"	

It is certified that the construction listed hereon is in accordance with maps, plans, and specifications delivered to the Post Engineer with the deficiencies listed on the back of this sheet, and is accepted.

ACCEPTED BY

Post Engineer.

TRANSFERRED BY

*Floyd L. Tomlin*  
 FLOYD L. TOMLIN,  
 Major, P. of E., Post Engineer

Commanding Officer.

U. S. GOVERNMENT PRINTING OFFICE

16-29704-1

Gunnery Range  
294th AAF Base Unit (Standby)  
Army Air Base  
Post - Salt Lake City, Utah  
Date - 4 May 1944  
Serial No. - PR 2

O. C. E. Form, No. 290  
WAR DEPARTMENT  
July 6, 1942

TRANSFER OF  
NEW CONSTRUCTION

BUILDINGS AND STRUCTURES Surplus Real Estate Directive Pacific Division No. 482

TOTAL NUMBER UNITS (1)	PLAN No. (2)	DESIGNATION AND TYPE (3)	TOTAL DESIGNED CAPACITY (4)	TOTAL SQUARE FEET IN FLOOR AREA (5)	BUILDING No. AND REMARKS (6)
2	SL 40-23 40-24	Boundary Stakes	Not Applicable	Not Applicable	
2	SL 40-23 40-24	Protective Fence	"	"	
21	SL 40-23 40-24	Gun Mounts	"	"	
6	SL 40-23	Full levers sheet range	Not Applicable	"	
21	SL 40-23	Station Boxes	Not Applicable	"	
1	SL 40-9 40-15	Control Tower	"	"	
3	SL 40-9 40-19	Rectifier House	"	32	
1	SL 40-9 40-14	Malfunction Bldg.	"	1300	
1	SL 40-9 40-14	Ammunition Storage	"	144	
1	SL 40-9 40-14	Latrine 12-D-T	"	160	
1	SL 40-8 40-21	Sperry Laser Ball Target Stands	Not Applicable	Not Applicable	
3	SL 40-8 40-21	Upper Sperry Target Stands	"	"	
3	SL 40-8 40-22	Consolidated Ball Target Stands	"	"	
23	SL 40-8 40-22	Upper Martin Target Stands	"	"	
24	SL 40-8 40-21	Flexible Machine Gun Mount	"	"	
5	SL 40-26	Range Poles	Not Applicable	"	
1	SL 40-14	Target Storage Bldg.	Not Applicable	400 Sq. Ft.	
1	SL 40-19	Range Office	"	800 Sq. Ft.	
2	SL 40-18	Latrines (Lat-2)	"	232 Sq. Ft.	
30	SL 40-8	Target Markers (Small)	"	Not Applicable	
30	SL 40-8	Target Markers (Large)	"	"	
2	SL 40-8	200 yard marker	"	"	
2	SL 40-8	Score Tables	"	"	
2	SL 40-8	Rifle Boxes	Not Applicable	"	
6	SL 40-4	Large Bench	"	"	

It is certified that the construction listed hereon is in accordance with maps, plans, and specifications delivered to the Post Engineer with the deficiencies listed on the back of this sheet, and is accepted.

ACCEPTED BY

Post Engineer.

TRANSFERRED BY

FLOYD A. YORF  
Major, U. S. Army  
Post Engineer

Commanding Officer.

U. S. GOVERNMENT PRINTING OFFICE

16-20704-1

Approved

Gunnery Range  
204th AAF Base Unit (Standby)  
Army Air Base  
Post - Salt Lake City, Utah  
Date 4 May 1946  
Serial No. FS 8

O. C. E. Form No. 290  
WAR DEPARTMENT  
July 6, 1942

TRANSFER OF  
NEW CONSTRUCTION

BUILDINGS AND STRUCTURES Surplus Deal Estate Directive Pacific Division No. 482

TOTAL NUMBER UNITS (1)	PLAN No. (2)	DESIGNATION AND TYPE (3)	TOTAL DESIGNED CAPACITY (4)	TOTAL SQUARE FEET IN FLOOR AREA (5)	BUILDING NO. AND REMARKS (6)
30	SL 40-6	Small Bench	Not Applicable	Not Applicable	
4		Sperry Lower Ball Turret Stands			
		Installed in Jeep Range #8			
4		Sperry Lower Ball Turret Stands			
3		Consolidated tail-turret stands			
2		Upper Sperry Turret Stands			
3		Upper Martin Turret Stands			
21		Flexible Machine Gun Mounts			
2		Flag Poles, steel			
2		Heaters, Space, U.S. No. 1			Armour Bldg. Range #2
1		Tank, Solvent, 4' x 4' x 6'			
2		Tables, work 3 1/2' x 4' x 18'			
1		Box, coal	Not Applicable		
2		Barrels, fire			
1		Seaters, U.S. Army No. 1 Space Heaters			Rifle Range Office, Range #13
1		Counter 20' long	Not Applicable		
1		Box coal			
1		Key, North Door No. DC-1161 in Armour Bldg. Range #2			
1		Key, Gun Room No. 75486			
1		Key, Control Tower No. DC-1068	Not Applicable		
3		Keys, Three Restroom Houses, Nos. 3, Range #2			
3		Keys, Nos. 4, "			
1		Key, Rifle Range Target Storage, No. 1, Range #13			

It is certified that the construction listed hereon is in accordance with maps, plans, and specifications delivered to the Post Engineer with the deficiencies listed on the back of this sheet, and is accepted.

ACCEPTED BY

Post Engineer.

TRANSFERRED BY

*Alfred H. Johnston*  
FLIGHT Lt. JONSTON  
Major, C. of E., Post Engineer  
Area Engineer.

Commanding Officer.

U. S. GOVERNMENT PRINTING OFFICE

16-29704-1

Gunnery Range  
204th AAF Base Unit (Standby)  
Army Air Base  
Salt Lake City, Utah  
Date 4 May 1944  
Serial No. PS 8  
Job No.

O. C. E. Form No. 280  
WAR DEPARTMENT  
JULY 6, 1942

TRANSFER OF  
NEW CONSTRUCTION

BUILDINGS AND STRUCTURES Surplus Real Estate Directive Pacific Division No. 432

(1) TOTAL NUMBER UNITS	(2) PLAN NO.	(3) DESIGNATION AND TYPE	(4) TOTAL DESIGNED CAPACITY	(5) TOTAL SQUARE FEET IN FLOOR AREA	(6) BUILDING NO. AND REMARKS
1	1 Key, Rifle Range Office	West Door No. 75785, Range #13		Not Applicable	
1	1 Key, "	North Door No. 75381		"	
1	1 Key, "	Interior Doors, (Master Key)		"	
6	CCC Panels	Barracks-Knocked Down		12,000 Sq. Ft.	Consists of dismantled CCC Panels
100 Yds.	Not Avail.	Firing Line	100 Yd.	Not Applicable	w/50 small target markers
4	"	Barrels, Fire	Not Applicable	"	
30	"	Trunks, Target	"	"	
2	"	Benches, Rifle	"	"	
43	"	Tent Floors (4 sections)	Not Applicable	"	
1	"	Tower	Not Applicable	"	at Pistol Range
2	"	Turret Stands	"	"	
5	"	Mounts	"	"	
1	"	Pistol Tower	Not Avail.	Not Avail.	Incomplete (No. OCS Form 290 received for these buildings)
1	"	Jeep track & embankment	"	"	
5	"	Rectifier Houses	Not Avail.	"	
1	"	Manufacturing Bldg.	"	"	
1	"	Lathings	"	"	
1	"	Ammunition Storage Bldg.	"	"	
561 1/2 Ft.	SL 40-4 40-5	Earth embankment	Not applicable	"	Earth Embankment, timber, but wall
328 Sq. Yds.	SL 40-4	Firing Line	"	"	Sand for firing line 2" deep
217 Sq. Yds.	SL 40-4	Firing Line	"	"	Earth Embankment 334' x 25' x 0.7'

It is certified that the construction listed hereon is in accordance with maps, plans, and specifications delivered to the Post Engineer with the deficiencies listed on the back of this sheet, and is accepted.

ACCEPTED BY

Post Engineer.

TRANSFERRED BY

FLOYD L. YOUNG,  
Major, U. S. A., Post Engineer

Commanding Officer.

U. S. GOVERNMENT PRINTING OFFICE

16-29704-1



Gunnery Range  
 294th AAF Base Unit (8 mby)  
 Army Air Base  
 Salt Lake City, Utah  
 Date 4 May 1944  
 Serial No. FH 8  
 Job No.

**TRANSFER OF NEW CONTRUCTION**

**UTILITY SYSTEMS Surplus Real Estate Directive Pacific Division No. 482**

O. C. E. FORM NO. 290-A  
 WAR DEPARTMENT  
 July 6, 1942

FEATURE (1)	BASE DATA (2)		PLAN No. (3)	TYPE OF REMARKS (4)
	UNIT	QUANTITY		
<b>WATER SYSTEM:</b>				
Water mains	Lin. ft.			
Water service lines	Lin. ft.			
Water pumping stations	1,000 gals./day			
Water filtration plant	1,000 gals./day			
<b>SEWER SYSTEM:</b>				
Sanitary sewer mains	Lin. ft.			
Sanitary house laterals	Lin. ft.			
Storm sewer lines	Lin. ft.			
Sewage pumping stations	1,000 gals./day			
Sewage treatment plant	1,000 gals./day			
<b>ELECTRIC SYSTEM:</b>				
Generating plant	Kv.-a capacity	4107		
Overhead distribution lines	Lin. ft.	15		
Overhead services	Number	2628		
Underground distribution lines	Lin. ft.	42		
Underground services	Number	22		
Exterior lighting system	Number lights	132 1/2		
Distribution line transformers	Kv.-a			
Substation	Number feeders	6462		
Transmission lines	Lin. ft.			
<b>GAS DISTRIBUTION</b>				
	Lin. ft.			

250' of 3 # 2 & 1 #8 WP Service Connect  
 1200' of 3 # 10 & 1 #8 Sec. Rectifier Bl.  
 1400' of 3 # 4 WP Flood light circuit  
 210' of 2 # 6 WP  
 (2 #8 WP 355', 2 #8 WP 185', 3 #8 WP 211'  
 (4 #4 WP 118', 2 #8 WP 58', 3 #8 WP 75'  
 (4 #2 WP 65', 4 #6 WP 20'  
 2 #2 Type R1 Increased Fiber Conduit.  
 To 5 Rectifiers Shelters, Conduits.  
 2 KW 600 Volt Wire in 2" Concrete Fiber  
 Rectifier Shelters to Turret Stands  
 Floodlights on Poles  
 3 - 15 KVA, 2 - 25 KVA & 1 - 37 1/2 Transformer  
 #6 BC Wire & #6 Steel Wire

It is certified that the construction listed hereon is in accordance with maps, plans, and specifications delivered to the Post Engineer with the deficiencies listed on the back of this sheet, and is accepted.

ACCEPTED BY \_\_\_\_\_  
 Post Engineer  
 TRANSFERRED BY \_\_\_\_\_  
 Major, U. S. Army, Post Engineer

Commanding Officer  
 U. S. GOVERNMENT PRINTING OFFICE : 1942-O-41487



## SECTION E-12

### U.S. Army Corps of Engineers, Pacific Division

***Surplus of Real Estate Directive Pacific Division No. 482***, 22 April 1944, Accession 342-48A-5044, Box 3, Folder: 601.53, NPRC (MRC) – St. Louis, MO.

Surplus Real Estate Directive  
Pac. Divn No. 482  
Sacramento District No. 14  
Lease No. See Reverse Side

WAR DEPARTMENT  
OFFICE OF THE DIVISION ENGINEER  
PACIFIC DIVISION  
351 CALIFORNIA STREET  
SAN FRANCISCO 19, CALIFORNIA

601.53 ~~ADREADD~~

22 April 1944

Subject: Declaration of Surplus Real Estate

To: The District Engineer  
U. S. Engineer-Office  
1209 Eighth Street  
Sacramento, California

1. Lessor and Location: Salt Lake AAB Gunnery Range 7 mi. West of AAB,  
See Reverse Side Salt Lake City, Utah
2. Description of Government Improvements: None indicated
3. Estimated Value of Government Improvements: -
4. Former Using Agency: AAB-SIC, Utah
5. Date Property Declared Surplus: 22 April 1944
6. Disposition directed: District Engineer to take over property  
accountability, maintenance and protection of this installation from  
Post Engineer, Utah AAB  
until termination or transfer of lease. Effective date of termination or  
transfer will be furnished when determined. Salt Lake City Real Estate  
Sub-Office and Service Command Engineer notified this date.

7. Funds: Necessary funds for guarding, maintenance and restoration,  
if required, will be obtained in accordance with Pacific Division Circular  
No. 11, dated 18 March 1944, Subject: Funds for Disposition, Dismantling,  
Alterations and Maintenance of Surplus and Excess Buildings and Structures.

For the Division Engineer,  
M. J. O'BYRNE

Distribution:

Real Estate Divn: 2 copies  
District Office concerned: 2 copies  
Real Estate Sub-Office: 1 copy  
Finance & Acctg. Branch: 1 copy  
Control Branch: 1 copy  
Service Command Engineer: 1 copy  
Supply Division: 1 copy  
Engineering Div.: 1 copy

M. J. O'BYRNE  
Lt. Col., Corps of Engineers  
Division Real Estate Officer

1229512352

Excess Real Estate Report  
Pac. Divn No. 736  
Lease No. ~~W-04-193-eng-2346~~  
W-04-193-eng-2345  
W-04-193-eng-2557  
W-04-193-eng-2553  
W-04-193-eng-2556  
W-04-193-eng-2554  
W-04-193-eng-2555

WAR DEPARTMENT  
OFFICE OF THE DIVISION ENGINEER  
PACIFIC DIVISION  
351 CALIFORNIA STREET  
SAN FRANCISCO 19, CALIFORNIA

601.53 PADRE-DD

3 April 1944

Subject: Report of Excess Property

To: The Post Engineer  
Utah Army Air Base  
Salt Lake City  
Utah

1. Declaration of excess has been received on the premises as indicated below:

a. Lessor: See reverse side.

b. Location: 7 miles west of AAB, S. L. C., Utah

c. Description: Approximately 5,373.095 acres land  
Salt Lake AAB Gunnery Range.

d. Using Agency: AAB, SLC, Utah

e. Date Vacated: Not indicated

f. Government Improvements: None indicated

2. It is requested that your office retain property accountability, maintenance and protection of subject installation including the assignment of guards, if determined necessary, until the property has been transferred or declared surplus by this office pursuant to W.D. Circular No. 8, 5 January 1944.

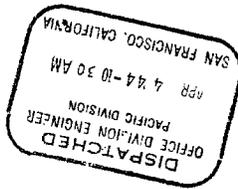
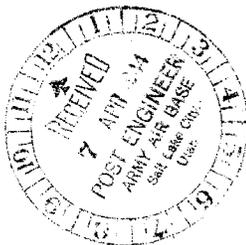
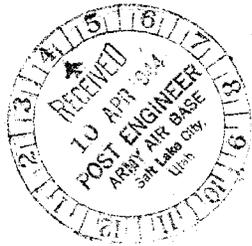
For the Division Engineer:

  
M. J. O'BYRNE  
Lt. Col., Corps of Engineers  
Division Real Estate Officer

Distribution:  
V.M.E., Post Eng., or Air Force  
Utilities Officer concerned: 2 copies  
Service Command Engineer: 1 copy  
Real Estate Sub-Office concerned: 1 copy

Salt Lake AAB Gunnery Range:

Joseph C. Ward, etal	W-04-193-eng-2346	10 acres
Agnes R. Dowse	W-04-193-eng-2345	30 acres
C. F. & E. L. Gillmor	W-04-193-eng-2557	240 acres
George H. Winter	W-04-193-eng-2553	400 acres
Bothwell Corp & Bonneville on the Hill	W-04-193-eng-2556	3643.15 acres
T. E. Jeremy	W-04-193-eng-2554	1039.945 acres
State of Utah	W-04-193-eng-2555	



## SECTION E-13

### Army Air Forces Headquarters, Office of Flying Safety

**Letter: Standby Status, Salt Lake City AAB (municipal  
Airport No. 1 and Blythe AAF, Blythe, Calif. 15 May  
1944, RG 18, Entry 292A, Box 1572, Folder 600 Misc  
SLCAAB, Utah. NARA-College Park, MD.**

REPRODUCED AT THE NATIONAL ARCHIVES

DECLASSIFIED

Authority E.O. 10501  
By LE NARA Date 10/28/02

HEADQUARTERS ARMY AIR FORCES

ROUTING AND RECORD SHEET

TALLY NO.	
FILE NO.	

SUBJECT: Standby Status, Salt Lake City AAB (Municipal Airport No. 1) and Blythe AAF, Blythe, Calif.

TO: Air Communications Officer  
FROM: Flying Safety, Operational Services Division

DATE 15 May 44  
GSW:FHR:mm 73427  
COMMENT NO. 1

1. Notice has been received from Air Service Command that effective 17 May, the Salt Lake City AAB (Municipal Airport No. 1) will be placed on standby status in so far as Army use is concerned. It was requested by the Air Service Command that your office be advised of this in order that you may take any action which may be necessary in this connection.

2. Notice has been received from the Air Service Command that assumption of jurisdiction of the Blythe AAF, Calif., and placing on standby status has been postponed until 1 June 44 instead of becoming effective on 15 May as reported by R&R from this office 11 May, subject, "Blythe Army Air Field, Blythe, Calif. - Standby Status."

3. There is furnished for your information copy of teletype forwarded this date to Army Air Force commands, which contains information with regard to two stations listed above.

Incl  
Cy tel to AAF Commands  
15 May 44

*for* *C.F. Cornish Maj. 2C*  
G.S.W. C. F. CORNISH  
Lt Col, Air Corps  
Chief, Operational  
Services Division  
Office of Flying Safety

TO AAF FILES  
AFAGC *ES*

PAGE \_\_\_\_\_

2-1100 A F

REPRODUCED AT THE NATIONAL ARCHIVES

DECLASSIFIED

Authority E.O. 10501  
By E. NARA Date 10/22/02

R E S T R I C T E D

ARMY AIR FORCES  
Headquarters  
Air Service Command

ASCP2A

Patterson Field, Ohio

13 May 1944

SUBJECT: Transfer of Salt Lake City Army Air Base, Salt Lake City, Utah, and  
Organization of 4263 AAF Base Unit (Base Maintenance)

TO : Commanding General  
Ogden Air Service Command

1. Pursuant to instructions contained in letter, Headquarters, AAF, (AFDBS-(2A-1/2), subject: "Designation of Bases for Standby and Assignment to the ASC," 2 May 1944, and with the concurrence of the Commanding General, Second Air Force referred to in teletype, Headquarters, Ogden Air Service Command OASCP2-T-5-157, 9 May 1944, command jurisdiction of Salt Lake City Army Air Base, Salt Lake City, Utah, is assumed by Air Service Command effective 17 May 1944, and subject station is hereby further assigned to Commanding General, Ogden Air Service Command.

2. Letter, this Headquarters, subject: "Standby Airfields," 18 February 1944 and inclosure thereto and "RESTRICTED" letter, this Headquarters, subject: "Assignment of Airdromes," 29 February 1944 will be complied with.

3. Station complement personnel, both military and civilian, as agreed upon with the Commanding General, Second Air Force, are transferred to the Air Service Command concurrently with the transfer of the subject field and are further assigned to the Commanding General, Ogden Air Service Command. Revision of the allotment of personnel will be governed by the provisions of paragraph 7, AAF Regulation No. 37-2, 18 December 1943.

4. Pursuant to instructions contained in WD letter, AG 322 (21 Feb 44) OB-I-AFRPG-M, subject: "Organization of AAF Base Units," 23 February 1944, necessary action will be taken by Ogden Air Service Command to organize the 4263rd AAF Base Unit (Base Maintenance) Salt Lake City Army Air Base, Salt Lake City, Utah.

5. An immediate report will be submitted by the Commanding General, Ogden Air Service Command, to the Commanding General, Air Service Command (Attn: ASCPM3), confirming transfer of station complement personnel, furnishing a roster of all officers, warrant officers, and enlisted men by military occupational specialty and grade, which are transferred to Air Service Command concurrently with the reassignment of the above station.

- 1 -

R E S T R I C T E D

(1) 6802 Salt Lake City Air Base

## **SECTION E-14**

### **Secretary of War**

**Letter: CE 601.53 Salt Lake Army air Base GR. Gn,  
Range, Utah (U.S. vs Agnes R. Douse, et al.) SPELE, 30  
May 1944, RG 107, Entry 102, Box 132, Folder Army  
Air Base Salt Lake City, Utah. NARA-College Park,  
MD.**

REPRODUCED AT THE NATIONAL ARCHIVES

CE 601.53 Salt Lake Army Air Base Gr. Gn. Range, Utah  
(U.S. vs. Agnes R. Douse, et al.) SPELE

MAY 30 1944

The Honorable,  
The Attorney General,  
Washington, D. C.

Dear Mr. Attorney General:

Reference is made to the condemnation proceeding entitled United States vs. 6,240 acres of land, more or less, situate in Salt Lake County, State of Utah, and Agnes R. Douse, et al., Civil Action No. 545, now pending in the United States District Court for the District of Utah, to acquire land for use in connection with the Salt Lake Army Air Base Ground Gunnery Range.

It is deemed necessary and advantageous to the interests of the United States to extend the term condemned to June 30, 1945, by the filing of proper notice at least thirty days prior to the end of the existing term, since the use and possession of these properties will be required for military purposes for an additional year.

You are, therefore, notified that I have elected to extend the term which was condemned for an additional year ending June 30, 1945, as to all of the land included in the above-named proceeding. It is requested that you file a proper notice of this election with the Court and cause copies of such notice to be transmitted to all interested parties.

Sincerely yours,

HENRY L. STIMSON

Secretary of War.

MAY 30 1944



COORDINATION  
AND  
OPERATIONS

COPY FOR SECRETARY OF WAR

MAY 29 1944



JCS  
WLB  
JJOB

OSW 601.53 Salt Lake Army Air Base Gr. Gn. Range, Utah (5/30/44)

hc

REPRODUCED AT THE NATIONAL ARCHIVES

601.5] Salt Lake Army Air Base Gr. Gunnery Range, Utah  
(U.S. vs. Agnes R. Douce, et al.) SPELE

601.5] Salt Lake Army Air Base  
Ground Gunnery Range, Utah  
(U.S. vs. Agnes R. Douce, et al.) SPELE

25 May 1944

**SUBJECT:** Land Acquisition.

**TO:** Under Secretary of War.

1. Reference is made to the condemnation proceeding entitled United States vs. 6,240 acres of land, more or less, situate in Salt Lake County, State of Utah, and Agnes R. Douce, et al., Civil Action No. 545, now pending in the United States District Court for the District of Utah, to acquire land for use in connection with the Salt Lake Army Air Base Ground Gunnery Range.

2. The term condemned in the above-named proceeding may be extended for an additional year at the election of the Secretary of War. It has been administratively determined that the use and possession of the property included in the above-named proceeding is necessary and advantageous to the best interests of the United States for the year ending 30 June 1945. It is recommended that the Attorney General be notified that the Secretary of War has elected to extend the term to 30 June 1945, and be requested to cause proper notice to be given. Accordingly, there is furnished herewith draft of letter to the Attorney General incorporating this information and this request.

3. Following execution of the above inclosure by the Secretary of War, it is requested that it be returned to this office for further necessary action.

For the Chief of Engineers:

1 Inclosure:  
Draft of ltr.  
to Atty. Gen.

JOHN J. O'BRIEN  
Colonel, Corps of Engineers  
Chief, Real Estate Division

MAY 29 1944

WAR DEPARTMENT  
OFFICE OF THE  
SECRETARY OF WAR

REPRODUCED AT THE NATIONAL ARCHIVES

CE 601.53 (Salt Lake Army Air Base,  
Gunnery Range, Utah) SPELE  
U. S. vs. Agnes R. Douse and 6240 Acres.  
D/T No. 1.

APR 26 1944

The Honorable,  
The Attorney General,  
Washington, D. C.

Dear Mr. Attorney General:

Reference is made to the condemnation proceeding entitled  
United States vs. 6,240 acres of land, more or less, in Salt Lake County,  
Utah, et al., in the District Court of the United States for the District  
of Utah, Central Division, Civil No. 545.

Pursuant to the provisions of the Act of Congress approved  
February 26, 1931, and the Acts of Congress recited in the petition filed  
in the above entitled condemnation proceeding, it is requested that you  
cause the inclosed Declaration of Taking No. 1 to be filed in said pro-  
ceeding for the condemnation of a term for years as more particularly set  
forth in the declaration of taking. The declaration of taking covers  
400 acres of land, more or less, which is a part of the land involved in  
the pending condemnation proceeding. The sum estimated to be just com-  
pensation for the taking of said land for the term beginning 2 October  
1943, and ending 30 June 1944, is \$167.89, check for which amount, payable  
to the order of the Clerk of the United States District Court in and for  
the District of Utah, Central Division, is inclosed for deposit in the  
registry of the court.

APR 26 1944 Title evidence and an appraisal report for the aforementioned  
land will be forwarded to your local field representative by Lt. Colonel  
M. J. O'Byrne, Division Real Estate Officer, Pacific Division, Corps of  
Engineers, U. S. Army, 151 California Street, San Francisco 17, California.



Three additional copies of the declaration of taking are

COORDINATION  
IN THE DIV.  
NEW SEC WAP

Sincerely yours,

Secretary of War.

- 2 Inclosures:  
1 - Check  
2 - Dec. of Tak. (Quad.)

Papers to *Eng. Trust*

APR 26 1944 FOR: SECRETARY OF WAR

OSM 601.1 Salt Lake Army Air Base, Gunnery Range, Utah (4-26-44)

*FBH*  
FBH

*WLB*  
WLB

JJO'B

DUPLICATED AT THE NATIONAL ARCHIVES

SD Form No. 974  
ADDRESS REPLY TO  
CHIEF OF ENGINEERS, U. S. ARMY  
WASHINGTON, D. C.

**WAR DEPARTMENT**  
OFFICE OF THE CHIEF OF ENGINEERS  
WASHINGTON

REFER TO FILE NO. ~~OF 601-11880~~  
**(Salt Lake Army Air Base,  
Gunnery Range, Utah) SPMS  
U. S. vs. Agnes R. Deuse and 6240 Acres.  
D/T No. 1**

20 April 1944

SUBJECT: Acquisition of Land.

TO: Under Secretary of War.

1. Authority for the acquisition of certain land in Salt Lake County, State of Utah, for use in connection with the Salt Lake Army Air Base, Gunnery Range, Utah, is contained in AR 100-61, paragraph 12.

2. In order to obtain title to and possession of the land involved in the time remaining before the land is required for the authorized military use, it is recommended that the Attorney General be requested to file in the pending condemnation proceeding a declaration of taking pursuant to existing law. Accordingly, there are furnished herewith:

- a. Declaration of Taking.
- b. Draft of letter to the Attorney General requesting the filing of the declaration of taking.

3. Following execution of these inclosures by the Secretary of War, it is requested that they be returned to this office for the procurement of a check for deposit in the Registry of the Court and for further necessary action.

For the Chief of Engineers:

2 Inclosures:  
As Listed.

92-2487

APR 22 44



**WAR DEPARTMENT**  
OFFICE OF THE  
SECRETARY

JOHN J. O'BRIEN,  
Colonel, Corps of Engineers,  
Chief, Real Estate Branch.

REPRODUCED AT THE NATIONAL ARCHIVES

CG 601.55 SALT LAKE CITY AIR BASE, UTAH  
U. S. v City of Salt Lake. (SPELM)

MAY 12 1943

The Honorable,  
The Attorney General,  
Washington, D. C.

Dear Mr. Attorney General:

It is necessary and advantageous to the interests of the United States that certain land and appurtenances in the City and County of Salt Lake, State of Utah, be temporarily acquired by the United States of America in connection with the Salt Lake City Army Air Base, Utah.

Therefore, pursuant to the provisions contained in the Act of Congress approved August 15, 1890 (26 Stat. 515), as amended by the Acts of Congress approved July 2, 1917 (40 Stat. 242), April 11, 1918 (40 Stat. 515, 50 U.S.C. sec. 171), and March 27, 1942 (Public Law 507 - 77th Congress), which acts authorize the acquisition of land for military or other war purposes, and the Act of Congress approved July 2, 1942 (Public Law 649 - 77th Congress), which act appropriated funds for such purposes, it is requested that you cause the necessary proceedings to be instituted for the condemnation of a town for years ending June 30, 1944, in and to the land above referred to, subject however, to existing easements for public utilities and for pipe lines, said term to be extendable for yearly periods thereafter during the existing national emergency at the election of the United States, notice of which election shall be filed in the proceeding at least thirty days prior to the end of the term thereby taken or subsequent extensions thereof. The aforementioned land is a portion of Twenty First West Street and Ninth North Street in the City and County of Salt Lake, State of Utah. A description of the land is inclosed marked Exhibit "A", and a map showing the location thereof is inclosed marked Exhibit "B". The apparent owners of the land are the City of Salt Lake, the County of Salt Lake and the Bethnell Corporation.

The Act of Congress approved July 2, 1942 (Public Law 649 - 77th Congress), supra, appropriated funds to acquire the property under consideration.

The aforementioned land is to be utilized in connection with an army air base, and immediate possession thereof is necessary for the successful prosecution of the war. It is, therefore, requested that pursuant to the provisions of the Act of Congress approved March 27, 1942 (Public Law 507 - 77th Congress), you procure from the court an order granting immediate possession of the land to the United States.

OSW  
601.1 Air Base, Utah (5/12/43) (11)

REPRODUCED AT THE NATIONAL ARCHIVES

MAY 12 1943

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Appraisal reports and title evidence are being procured under the supervision of Lt. Col. H. J. O'Byrne, Division Real Estate Officer, Pacific Division, San Francisco Branch, 381 California Street, San Francisco, California, and the probable date of availability of appraisal reports and title evidence can be obtained by your field representative from Lt. Col. O'Byrne. It is requested that you instruct your field representative to deliver a copy of the petition and possession order to Lt. Col. O'Byrne.

Three additional copies of Exhibits "A" and "B" are inclosed.

Sincerely yours,

MAY 12 1943 HENRY L. STIMSON

2 Inclosures:

- 1 - Ex. "A" (in quad.)
- 2 - Ex. "B" (in quad.)

Secretary of War.



COOPERATION  
AND  
WAR

Paterto *Chas. M...*  
MAY 12 1943



11d

RLT

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WLB

JJO'B

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77414

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REPRODUCED AT THE NATIONAL ARCHIVES

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ADDRESS REPLY TO  
CHIEF OF ENGINEERS, U. S. ARMY  
WASHINGTON, D. C.

**WAR DEPARTMENT**  
OFFICE OF THE CHIEF OF ENGINEERS  
WASHINGTON

REFER TO FILE NO. CE 601.1 **COL. SS SALT LAKE CITY**  
**AIR BASE, UTAH.**  
**U. S. v City of Salt Lake (SPELE)**

May 11, 1943.

**SUBJECT:** Acquisition of Land.  
**TO:** Under Secretary of War.

1. Authority for the acquisition of land in the City and County of Salt Lake, State of Utah, for the Salt Lake City Air Base, is contained in War Department Circular No. 47, issued by the Secretary of War on February 18, 1943.

2. In order to obtain possession of the land involved in the time remaining before the land is required for the authorized military use, it is recommended that the Attorney General be requested to institute condemnation proceedings for the acquisition of the aforementioned land, and to secure in those proceedings a court order allowing immediate possession. Accordingly, there is furnished herewith a draft of letter to the Attorney General, which incorporates this request.

3. After execution of this letter by the Secretary of War, it is requested that it be returned to this office for further necessary action.

For the Chief of Engineers:

JOHN J. O'BRIEN  
Colonel, Corps of Engineers  
Chief, Real Estate Branch

12

REPRODUCED AT THE NATIONAL ARCHIVES

CE 601.53 SALT LAKE ARMY AIR BASE,  
UTAH  
U. S. v Agnes R. Douze, et al.  
SPELE

SEP 27 1943

The Honorable,  
The Attorney General,  
Washington, D. C.

Dear Mr. Attorney General:

It is necessary and advantageous to the interests of the United States that certain land and appurtenances located in Salt Lake County, Utah, be acquired by the United States for use as a ground gunnery range for the Salt Lake Army Air Base, Utah.

Therefore, pursuant to the provisions contained in the Act of Congress approved August 18, 1890 (26 Stat. 316), as amended by the Acts of Congress approved July 3, 1917 (40 Stat. 241), April 11, 1918 (40 Stat. 518, 50 U.S.C. sec. 171), and March 27, 1942 (Public Law 507 - 77th Congress), which acts authorize the acquisition of land for military or other war purposes, and the Act of Congress approved July 1, 1943 (Public Law 108 - 78th Congress), which act appropriated funds for such purposes, it is requested that you cause the necessary proceedings to be instituted for the condemnation of a term for years ending June 30, 1944, in the land above referred to, extendible for yearly periods thereafter during the existing national emergency at the election of the United States, notice of which election shall be filed in this proceeding at least 30 days prior to the end of the term taken or subsequent extensions thereof, subject however, to existing easements for public roads and highways, for public utilities, for railroads and for pipe lines, together with the right to remove within a reasonable time after the expiration of the term or extensions thereof, any and all improvements and structures placed thereon by or for the United States. The land above referred to aggregates 2240 acres, more or less, and is more particularly described in the inclosed Exhibit "A" and shown on the inclosed map marked Exhibit "B". The names of the purported owners of said land are set forth in said Exhibit "A".

The Act of Congress approved July 1, 1943 (Public Law 108 - 78th Congress), supra, appropriated funds to acquire the land under consideration.

The aforementioned land is to be utilized in connection with a military air base, and immediate possession thereof is necessary for the successful prosecution of the war. It is, therefore, requested that

OSW 601.53 Salt Lake Army Air Base, Utah (9-27-43.) (1)

REPRODUCED AT THE NATIONAL ARCHIVES

2 FEB 51 1943

SECRET  
BY 1. A y... H. ...  
DATE  
ON 307-23 2512 1741 1741 1741

pursuant to the provisions of the Act of Congress approved March 27, 1942 (Public Law 507 - 77th Congress), you procure from the court an order granting immediate possession of said land to the United States. It is requested that you instruct your field representative to deliver a copy of the petition and possession order to Lt. Col. M. J. O'Byrne, Division Real Estate Officer, Pacific Division, San Francisco Branch, Corps of Engineers, U.S.A., 301 California Street, San Francisco, California.

Appraisal reports and title evidence are being obtained under the supervision of Lt. Col. O'Byrne, and the probable date of availability of appraisal reports and title evidence can be obtained by your field representatives from the Division Real Estate Officer.

Two additional copies of Exhibits "A" and "B" are inclosed.

Sincerely yours,

HENRY L. STIMSON

Secretary of War.

SEP 27 1943

- 2 Incls:  
1 - Ex. "A" (trip.)  
2 - Ex. "B" (trip.)



COORDINATION  
AND RECORD DIV.  
OFF. MIL. WAR

SEP 25 1943



OFFICE OF THE  
SECRETARY OF WAR

Papers to...

SEP 27 1943

11d

-2-

WLB  
RLT

JJO'B

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ADDRESS REPLY TO  
CHIEF OF ENGINEERS, U. S. ARMY  
WASHINGTON, D. C. .63

WAR DEPARTMENT  
OFFICE OF THE CHIEF OF ENGINEERS

REFER TO FILE NO. CE 601 \* SALT LAKE ARMY WASHINGTON  
~~IN BASE, UTAH~~  
U. S. v Agnes R. Douse, et al.  
SPELE

25 September 1943

SUBJECT: Acquisition of Land.

TO: Under Secretary of War.

1. Authority for the acquisition of land in Salt Lake County, Utah, for the Salt Lake Army Air Base, is contained in AR 100-61.

2. In order to obtain possession of the land involved in the time remaining before the land is required for the authorized military use, it is recommended that the Attorney General be requested to institute condemnation proceedings for the acquisition of the aforementioned land, and to secure in those proceedings a court order allowing immediate possession. Accordingly, there is furnished herewith a draft of letter to the Attorney General, which incorporates this request.

3. After execution of this letter by the Secretary of War, it is requested that it be returned to this office for further necessary action.

For the Chief of Engineers:

SEP 25 1943

JOHN J. O'BRIEN  
Colonel, Corps of Engineers  
Chief, Real Estate Branch

1 Incl.  
Draft ltr. to  
Att. Gen.



## SECTION E-15

### Chief of Engineers, War Department

**Letter: Additional Ranges, Salt Lake City Airdrome,**  
**9 September 1943, Corps of Engineer Box 15, Salt**  
**Lake 02042980. US Air Force Historical Research**  
**Agency, Maxwell AFB, Montgomery, AL.**

Dir. Com. No. A 16548  
Dist. Seq. No. D-Salt Lake City A 275  
Job No. Salt Lake City Airbase A(7-2)

ADDRESS REPLY TO  
CHIEF OF ENGINEERS, U. S. ARMY  
WASHINGTON, D. C.

WAR DEPARTMENT

OFFICE OF THE CHIEF OF ENGINEERS

WASHINGTON

REFER TO FILE NO. 614 (Salt Lake City Airport, Utah)

SP2KH

9 September 1943

**SUBJECT:** Additional Ranges, Salt Lake City Airbase, Utah.

**TO:** The Division Engineer  
Pacific Division  
Corps of Engineers, U. S. A.  
222 South West Temple Street  
SALT LAKE CITY (1), UTAH

1. Construction is authorized of the project described below.
2. a. Job location: Salt Lake City Airbase, Utah; supervision by District Engineer, Salt Lake City.  
b. Reference: 1st Indorsement, 3 September 1943, from Headquarters, Army Air Forces, subject as above.  
c. Completion date of Job Series A7: 1 April 1944. The construction authorized herein should be scheduled for accomplishment at the earliest practicable date.

3. Construction authorized:

- a. One (1) .45 Caliber Pistol Range, 45 targets alternate fixed and bobbing type, with 15 and 25 yard firing positions constructed in accordance with drawing no. 1600-110.
- b. Three (3) Sheet Ranges constructed in accordance with drawing no. 1600-170.
- c. Five (5) High Tower Shotgun Turret Ranges similar to ranges constructed at the Flexible Gunnery School, Las Vegas, Nevada.
- d. Two (2) Sub-Machine Gun Ranges constructed in accordance with drawing no. 1600-135 and as described in Chapter 3, Section IV of FM 23-40.
- e. One (1) 24-Gun Malfunction Range similar to ranges constructed at the Flexible Gunnery School, Las Vegas, Nevada.



Airfields

AIR MAIL

Dir. Cons. No. A 16548  
Dist. Seq. No. PD-Salt Lake City A 275  
Job No. Salt Lake City Airbase A(7-2)

LC/ehd

PC

- i. Two (2) Target Storehouses, constructed in accordance with Figure 12 in TM 9-355, for storage of pistol and sub-machine gun targets.
- g. Pit Latrines of number and size as required.
- h. Minimum access roads of simplest construction possible consistent with requirements.

4. Engineering instructions:

Targets, target material and target accessories are furnished by the Ordnance Department (Reference Paragraph ig. of TM 9-355). The Base Ordnance Officer will requisition this equipment.

In preparing layout of the ranges, regulations and requirements of TM 9-355 and AR 750-10 shall be complied with.

5. Prior to initiating construction, layout plan approval will be obtained from the Commanding General, Second Air Force.

6. If additional real estate is required, a request for acquisition should be submitted immediately, and construction will not be initiated until right of entry is obtained.

7. Funds:

a. Source: Project 210, ESA 1942-44.

b. Initial authorization of \$15,000; additional expenditure will not be authorized until receipt of field estimate of cost.

c. Total authorized to date for Job Series A7 is \$66,300, which will not be exceeded without authority of this office.

By order of The Chief of Engineers:

H. E. HEDGER  
Major, Corps of Engineers  
Assistant, Military Construction Branch  
Construction Division

RECORD: This construction requested by Hq., 2d AF, and approved by Hq., AAF. Engineering Division estimates cost of ranges and target storehouses at approximately \$15,000, but cannot estimate on access roads required, so token authorization of \$15,000 given.

DISSEMINATION: cc: Dist. Engr., SIC, airmail  
CG, 2d AF (2) airmail  
Funds & Data (2) - 2 -  
WFB v/p



PC  
PFE  
HCS

Area Engr., SIC Airbase airmail  
Bldgs & Crds., Hq., AAF (2) w/d  
Off. Tech. Inf.  
Major Hedger w/d  
Reading w/d  
AJR MAJ

## SECTION E-16

### War Department, HQ Army Air Forces

**Letter:** [Clearance Request for Ground Gunnery Range for Salt Lake City Army Air Base, Salt Lake City, Utah, 18 August 1943](#). RG 18, Entry 292A, Box 1572, Folder 600 Misc. SLCAAB, UT, NARA-College Park, MD.

REPRODUCED AT THE NATIONAL ARCHIVES

Written 8-17-43

5829

**Subject:** Clearance Request for Ground Gunnery Range for Salt Lake City Army Air Base, Salt Lake City, Utah.

AFDBS 2A-2/7

1st Ind.

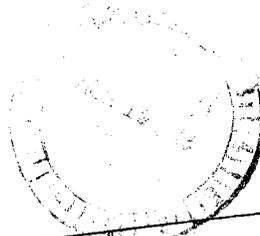
18 AUG 1943

WD Hq Army Air Forces, Washington, D. C.  
 To: Commanding General, Second Air Force, Colorado Springs, Colorado.

With reference to your request in the basic communication, in view of the fact that activities will be restricted to horizontal ground to ground firing with the maximum height of projectiles not over twenty-five feet above the ground, no clearance action by the Interdepartmental Air Traffic Control Board will be necessary.

By command of General ARNOLD:

J. C. SHIVERS, A.C.  
 Buildings Section  
 Office, Ass't Chief of Staff, M.M.D.



OFFICE SYMBOL	1	2	3	4	5	6
SIGNATURE OF RESPONSIBLE OFFICER	EJC/rs					
INTERNAL OFFICE COORDINATION	AFDBS-B&G					

☆ 16-29242-1 U. S. GOVERNMENT PRINTING OFFICE : 1942

## SECTION E-17

### War Department

Letter: *Revocation of Directive Consecutive No. A19272, 14 March 1944.* .Corps of Engineer Records, Box 02042980-02042994, Folder 614 Salt Lake City Airfield. US Air Force Historical Research Agency, Maxwell AFB, Montgomery, AL.

ADDRESS REPLY TO  
CHIEF OF ENGINEERS, U. S. ARMY  
WASHINGTON, D. C.

**AIR MAIL**

**WAR DEPARTMENT**

OFFICE OF THE CHIEF OF ENGINEERS  
WASHINGTON

Dir. Cons. No. A 20059  
Dist. S. No. FD-Sacramento A 838  
Job No. Salt Lake City AAF A(8-2)

REFER TO FILE NO. CE

SPENT

14 March 1944

SUBJECT: Revocation of Directive Consecutive No. A 19272

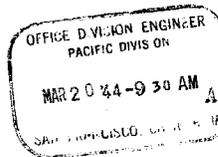
TO: The Division Engineer  
Pacific Division  
Corps of Engineers, U.S.A.  
351 California Street  
SAN FRANCISCO (19), CALIFORNIA

1. Authority to construct the project described below is revoked.
2. a. Job location: Salt Lake City Air Base, Utah; supervision by District Engineer, Sacramento.
- b. Request of Commanding General, Army Air Forces, dated 11 March 1944.
3. Construction revoked:

The authority given to construct one (1) "Foorman" Type Target Range with five (5) firing positions under Directive Consecutive No. A 19272, Job No. Salt Lake City Air Base A(8-1), is revoked.

4. No adjustment of funds will be made at this time. It is requested that this office be advised as to the amount of funds available for revocation as a result of this action.

By order of The Chief of Engineers:



*J. A. Downs*  
J. A. DOWNS  
Major, Corps of Engineers  
Assistant; Troop Facilities Branch  
Military Construction Division

**AIR MAIL**

Dir. Cons. No. A 20059  
Dist. Seq. No. PB-Sacramento A 128  
Job No. Salt Lake City AAF M(3-2)

61A (Salt Lake City A.F.) PADBA  
Sacramento District

Subject: Revocation of Directive  
Consecutive No. A 19272  
(Ltr. frm. CCE to ED  
14 March 1944)

1st Ind.

Office Division Engineer, Pacific Division, San Francisco, California  
22 March 1944.

To: District Engineer, SACRAMENTO DISTRICT, SACRAMENTO (S), CALIFORNIA

For your information.

For the Division Engineer:

  
J. W. SOMERS  
Captain, Corps of Engineers  
for JOHN C. LOW  
Colonel, Corps of Engineers  
Chief, Engineering Division

600.1(AAB,Salt Lake)PADKO-V 2nd Ind. (14 March 1944)

U.S.Engineer Office, P.O.Box 1739, Sacramento 8, Calif., 6 April 1944

TO: The Chief of Engineers, U. S. Army, WASHINGTON, D.C., through The  
Division Engineer, Pacific Division, SAN FRANCISCO, CALIFORNIA.

1. Reference is made to paragraph 4 of basic communication. Funds  
obligated for construction authorized in subject directive prior to  
stoppage of work totaled \$1,568.60.

2. Funds in the amount of \$3,431.40 of the original authorization  
are therefore available for revocation.

FOR AND IN THE ABSENCE OF THE DISTRICT ENGINEER:



  
R. H. Thompson,  
Major, Corps of Engineers,  
Executive Assistant

-2-

## SECTION E-18

### 294<sup>th</sup> AAF Base Unit (standby)

Letter: [Real Property Utilization Report](#), 3 June 1944,  
Accession 342-48B-5044, Box 1, Notebook NPRC  
(MRC) – St. Louis, MO.

( Control Approval Symbol EKU-66 )

HEADQUARTERS  
294th AAF BASE UNIT (STANDBY)  
ARMY AIR BASE  
SALT LAKE CITY, UTAH

~~June~~  
~~2 May~~ 1944

SUBJECT: Real Property Utilization Report.

TO: Office of the Chief of Engineers, Washington 25, D.C.  
ATTENTION: Management Section, Repairs & Utilities Branch  
Recording Unnecessary

1. There is inclosed one set of IBM Mark Sensing Cards which indicate property utilization and occupancy for the month of ~~April~~ <sup>June</sup> 1944 for the 294th AAF Base Unit (Standby), Army Air Base, Salt Lake City, Utah and all other separate facilities and installations maintained by the Post Engineer which are included in the monthly cost report (Station Cost Accounting Code Number 76908) as submitted by this station.

2. The following facilities and installations are included in this report.

a. 294th AAF Base Unit (Standby), Army Air Base, Salt Lake City, Utah. 06,12,5

	Designed Capacity	Occupancy	Per Cent
Designed Housing Capacity	8909	2162	24%
Hospital Bed Capacity	354	23	7%
Net Sq. Ft. Closed Storage Space	120,480	117,860	98%
Net Sq. Ft. Hardstanding	116,900	116,900	100%
Net Sq. Ft. Igloo & Magazine	12,737	2,917	23%
Net Sq. Ft. Office Space	600	600	100%

b. Sub Base #1 (Fairgrounds) Salt Lake City, Utah. 03,12,8

Designed Housing Capacity	675	2	0%
Net Sq. Ft. Closed Storage Space	13930	0	0%
Net Sq. Ft. Office Space	4,840	0	0%

c. Sub Base #2 (CCC Camp) Pleasant Grove, Utah. 04,12,9

Designed Housing Capacity	200	2	1%
Net Sq. Ft. Office Space	600	0	0%

d. Gunnery Range, Army Air Base, Salt Lake City, Utah. 04,12,9

Net Sq. Ft. Closed Storage Space	472	0	0%
Net Sq. Ft. Igloo & Magazine	144	0	0%
Net Sq. Ft. Office Space	800	0	0%

3 May 1944

Real Property Utilization Report (Continued)

3. The Army Air Base, Salt Lake City, has been placed on a standby basis and steps are now being taken to transfer accountability for Sub Bases No. 1 and No. 2, and Gunnery Range to District Engineer, Sacramento District.

Lewis F. Whitstone  
~~PAUL V. PORTER~~  
1st Lt. Captain, Air Corps,  
Commanding.

( Control Approval Symbol EKV-66)

HEADQUARTERS  
294TH AAF BASE UNIT (STANDBY)  
ARMY AIR BASE  
SALT LAKE CITY, UTAH

4 April 1944

**SUBJECT: Real Property Utilization Report.**

**TO: Office of the Chief of Engineers, Washington 25, D.C.**  
**ATTENTION: Management Section, Repairs & Utilities Branch**  
**Recording Unnecessary**

1. There is inclosed one set of IBM Mark Sensing Cards which indicated property utilization and occupancy for the month of March 1944 for the 294th AAF Base Unit (Standby), Army Air Base, Salt Lake City, Utah and all other separate facilities and installations maintained by the Post Engineer which are included in the monthly cost report (Station Cost Accounting Code Number 76908) as submitted by this station.

2. The following facilities and installations are included in this report:

a.	294th AAF Base Unit (Standby), Army Air Base, Salt Lake City, Utah	06,12,5
	Designed Capacity	Occupancy Per Cent
	Designed Housing Capacity - 8,599 -	8,413 - 98%
	Hospital Bed Capacity - 354 -	171 - 48%
	Net Sq. Ft. Closed Storage Space - 120,480 -	117,860 - 98%
	Net Sq. Ft. Hardstanding - 116,900 -	116,900 - 100%
	Net Sq. Ft. Igloo & Magazine - 12,737 -	12,737 - 100%
	Net Sq. Ft. Office Space - 600 -	600 - 100%
b.	Hq. Sq. 18th Wing (153 South 2nd West) Salt Lake City, Utah	04,12,9
	Designed Housing Capacity - 65 -	73 - 112%
c.	18th Replacement Wing (51 South State) Salt Lake City, Utah	30,12,9
	Net Sq. Ft. Office Space - 18,252 -	7,666 - 42%
d.	Sub Base #1 (Fairgrounds) Salt Lake City, Utah	03,12,8
	Designed Housing Capacity - 675 -	209 - 31%
	Net Sq. Ft. Closed Storage Space - 13,930 -	13,930 - 100%
	Net Sq. Ft. Office Space - 4,840 -	200 - 4%

-1-

Real Property Utilization Report (Continued)

4 April 1944

<u>g.</u> Sub Base #2 (COC Camp) Pleasant Grove, Utah			04,12,9
	Designed Capacity	Occupancy	Per Cent
Designed Housing Capacity	- 200 -	2	1%
Net Sq. Ft. Office Space	- 600 -	0	0

<u>f.</u> Gunnery Range, Army Air Base, Salt Lake City, Utah			04,12,9
Net Sq. Ft. Closed Storage Space	- 472 -	472	100%
Net Sq. Ft. Igloo & Magazine	- 144 -	144	100%
Net Sq. Ft. Office Space	- 800 -	800	100%

3. Included in the Mark Sensing Card for Government-owned officer housing, Code No. 101-11, are 30 buildings originally constructed as enlisted men's barracks (2,000 sq. ft. each), which are now being utilized as officer housing on a basis of 40 square feet actual housing for temporary purposes. Capacity has been reported on the basis of 120 sq. ft. per officer.

GOLDEN P. WRIGET, .  
Lt. Colonel, Air Corps,  
Commanding

1 Incl:  
Set IBM Mark Sensing Cards.

## SECTION E-19

### Department of the Army

Letter: *Office of the Chief of Engineers and the Director of the Bureau of Land Management*, 30 January 1950. Real Estate Division, Cadastral Section, Microfiche Drawer-Army 2 of 2. US Army Corps of Engineers, Sacramento Division, CA.



DEPARTMENT OF THE ARMY  
OFFICE OF THE CHIEF OF ENGINEERS  
WASHINGTON

002 Salt Lake City Aerial Gunnery Range, Utah. ENOLT

ED/13  
101M  
LBK  
30 January 1950  
EJP  
OPM  
WHH

Director  
Bureau of Land Management  
Department of the Interior  
Washington 25, D. C.

Dear Sir:

The following described land in Salt Lake County, Utah, used by the Department of the Air Force in connection with the Salt Lake City Aerial Gunnery Range, Utah, is no longer required and the use thereof is hereby relinquished:

*should read NW 1/4*

SW 1/4 of the NE 1/4 of Section 18, Township 1 North, Range 2 West, Salt Lake Meridian.

The land was used by virtue of verbal permission and no formal document was issued to cover the occupancy which began on 10 April 1942.

There were no improvements placed on the property during the occupancy and no restoration work is deemed necessary.

The lands have been given a careful visual inspection and no decontamination work is deemed necessary.

Your cooperation in making these lands available is appreciated.

FOR THE CHIEF OF ENGINEERS:

Sincerely yours,

3 Inclosures:

- 1. Map, Adited 2305
- 2. Ltr fm Dept/Int 20 Jul 49
- 3. Certificate fm SF/Dist, 27 Oct 49

F. E. HASTINGS  
Colonel, Corps of Engineers,  
Assistant Chief of Engineers for Real Estate

CHIEF OF ENGINEERS  
18331  
JAN 31 8 38 AM '50

cc: SPD ENGR Oakland 11, Calif

**APPENDIX F  
STILL PHOTOGRAPH REFERENCES  
  
NOT USED**

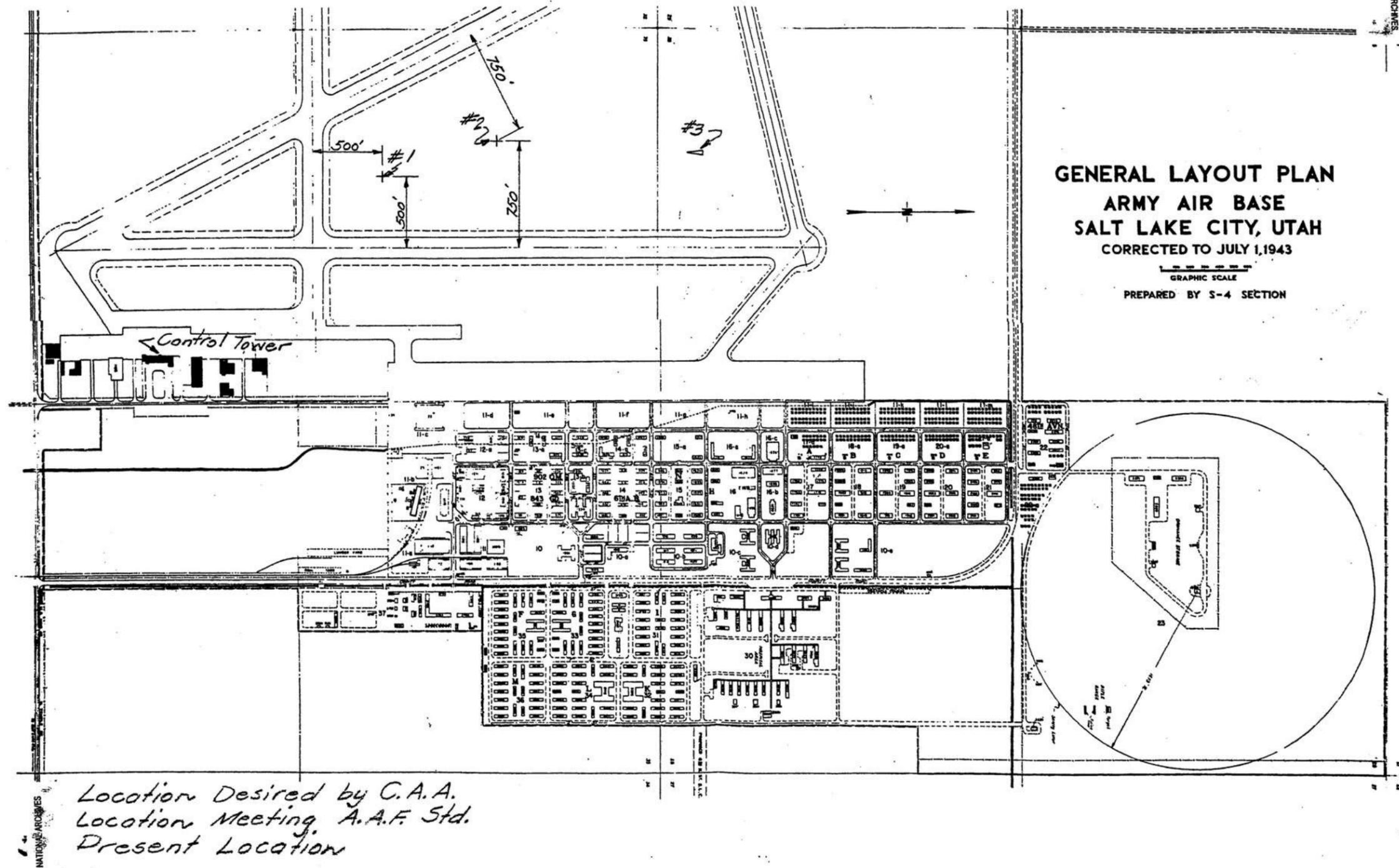
# **APPENDIX G**

## **MAPS/DRAWINGS REFERENCES**

## MAPS/DRAWINGS REFERENCES

- | <u>Map No.</u> | <u>Historical Maps/Drawings</u>   |
|----------------|---|
| G-1            | Salt Lake City Army Air Base<br>1943 <a href="#"><i>General Layout Plan Army Air Base Salt Lake City Utah</i></a> , 1 July 1943, RG 18, Entry 2A, Box 2332, Folder Buildings and Grounds Utah 686 1944, NARA-College Park, MD.  |
| G-2            | Corps of Engineers, South Pacific Division<br>1951 <a href="#"><i>Real Estate Salt Lake City Army Air Base Gunnery Range, Audited Project No. 2385</i></a> , 2 December 1948, revised 9 January 1951, Real Estate Division, Cadastral Section, Microfiche Drawer: Army 2 of 2, Section: Salt Lake Army Air Base, U.S. Army Corps Of Engineers – Sacramento, CA. |

REPRODUCED AT THE NATIONAL ARCHIVES





**APPENDIX H**  
**INTERVIEWS**  
**(NOT USED)**

**APPENDIX I**

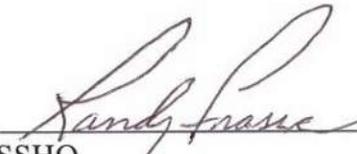
**SITE SAFETY AND HEALTH PLAN (SSHP)**

**SITE SAFETY AND HEALTH PLAN (SSHP)**  
**Salt Lake City Army Air Base Gunnery Range**  
**Salt Lake City, UT**  
**SITE # J08UT095101**

The purpose of this site visit is to reconnoiter, document, and photograph areas on Salt Lake City Army Air Base Gunnery Range, Salt Lake City, Utah suspected to be contaminated with unexploded ordnance and/or toxic chemical munitions.

PREPARED BY:	<u>George Sloan</u>
OFFICE	<u>USACE, CEMVS-ED-P</u>
ADDRESS	<u>1222 Spruce St. St. Louis, MO</u>
PHONE	<u>314-331-8796</u>
DATE PREPARED	<u>3 September 2003</u>

REVIEWED/APPROVED BY:

  
\_\_\_\_\_  
SSHO

NOTE: This SSHP is to be used only for non-intrusive site visits and must be approved by safety prior to the start of the field visit. All team members must read and comply with the SSHP, and attend the safety briefings. The Site Safety and Health Officer (SSHO) shall ensure that the Safety Briefing Checklist and the SSHP acceptance form (Appendix C) are filled out prior to the start of the site visit.

**A. SITE DESCRIPTION AND PREVIOUS INVESTIGATIONS**

**1. Site Description**

**a. Size:** 6276.81 acres

**b. Present Usage:** (check all that apply)

- |   |  |  |
|---|--|--|
| <input type="checkbox"/> Military               | <input type="checkbox"/> Recreational          | <input type="checkbox"/> Other (specify) |
| <input checked="" type="checkbox"/> Residential | <input checked="" type="checkbox"/> Commercial |  |
| <input type="checkbox"/> Natural Area           | <input checked="" type="checkbox"/> Industrial |  |
| <input type="checkbox"/> Agricultural           | <input type="checkbox"/> Landfill              |  |
| <input checked="" type="checkbox"/> Secured     | <input type="checkbox"/> Active                | <input type="checkbox"/> Unknown         |
| <input checked="" type="checkbox"/> Unsecured   | <input type="checkbox"/> Inactive              |  |

**2. Past Uses:** The Army Air Forces used the former Salt Lake City Army Air Base Gunnery Range as a ground gunnery range from 1942-46.

**3. Surrounding Population** (check all that apply)

- |  |   |  |
|--|---|--|
| <input type="checkbox"/> Rural                 | <input checked="" type="checkbox"/> Residential | <input type="checkbox"/> Other (specify) |
| <input checked="" type="checkbox"/> Urban      | <input checked="" type="checkbox"/> Industrial  |  |
| <input checked="" type="checkbox"/> Commercial |   |  |

**4. Ordnance/Explosives (OE) Potential:** Small Arms.

**B. DESCRIPTION OF ON-SITE ACTIVITIES** (check all that apply)

- |  |   |  |
|--|---|--|
| <input checked="" type="checkbox"/> Walk-through | <input checked="" type="checkbox"/> Drive-through | <input type="checkbox"/> Other (specify) |
| <input checked="" type="checkbox"/> On-Path      | <input checked="" type="checkbox"/> On-road       |  |
| <input checked="" type="checkbox"/> Off-Path     | <input type="checkbox"/> Off-road                 |  |

**C. SITE PERSONNEL AND RESPONSIBILITIES**

**1. Responsibilities**

**a. Project Manager:** The Corps of Engineers Project Manager (PM) is overall responsible for the site visit. He will assign a Team Leader, (in most situations this will be the PM). The PM will ensure that the SSHP is completed along with coordinating and executing the site visit.

**b. Site Safety and Health Officer:** The SSHO is designated to conduct safety, enforce the SSHP, conduct safety briefings and ensure that the team

leader can safely fulfill his objectives. The SSHO will maintain the safety gear and monitor on-site operations. The SSHO is responsible for identifying, marking and reporting any unexploded ordnance and explosives.

## 2. Team Members

<u>Name</u>	<u>Position</u>	<u>Address</u>	<u>Phone</u>
Randal Curtis	PM	CEMVS-ED-P	314-331-8786
George Sloan	SSHO	CEMVS-ED-P	314-331-8796

### D. OVERALL HAZARD EVALUATION (check one)

High       Moderate       Low       Unknown

This assessment was developed using the Site Investigation Hazard Analysis and Risk Assessment Code Matrix.

**E. GENERAL PRECAUTIONS:** Prior to the on-site visit, all team members are required to read this SSHP and sign the form acknowledging that they have read and will comply with it. In addition, the SSHO shall hold a brief tailgate meeting in which site specific topics regarding the day's activities will be discussed. If unanticipated hazardous conditions arise, team members are to stop work, leave the immediate area and notify the SSHO. The buddy system will be enforced at all times.

### F. STANDARD OPERATION SAFETY PROCEDURES, ENGINEERING CONTROLS AND WORK PRACTICES

**1. Site Rules/Prohibitions:** At any sign of unanticipated hazardous conditions, stop tasks, leave the immediate area and notify the SSHO. Smoking, eating and drinking allowed in designated areas only.

**2. Material Handling Procedures:** Do not handle.

**3. Drum Handling Procedures:** Do not handle.

**4. Confined Space Entry:** An area identified as a Permit Required Confined space will not be entered. All confined spaces shall be considered permit required confined spaces until the pre-entry procedures demonstrate otherwise. Confined spaces may be entered without a written permit or attendant provided the space is determined not to be a permit required confined space as specified in 29 CFR 1910.146.

**5. Electrical Protection:** Overhead power lines, downed electrical wires and buried cables pose a danger of shock and electrocution. In addition, buildings may

contain exposed wiring that may hold a potential load. Workers should avoid contact with any and all exposed wire and cables

**6. Spill Containment:** N/A

**7. Excavation Safety:** Do not enter trenches/excavations.

**8. Illumination:** Site visits will be conducted during daylight hours only.

**9. Sanitation:** Use existing sanitary facilities.

**10. Buddy System:** Individuals will maintain constant contact with other personnel at all times. No one will work alone at any time during the site visit.

**11. Engineering Controls:** N/A

**12. Insects:** Wearing light colored clothing and tucking in the pant legs can reduce contact. In severely infested area it may be necessary to tape all openings. Apply repellents to both clothing and bare skin. Diethyltoluamide (DEET) is an active ingredient in many repellents, which are effective against ticks and other insects. Repellents containing DEET can be applied on exposed areas of skin and clothing. However, repellents containing permethrin should be used on only clothing. For more information on insect bites, refer to Appendix B.

**13. Poisonous Vegetation:** Recognition and avoidance is the best protection. Cover all exposed skin. If it is known or suspected that an individual has been exposed, wash the effected area with soapy water.

**14. Inclement Weather:** When there are warnings or indications of impending severe weather (heavy rains, strong winds, lightning, tornadoes, etc.), weather conditions shall be monitored and appropriate precautions taken to protect personnel and property from the effects of the severe weather.

**15. Hot Weather:** In hot environments, cool drinking water shall be made available and workers shall be encouraged to frequently drink small amounts, e.g., one cup every 15 - 20 minutes; the water shall be kept reasonably cool. In those situations where heat stress may impact worker safety and health, work regimens shall be established. Environmental monitoring of the Wet Bulb Globe Temperature Index shall be conducted and workloads and work regimens categorized as specified in the American Conference of Governmental Industrial Hygienist (ACGIH) publication "Threshold Limit Values and Biological Exposure Indices". For more information on Heat Stress refer to Appendix A of this SSHP.

**16. Cold Weather:** Cold injury (frostbite and hypothermia) and impaired ability to work are dangers at low temperatures and when the wind-chill factor is low. To guard against them; wear appropriate clothing; have warm shelter readily available; carefully schedule work and rest periods, and monitor workers' physical conditions.

**17. Off-Road Driving:** Ensure all emergency equipment is available with the vehicle i.e. tire changing equipment. Drivers shall familiarize themselves with the procedures for engaging four-wheel drive systems before the need for added traction arises. Vehicles will not be driven into an environment that is unknown, such as deep water, or an unstable surface. Vehicles will not be driven into a suspected ordnance impact area.

## **18. Ordnance**

### **a. General Information**

- (1) The cardinal principle to be observed involving explosives, ammunition, severe fire hazards or toxic materials is to limit the exposure to a minimum number of personnel, for the minimum amount of time, to a minimum amount of hazardous material consistent with a safe and efficient operation.
- (2) The age or condition of an ordnance item does not decrease the effectiveness. Ordnance that has been exposed to the elements for extended periods of time may become more sensitive to shock, movement, and friction, because the stability agent in the explosives may be degraded.
- (3) When chemical agents may be present, further precautions are necessary. If the munition has green markings leave the area immediately, since it may contain a chemical filler.
- (4) Consider ordnance that has been exposed to fire as extremely hazardous. Chemical and physical changes may have occurred to the contents, which render it more sensitive than it was in its original state.

### **b. On-Site Instructions**

- (1) DO NOT TOUCH or MOVE any ordnance items regardless of the markings or apparent condition.

- (2) DO NOT conduct a site visit during an electrical storm or an approaching electrical storm. If a storm approaches during the site visit leave the site immediately and seek shelter.
- (3) DO NOT use a radio or cellular phone in the vicinity of a suspect ordnance item.
- (4) DO NOT walk across an area where the ground cannot be seen.
- (5) DO NOT drive a vehicle into a suspected OE area; use clearly marked lanes.
- (6) DO NOT carry matches, cigarettes, lighters or other flame producing devices into an OE site.
- (7) DO NOT rely on color code for positive identification of ordnance items or their contents.
- (8) Approach ordnance items from the side; avoid approaching from the front or rear.
- (9) Always assume ordnance items contain a live charge until it can be determined otherwise.
- (10) Dead vegetation and animals may indicate potential chemical contamination. If a suspect area is encountered, personnel should leave the immediate area and evaluate the situation before continuing the site visit.

**c. Specific Action Upon Locating Ordnance**

- (1) DO NOT touch, move or jar any ordnance item, regardless of its apparent condition.
- (2) DO NOT be misled by markings on the ordnance item stating "practice", "dummy" or "inert". Practice munitions may contain an explosive charge used for spotting the point of impact. The item may also be mislabeled.
- (3) DO NOT roll the item over or scrape the item to read the markings.

(4) The location of any ordnance items found during site investigations should be clearly marked so it can be easily located and avoided.

(5) Reporting will be conducted in accordance with CELMS-PM-M, Standard Operating procedure for Reporting Ordnance and Unexploded Ordnance (UXO), dated 19 January 1995.

19. **Other** (specify)

**G. SITE CONTROL AND COMMUNICATIONS**

1. **Site Map:** Any maps will be maintained by the PM or Safety Officer.

2. **Site Work Zones:** N/A

3. **Buddy System:** Individuals will maintain constant contact with other personnel at all times. No one will work alone at any time during the site visit.

4. **Communications**

a. **On-Site:** Verbal communications will be used among team members.

b. **Off-Site:** Communications shall be established on every site. Communications may be established by using a cellular, public or private phone, which may be readily accessible. (specify below)

Cellular phone

Public/private phone

Other

c. **Emergency Signals:** In the case of small groups, a verbal signal for emergencies will suffice. An emergency signal for large groups (i.e. air horn, whistle) should be incorporated at the discretion of the SSHO. (specify below)

Verbal

Nonverbal - whistle

**H. EMERGENCY RESPONSE:** Team members are to be alert to the dangers associated with the site at all times. If an unanticipated hazardous condition arises, stop work, evacuate the immediate area and notify the SSHO. A First Aid Kit and emergency

eyewash (if applicable) will be located in the field vehicle. If qualified persons (i.e. fire department, medical facility or physician) are not accessible within five minutes of the site, at least two team members shall be qualified to administer first aid and CPR.

**1. Emergency/Important Telephone Numbers**

Salt Lake City Police Department .....801-799-3768  
3d Ordnance Bn (EOD) Ft. Lewis .....206-967-1971/1972  
62d Ordnance Co (EOD) TEAD.....801-833-2962/2964  
Huntsville Safety Office .....256-895-1598/1596  
Huntsville Safety (after hours).....256-895-1180  
St Louis Corps of Engineers (Dace) .....314-331-8036

**2. Hospital/Medical Facility Information**

University Hospital  
Address: 50 North Medical Drive  
              Salt Lake City, UT 84132  
Phone: 801-581-2121

Distance to hospital: approximately 16 miles

Route to Hospital: refer to the site map included with this SSHP.

**I. MONITORING EQUIPMENT AND PROCEDURES**

**1. Exposure Monitoring:** For non-intrusive on-site activities such as site visits, air monitoring is typically not required. However, if the site situation dictates the need for monitoring, complete the following information on a separate page and attach the page to the SSHP.

**a. Monitoring Equipment To Be Utilized:** N/A

**b. Equipment Calibration Results:** N/A

**c. Action Levels:** N/A

**2. Heat/ Cold Stress Monitoring**

**a.** Heat Stress monitoring criteria published in Chapter 8 of the NIOSH/OSHA/USCG/EPA "Occupational Safety and Health Guidance Manual for Hazardous Waste Site Activities" shall be followed.

**b.** Cold Stress monitoring shall be conducted in accordance with the most current published American Conference of Governmental Industrial Hygienists (ACGIH) cold stress standard.

**J. PERSONAL PROTECTIVE EQUIPMENT:** Typically, for non-intrusive site visits, Level D is required. If a higher level of protection is to be used initially or as contingency, a brief discussion will be attached. At a minimum personnel shall wear clothing suitable for the weather and work condition. The minimum for fieldwork shall be short sleeve shirt, long trousers, and leather or other protective work shoes or boots. If a higher level of protection is to be used initially or as contingency, a brief discussion will be attached.

**1. Footwear:** Footwear providing protection against puncture shall meet the applicable requirements as stated in EM 385-1-1, paragraph 05.A.08. All activities which personnel are potentially exposed to foot hazards will be identified and documented in a hazard analysis. As an exception to wearing steel-toed boots, GSA-approved protective-soled boots are authorized.

**2. Hand Protection:** Persons involved in activities, which subject the hands to injury (e.g., cuts, abrasions, punctures, burns, etc.), shall use leather gloves.

**3. Head Protection:** Hardhats shall be worn when personnel are subject to potential head injury. The identification and analysis of head hazards will be documented in a hazard analysis.

**4. Eye Protection:** Personnel will wear eye protection when activities present potential injuries to the eyes. All eye protection equipment shall meet the requirements as stated in EM 385-1-1, paragraph 05.B.

**K. DECONTAMINATION PROCEDURES:** Decontamination procedures are not anticipated for this site investigation. Team members are cautioned not to walk, kneel or sit on any surface with potential leaks, spills or contamination.

**L. TRAINING:** All site personnel shall have completed the training required by Engineer Manual (EM) 385-1-1 and Title 29, Code of Federal Regulations (29 CFR, Part 1910.120 (e)). The U.S. Army Corps of Engineer (USACE) Project Manager shall ensure, and the SSHO shall verify, that all on-site personnel have completed appropriate training. Additionally, the SSHO shall inform personnel before entering of any potential site-specific hazards and procedures.

**M. MEDICAL SURVEILLANCE PROGRAM:** The USACE Project Manager shall ensure, and the SSHO shall verify, that all on-site personnel meet the requirements of 29 CFR 1910.120. This includes enrollment in a Medical Surveillance Program, and

complying with the standards of ANSI Z-88.2, as appropriate, depending on the personnel protective equipment (PPE) and site-specific tasks.

<u>NAME</u>	<u>HAZWOPER</u> <u>DATE</u>	<u>PROVIDER</u>	<u>MEDICAL</u> <u>DATE</u>
Randal Curtis	3 Apr 03	Corps of Engineers	29 July 2003
George Sloan	3 Apr 03	Corps of Engineers	22 July 2003

**N. LOGS, REPORTS AND RECORD KEEPING:** Site logs are maintained by the Project Manager and SSHO. This is to include historical data, personnel authorized to visit the site, all records, standard operating procedures, air monitoring logs and the SSHP.

**O. GENERAL:** The number of personnel visiting the site shall be a limited to a minimum of two, maximum of eight. The more personnel on-site, the greater potential there is for an accident. The SSHO may modify this SSHP if site conditions warrant it and without risking the safety and health of the team members. This modification will be coordinated with the team members. The SSHO shall notify Corps of Engineers Safety Office in Huntsville, AL. of the change as the situation allows.

## APPENDIX A

### HEAT- RELATED INJURIES

Once the signals of a heat-related illness begin to appear, the victim's condition can quickly get worse. A heat related illness could result in death. If you see any of the signals of sudden illness, and the victim has been exposed to extremes of heat, suspect a heat-related illness.

People at risk for heat-related illness include those who work or exercise outdoors, elderly people, young children, and people with health problems. Also at risk are those who have had a heat-related illness in the past, those with medical conditions that cause poor blood circulation, and those who take medications to get rid of water from the body (diuretics).

People usually try to get out of extreme heat before they begin to feel ill. However, some people do not or can not. Those that work outdoors often keep working even after they begin to feel ill. Many times, they might not even recognize that they are in danger of becoming ill.

Heat cramps, heat exhaustion, and heat stroke are conditions caused by overexposure to heat. You can help prevent heat-stress emergencies by recognizing and properly treating symptoms. Below is a quick reference guide to heat-related emergencies:

**HEAT CRAMPS:** Heat cramps are the least severe, and often are the first signals that the body is having trouble with the heat. *Symptoms* include: muscle twitching; painful spasms in the legs, arms or abdomen.

#### WHAT TO DO:

- Have the individual rest in a cool place.
- Give cool water or a commercial sports drink.
- Lightly stretch the muscle and gently massage the area.

**HEAT EXHAUSTION:** Heat exhaustion is a more severe condition than heat cramps. *Symptoms* include: cool, moist, pale, or flushed skin, headache, nausea, dizziness, weakness, and exhaustion.

**HEAT STROKE:** Heat stroke is the least common but most severe heat emergency. It most often occurs when people ignore the signals of heat exhaustion. Heat stroke develops when the body systems are overwhelmed by heat and begin to stop functioning. **Heat stroke is a serious medical emergency.** *Symptoms* include: red, hot, dry skin; changes in consciousness; rapid, weak pulse; and rapid, shallow breathing.

**WHAT TO DO:** When you recognize a heat-related illness in its early stages, you can usually reverse it.

Get the victim out of the heat.

Loosen any tight clothing and apply cool, wet cloths, such as towels or sheets.

If the victim is conscious, give cool water to drink. Do not let the conscious victim drink too quickly. Give about 1 glass (4 ounces) of water every 15 minutes.

Let the victim rest in a comfortable position, and watch carefully for changes in his or her condition. The victim should not resume normal activities the same day.

**Refusing water, vomiting, and changes in consciousness mean that the victim's condition is getting worse. Call for an ambulance immediately if you have not already done so.**

If the victim vomits, stop giving fluids and position them on their side.

Watch for signals of breathing problems.

Keep the victim lying down and continue to cool the body any way you can. If you have ice packs or cold packs, place them on each of the victim's wrists and ankles, on the groin, in each armpit, and on the neck to cool the large blood vessels.

## APPENDIX B

### BITES AND STINGS

#### Scorpions, Bees and Spiders

Bee stings are painful, but rarely fatal. Some people however, have a severe allergic reaction to an insect sting. This allergic reaction may result in a breathing emergency. If an insect stings someone, remove the stinger. Scrape it away with from the skin with your fingernail or plastic card, such as a credit card, or use tweezers. If you use the tweezers, grasp the stinger, not the venom sac. Wash the site with soap and water. Cover it to keep it clean. Apply a cold pack to the area to reduce the pain and swelling. Watch the victim for signals of an allergic reaction.

Scorpions live in dry regions of the southwestern United States and Mexico. They live under rocks, logs, and the bark of certain trees and are most active at night. Only a few species of scorpions have a sting that can cause death.

There are only two spiders in the United States whose bite can make you seriously sick or be fatal. These are the black widow spider and the brown recluse. The black widow is black with a reddish hourglass shape on the underside of its body. The brown recluse is light brown with a darker brown, violin-shaped marking on the top of its body. Both spiders prefer dark, out of the way places. Often, the victim will not know that he or she has been bitten until he or she starts to feel ill or notices a bite mark or swelling.

*Symptoms:* include nausea and vomiting, difficulty breathing or swallowing, sweating and salivating much more than normal, severe pain in the sting or bite area, a mark indicating a possible bite or sting, and swelling of the area.

*First Aid:* if someone has been stung by a scorpion or bitten by a spider he or she thinks is a black widow or brown recluse, wash the wound, apply a cold pack to the site, and get medical help immediately.

#### Reptiles

Venomous snakes exist in all parts of the continental United States. The pit viper family represents the greatest hazard in the field. This group includes the rattlesnakes and moccasins (copperhead and cottonmouth). Consider wearing snake chaps in areas of known infestation. Walking in grasses and shrubs that prevent seeing exactly where you are stepping, should be avoided. Extreme caution should be exercised in areas where alligators are present, particularly during the nesting season. Consulting a local resident or authority, such as a fish and wildlife or park ranger, is prudent before entering such areas.

*First Aid:* Often, a venomous snake will strike without injecting any venom into the wound. This is known as a dry bite. In any event, whenever bitten by a snake, especially if positive identification cannot be made, medical help should be sought immediately. Reassure and keep the victim calm. Keep limbs below the level of the heart. Clean the bite area, and get the person to a medical facility. Do not make incisions or suck the poison with the mouth. If medical help is many hours away, place a constricting band between the wound and the heart (it should be at least two inches wide and be able to slip a finger underneath).

## **Ticks - Lyme Disease**

### *Transmission:*

Lyme Disease (LD) is most commonly transmitted by a tick bite (usually painless). The tick vectors include *Ixodes scapularis* (Deer Tick), *Ixodes dammini* (Deer tick), *Amblyomma americanum* (Lone Star Tick) and *Ixodes pacificus*. *Ixodes dammini* was thought to be the only species responsible for transmission until it was shown to be the same as *Ixodes scapularis* in 1993. The ticks prefer to live in wooded areas, low growing grassland, seashores and yards. Depending on the location, anywhere from less than 1% to more than 90% of the ticks are infected with spirochetes.

The Deer tick has a 2-year life cycle and must feed 3 times. In the larvae stage, it is tan, the size of a pinhead and feeds on small animals like the mouse where it can pick up the spirochete. During the nymph stage the tick is the size of a poppy seed, beige or partially transparent and feeds on larger animals such as cats, dogs and humans. The adult ticks are black and/or reddish and feed on cattle, deer, dogs and humans. The Lone Star tick is gray with a white dot. April through October is considered the "tick season" even though Lyme disease is a year round problem. Ticks are very active in the spring and early summer.

### *Location:*

Cases of Lyme disease have been reported in virtually every state, although the Northeastern, Great Lakes, and Pacific Northwest areas are particularly endemic.

### *Symptoms:*

Lyme disease is called the "Great Imitator" because it can mimic many other diseases, which makes diagnosis difficult. A rash can appear several days after infection, or not at all. It can last a few hours or up to several weeks. The rash can be very small or very large (up to twelve inches across). A "bulls-eye" rash is the hallmark of LD. It is a round ring with central clearing. Unfortunately, this is not the only rash associated with Lyme. Various other rashes associated with LD have been reported. One bite can cause multiple rashes. The rash can mimic such skin problems as hives, eczema, sunburn, poison ivy,

flea bites, etc. The rash can itch or feel hot or may not be felt at all. The rash can disappear and return several weeks later. For those with dark skin the rash will look like a bruise. If you notice a rash, take a picture of it. Some physicians require evidence of a rash before prescribing treatment.

Early Symptoms: Several days or weeks after a bite from an infected tick, a patient usually experiences "flu-like" symptoms such as aches and pains in their muscles and joints, low-grade fever, and/or fatigue.

Other Possible Symptoms -- No organ is spared:

- Jaw -- pain, difficulty chewing
- Bladder -- frequent or painful urination, repeated "urinary tract infection"
- Lung -- respiratory infection, cough, asthma, pneumonia
- Ear -- pain, hearing loss, ringing, sensitivity to noise
- Eyes -- pain due to inflammation, sensitivity to light, scleritis drooping of eyelid, conjunctivitis, blurring or double vision
- Throat -- sore throat, swollen glands, cough, hoarseness, difficulty swallowing
- Neurological -- headaches, facial paralysis, seizures, meningitis, stiff neck, burning, tingling, or prickling sensations, loss of reflexes, loss of coordination, MS like syndrome
- Stomach -- pain, diarrhea, nausea, vomiting, abdominal cramps, and anorexia
- Heart -- weakness, dizziness, irregular heartbeat, myocarditis, pericarditis, palpitations, heart block, enlarged heart, fainting inflammation of muscle or membrane, shortness of breath, chest pain
- Joint -- arthralgias or arthritis, muscle inflammation and pain
- Other Organs -- liver infection, elevated liver enzymes, enlarged spleen, swollen testicles, irregular or ceased menses
- Neuropsychiatric -- mood swings, irritability, poor concentration, cognitive loss, memory loss, loss of appetite, mental deterioration, depression, disorientation, sleep disturbance
- Pregnancy -- miscarriage, premature birth, birth defects, stillbirth
- Skin -- single or multiple rash, hives

The above is a list of possible symptoms. They can occur in any combination. You may have one or several symptoms but not everyone will experience every symptom. Lyme affects each host in a different way. Having one or many of these symptoms does not indicate that you have Lyme disease. Diagnosis for Lyme is a clinical one and must be made by a physician experienced in recognizing LD. Serological testing is not reliable.

*Lyme Disease Prevention:*

- Dress properly, wear long-sleeved shirts that button at the wrist, long pants tucked into socks, and closed shoes. Choose light-colored fabric so you can spot and brush off ticks.

- Apply approved tick repellent and use only as directed. Products that contain DEET are tick repellents. They do not kill the tick and are not 100% effective in discouraging a tick from feeding on you. Products like Permanone contain permethrin and are known to kill ticks. However, they are not to be sprayed on the skin. Permanone can be sprayed on clothing. Once it is dry it is assumed to be safe. Ticks are anti-gravitational. They are generally seeking the highest point. If they get on your body below the clothes line, one hopes they will travel up and die once they come in contact with treated clothing.

- Always do regular tick checks when outdoors.

- Shower after all outdoor activities are over for the day. If the tick is still wandering it may wash off. Check all body parts that bend. Run fingers gently over skin. If there is a tick and it is attached, it will feel like the last piece of scab left before a cut completely heals. Remove ticks promptly and properly from yourself.

*Proper Tick Removal:*

Using fine-tipped tweezers, grasp tick close to the skin. Apply gentle, steady straight upward pressure to remove. Disinfect the bite site. Do not squeeze the body, apply Vaseline, use a burnt match, or clean with alcohol while the tick is attached. Any of these actions could cause transmission of the bacteria. Save the tick for testing. Put it in a vial or zip lock bag with a blade of grass. Contact your doctor for further instructions.

The best defense against LD is education. Know your facts.



**SITE SURVEY SAFETY BRIEFING**

(Check subjects discussed)

Date 9 September 2003

**GENERAL INFORMATION**

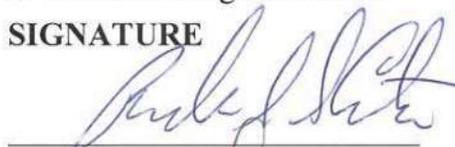
- Purpose of Visit
- Identify Key Site Personnel

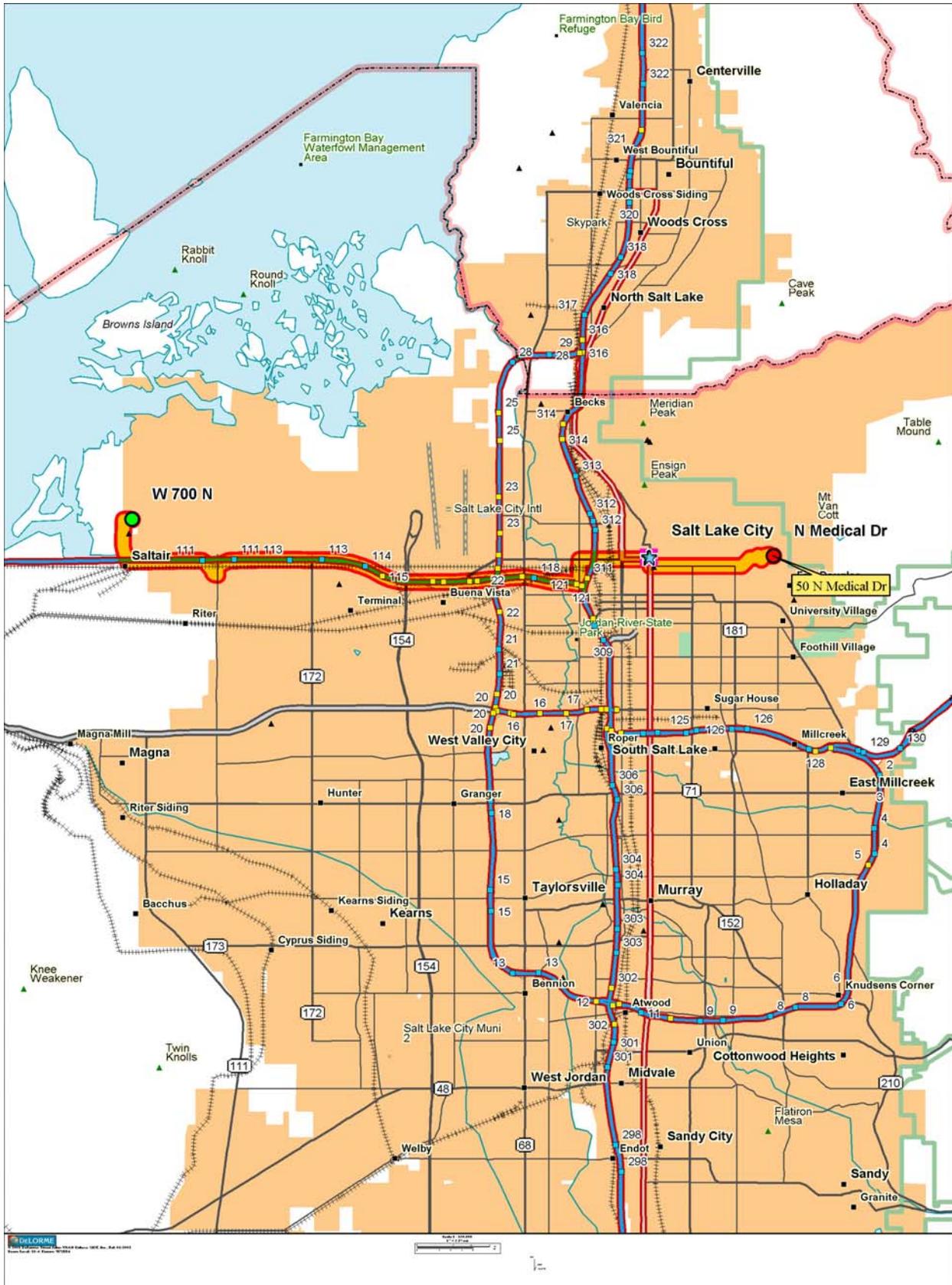
**SITE SPECIFIC INFORMATION**

- Site Description/Past Use
- Results of Previous studies
- Potential Site Hazards
- OE Safety Procedures
- Site SOP
- Site Control and Communications
- Emergency Response
  - Location of First aid Kit
  - Emergency Phone Numbers
  - Map to Facility
- PPE
- Weather Precautions
  - Cold/Heat
  - Severe Weather

**Safety Briefing Attendance**

All team members and any accompanying personnel will be briefed and sign this form.

NAME (Print)	ORGANIZATION	SIGNATURE
<u>Randal Curtis</u>	<u>USACE-CEMVS-ED-P</u>	
<u>George Sloan</u>	<u>USACE-CEMVS-ED-P</u>	
_____	_____	_____
_____	_____	_____



## **APPENDIX J**

### **SITE INSPECTION REPORT**

**Not Used, see section 6.2 of ASR text**

**APPENDIX K**

**PRESENT SITE PHOTOGRAPHS**

**PRESENT SITE PHOTOGRAPHS**

<u>Photo No.</u>	<u>Photograph Location</u>	<u>Page No.</u>
1	View of site from airplane approaching nearby airport .....	K-2
2	<b>Ranges 2 West Moving Target (jeep type) Range</b> - earth embankment .....	K-2
3	<b>Ranges 2 West Moving Target (jeep type) Range</b> –500-yard firing line.....	K-3
4	<b>Ranges 2 West Moving Target (jeep type) Range</b> – 1,000-foot firing line .....	K-3
5	<b>Ranges 4-8, High Tower Shotgun Turret Ranges</b> – brackets for tower .....	K-4
6	<b>Ranges 4-8, High Tower Shotgun Turret Ranges</b> – broken clay pigeon..... debris	K-4



Photo #1 – Salt Lake City Army Air Base Gunnery Range – 9 September 2003  
Looking east from airplane approaching the Salt Lake International Airport; a portion of earth embankment for Range 3 is visible in lower left corner and the concrete pads for High Tower Shot Gun Ranges are visible in the bottom center

Photo #2 - Salt Lake City Army Air Base Gunnery Range – 10 September 2003  
**Ranges 2 West Moving Target (jeep type) Range -** Looking north within triangular earth embankment.





Photo #3 Salt Lake City Army Air Base Gunnery Range – 10 September 2003  
**Ranges 2 West Moving Target (jeep type) Range** – looking east within corral at one of the five 5 foot square concrete slabs with 3-foot circular depressions for the 500-yard firing line.

Photo #4 Salt Lake City Army Air Base Gunnery Range – 10 September 2003  
**Ranges 2 West Moving Target (jeep type) Range** – looking east from western most pyramidal concrete points with threaded pipe for the 1,000-foot firing line.





Photo #5 Salt Lake City Army Air Base Gunnery Range – 10 September 2003  
**Ranges 4-8, High Tower Shotgun Turret Ranges** – looking south at one of the sets of brackets for a tower; the vehicles are about 525 feet away on the road that defines the southern boundary.

Photo #6 Salt Lake City Army Air Base Gunnery Range – 10 September 2003  
**Ranges 4-8, High Tower Shotgun Turret Ranges** – broken clay pigeon debris.



**APPENDIX L**  
**RESPONSE TO COMMENTS**

U. S. ARMY ENGINEERING AND SUPPORT CENTER, HUNTSVILLE		CORPS OF ENGINEERS	
_DESIGN REVIEW COMMENTS		J08UT095100	
X <input type="checkbox"/> ASR/INPR TEAM		PROJECT DERP FUDS Salt Lake City AAB Gunnery Range	
REVIEW ASR TAG OE		REVIEW ASR TAG OE	
DATE 26 July 2004		DATE 26 July 2004	
NAME Ron Thornhill		NAME Ron Thornhill (918) 420-8395	
ACTION		ACTION	
ITEM	DRAWING NO. OR REFERENCE	COMMENT	ACTION
1.	General	Draft ASR for Salt Lake City Army Air Base Gunnery Range, Salt Lake County, Utah, was reviewed for accuracy and completeness. Based on this review the following comments are provided:	
2.	General	Site acreage is not consistent throughout the ASR.	
3.	General	The reviewer does not concur with HNC Safety and the ASR score of RAC 4. There is documented evidence this site was used as a small arms range complex, and only expended small arms ammunition projectiles were found at the site.	
4.	General	Recommend a score of RAC 5.	

U. S. ARMY ENGINEER DIVISION HUNTSVILLE		CORPS OF ENGINEERS	
<b>DESIGN REVIEW COMMENTS</b>		PROJECT	
Salt Lake City Army Air Base Gunnery Range - J08UT095101		Salt Lake City Army Air Base Gunnery Range - J08UT095101	
<input type="checkbox"/> SITE DEV & GEO <input type="checkbox"/> ENVIR PROT & UTIL <input type="checkbox"/> ARCHITECTURAL <input type="checkbox"/> STRUCTURAL	<input type="checkbox"/> MECHANICAL <input type="checkbox"/> MFG TECHNOLOGY <input type="checkbox"/> ELECTRICAL <input type="checkbox"/> INST & CONTROLS	<input type="checkbox"/> OE SAFETY <input type="checkbox"/> ADV TECH <input type="checkbox"/> ESTIMATING <input type="checkbox"/> SPECIFICATIONS	<input type="checkbox"/> SYSTEMS ENG <input type="checkbox"/> VALUE ENG <input checked="" type="checkbox"/> OTHER - USA Environmental, Inc. ASR Review 29 February 2004 Doug Ralston 813-884-5722 x104
ITEM	DRAWING NO. OR REFERENCE	COMMENT	ACTION
1	General	Draft ASR for Salt Lake City Army Air Base Gunnery Range, Salt Lake City, UT, was reviewed for accuracy and completeness. Based on this review the following comments are provided:	
2	General	I concur with the RAC score of 4, supported by the ASR as written.	
3	Appendix E	The FDE is unsigned and undated.	

ACTION CODES  
 W - WITHDRAWN  
 A - ACCEPTED/CONCUR N - NON-CONCUR  
 D - ACTION DEFERRED VE - VE POTENTIAL/VEP ATTACHED

CEHND FORM 7 (Revised)

PREVIOUS EDITIONS OF THIS FORM ARE OBSOLETE

CESPK-PM-M

March 8, 2004

MEMORADUM FOR CEMVS-ED-P (Randy Curtis)

SUBJECT: Comments to Archives Search Report, Salt Lake City Army Air Base Gunnery Range, prepared by St. Louis District, U.S. Army Corps of Engineers

DOCUMENT REVIEWED: Interim report, Archives Search Report, Salt Lake City Army Air Base Gunnery Range, Salt Lake City, UT, Project Number J08UT095101, dated September 2003.

Cmt. No.	Section	Page	Paragraph	Comment
<b>General Comments</b>				
1.				If the type of weapon(s) used at each range is known, it would be helpful to specifically state this. In addition, it would be helpful to specifically identify the type of bullet/projectile thought be used at each range and cross reference it with the descriptions included in Appendix D.
2.				When referring to the various ranges, be consistent in the nomenclature used for each range in the text, on the figures, and in bulleted lists.
<b>Specific Comments</b>				
3.	RAC	5	C	Fill in the 5 check box
4.	RAC	6	F	Include a 5 in the total value space for this category.
5.	Section 1	1	1.1	In the 3 <sup>rd</sup> paragraph, change “Engineers acts as” to “Engineers has acted as” and “(USAESCH) serves as” to “(USAESCH) has served as”.
6.	Section 1	2	1.3	In the sentence prior to the definitions, add “, chemical agent” after “OE”.
7.	Section2	4	2.2	Investigations conducted by the property owners and the State of Utah should be included here.
8.	Section 3	5	3.1.3	Modify the last sentence to indicate Land Usage only. No ownership information is provided on Plate 2. If current land ownership designations are known, add to this plate.
9.	Section 3	5	3.2	Reword this sentence – it reads oddly – and add wind speed to the list of data referenced in Table 3.2.1.
10.	Section 3	7	3.2	Delete “at” from the last sentence of the 2 <sup>nd</sup> paragraph.
11.	Section 3	7	3.3	Modify the sentence to “...described as flat and has low grass vegetation.”

Cmt. No.	Section	Page	Paragraph	Comment
12.	Section 3	8	3.4.2	What was the reference used to describe the soil? This could come in handy in the future.
13.	Section 3	8	3.5.1	Is it possible to include a plate showing the location of the drain and the gage? Change "Moving" to "moving" and "TABLE 3.4.1" to "Table 3.5.1". Add period to end of paragraph. Keep table heading with table and change table number to match section. Has data been collected after 1983? If so, present some of it.
14.	Section 3	9	3.5.2	Was the reference in endnote 7 used for the entire section or just the aquifer-test data? If not the entire section, what other references were used? Again, this could prove helpful in future activities at the site.
15.	Section 3	9	3.5.2	Recommend removing last sentence: <i>"It is unknown if there is any residual contamination of the groundwater from munitions."</i>
16.	Section 3	10	3.6	In the 1 <sup>st</sup> paragraph after Table 3.6, change "The site" to "A portion of the site" and delete "part of" in the first sentence. Last sentence: Remove "a" between as and having.
17.	Section 3	11	3.7.1	Please add "time" after "At the" in the second sentence.
18.	Section 3	13	Table	Table should be numbered. Formatting needs to be corrected in the last row of the table
19.	Section 4	14	4.1.1	In the 2 <sup>nd</sup> paragraph, define "mp" or add to Appendix C.
20.	Section 4	15	4.1.1	Second paragraph, 3 <sup>rd</sup> sentence: Add "site" after "A 6,000 plus acre". Please define what a "Poorman" range is. Comment 1 above may accomplish this.
21.	Section 4	16	4.2.1.2	Change "Rang" to "Range" in first sentence. Next to last bullet: Add "&14" to "Ranges 10-12". Last bullet: Change "Know" to "Known".
22.	Section 4	17	4.2.1	Correct numbering. Also, should the statement regarding decontamination say "no decontamination work is deemed necessary" as shown in Appendix E, Section E-19? Under the "Summary of CWM Activities", delete the subheading.
23.	Section 4	17	4.3	Add "District" after "The Sacramento" in the 2 <sup>nd</sup> sentence.

Cmt. No.	Section	Page	Paragraph	Comment
24.	Section 4	18	4.5	The middle of 2 <sup>nd</sup> paragraph states: "Analysis of the aerial photographs referenced the site maps discussed in sections 4.4 above." Section 4.4 states no site-specific layout plans could be located, only real estate maps. Change "sections" to "section" in same sentence.
25.	Section 4	19	4.5.1	Second paragraph references "firing lanes" several times. Is this correct terminology? In the last sentence of this paragraph, change "one site" to "on site". Last paragraph, 3 <sup>rd</sup> sentence: It would be helpful to add 5A to Plate 3; 4 <sup>th</sup> line should read "(5A), similar to the ones noted for the jeep range,;" 8 <sup>th</sup> line: insert "is" between "this" and "supposition"; 9 <sup>th</sup> line: Change "areas" to "area".
26.	Section 4	20	4.6	You indicate that persons were contacted for interviews. Were you able to locate any? Please provide contacts that you successfully found as well as those that you were unable to locate. Records of conversations would also be helpful, if applicable. Define "negative incident reports".
27.	Section 5	21	5.1	Modify the second bullet to acreage 6,212.57 rather than 5,212.57.
28.	Section 5	21	5.2	I understand this paragraph to mean there is potential OE beyond the FUDS boundary. If this is correct, please further define what "direct evidence" is considered in the same paragraph.
29.	Section 6	24	6.2	Figures on this page are difficult, if not impossible, to read. On line 21 of text, change "used" to "use".
30.	Section 6	25	6.2	The INPR referenced in the 1 <sup>st</sup> paragraph is missing figures 3 and 4. In the 3 <sup>rd</sup> paragraph, add a ";" after "Poorman Ranges". In the 4 <sup>th</sup> paragraph, change "indicted" to "indicated".
	Section 8	28	8.2.1	You identify Range Complex No. 1 (which appears to represent all ranges on site). This identification is not included on Plate 4 as indicated. Also, it is confusing because Range 1 is the skeet range. Is there another way we can identify this so it does not seem like the skeet range is 6,079 acres in size?

Cmt. No.	Section	Page	Paragraph	Comment
31.	Section 8	29	8.2.1.1	If the “five adjacent 6-position mounts that are essentially a single range”, why not give them one designation? Last paragraph, 1 <sup>st</sup> sentence: Delete “in” after “gap” and reword this sentence as it implies that half of the one-mile gap is a drainage canal. Do you mean half-way between the two ranges? Second sentence: Delete “-in” after “present”.
32.	Appendix E-6	E-58		Is there any way to get a better copy of this report?
33.	Appendix E-1	E-12		Please correlate the photos with the range number.
34.	Plates	4		Please vary the color of the range fans by range and add a designation to the legend. As is, the fans are difficult to read. Also, a narrative as to how each fan was developed is necessary. As indicated the distances on maps are approximate. This information is important in developing future sampling plans. Each narrative should include, at a minimum, type of range, expected distances of shot for type of weapon used on each range, any assumptions used to develop fans, etc. It is assumed that the fans have been developed assuming the maximum projectile distance. It would be helpful to also estimate the expected fan based on the maximum height of 25 feet as stated in the report. If the angle of the weapon was likely to have been limited due to mounting constraints, please state. This would produce a much more realistic fan. Both should be included as maximum and expected. Please identify the Poorman range differently, so that this plate clearly states that it was never used. Change the range fans for the moving target (jeep type) ranges to be those of a .50 caliber weapon as that size spent bullets have been found on the front of the eastern most embankment (add to text as well).

If you have any questions or concerns, feel free to contact me at (916) 557-7257 or [Meegan.G.Nagy@usace.army.mil](mailto:Meegan.G.Nagy@usace.army.mil).

Sincerely,

Meegan G. Nagy  
Project Manager

CEMVS-ED-P

15 December 2004

**MEMORANDUM FOR CESPCK-PM-M**

**SUBJECT:** Response to Comments regarding Interim Archives Search Report (ASR) on Salt Lake City Army Air Base Gunnery Range, J08UT095101 prepared by St. Louis District, U.S. Army Corps of Engineers September 2003

1. Reference:

- a) Memorandum for CEMVS-ED-P (Randy Curtis) Subject Comments to Archives Search Report, Salt Lake City Army Air Base Gunnery Range, prepared by St. Louis District, U.S. Army Corps of Engineers from CESPCK-PM-M, dated 8 March 2004.
  
- b) U.S. Army Engineering and Support Center Huntsville, Design Review Comments J08UT095101 DERP FUDS Salt Lake City Army Air Base Gunnery Range, Review ASR TAG OE, Date 26 July 2004, Ron Thornhill.

2. The ASR TAG Design Review Comments received from U.S. Army Engineering and Support Center Huntsville included a new RAC form with a reduction in the RAC score from a 4 to 5. The other comment is addressed in the responses below:

3. The following table includes responses and the action taken for each comment provided by CESPCK-PM-M in the memorandum dated 8 March 2004:

Cmt. No.	Comment	Action
	<b>General Comments</b>	
1.	If the type of weapon(s) used at each range is known, it would be helpful to specifically state this. In addition, it would be helpful to specifically identify the type of bullet/projectile thought to be used at each range and cross reference it with the descriptions included in Appendix D.	Weapon use is stated where known, though all the ranges at this site fall within the small arms category

Cmt. No.	Comment	Action
2.	When referring to the various ranges, be consistent in the nomenclature used for each range in the text, on the figures, and in bulleted lists.	Differences in range nomenclature are a function of meaningful simplification versus historic designation (e.g. High Tower Shotgun Turret Range is called Ranges 4-8); where confused was noted both are listed.
<b>Specific Comments</b>		
3.	Fill in the 5 check box	Concur, change made.
4.	Include a 5 in the total value space for this category.	Concur, change made.
5.	In the 3 <sup>rd</sup> paragraph, change “Engineers acts as” to “Engineers has acted as” and “(USAESCH) serves as” to “(USAESCH) has served as”.	Concur, change made.
6.	In the sentence prior to the definitions, add “, chemical agent” after “OE”.	Concur, change made.
7.	Investigations conducted by the property owners and the State of Utah should be included here.	Inserted following at end of Section 2.2. “Investigations conducted by the property owners and the State of Utah reportedly existed but were not evaluated by the ASR team.”
8.	Modify the last sentence to indicate Land Usage only. No ownership information is provided on Plate 2. If current land ownership designations are known, add to this plate.	Concur, change made.
9.	Reword this sentence – it reads oddly – and add wind speed to the list of data referenced in Table 3.2.1.	Concur, change made.
10.	Delete “at” from the last sentence of the 2 <sup>nd</sup> paragraph.	Concur, change made.
11.	Modify the sentence to “...described as flat and has low grass vegetation.”	Concur, change made.

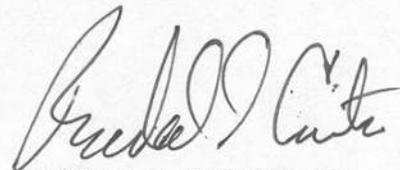
Cmt. No.	Comment	Action
12.	What was the reference used to describe the soil? This could come in handy in the future.	Concur, reference added.
13.	Is it possible to include a plate showing the location of the drain and the gage? Change "Moving" to "moving" and "TABLE 3.4.1" to "Table 3.5.1". Add period to end of paragraph. Keep table heading with table and change table number to match section. Has data been collected after 1983? If so, present some of it.	Concur, changes made; no data after 1983 found.
14.	Was the reference in endnote 7 used for the entire section or just the aquifer-test data? If not the entire section, what other references were used? Again, this could prove helpful in future activities at the site.	Reference is to entire section, no change made.
15.	Recommend removing last sentence: <i>"It is unknown if there is any residual contamination of the groundwater from munitions."</i>	Sentence removed.
16.	In the 1 <sup>st</sup> paragraph after Table 3.6, change "The site" to "A portion of the site" and delete "part of" in the first sentence. Last sentence: Remove "a" between as and having.	Concur, changes made.
17.	Please add <i>"time"</i> after "At the" in the second sentence.	Concur, change made.
18.	Table should be numbered. Formatting needs to be corrected in the last row of the table	Concur, change made.
19.	In the 2 <sup>nd</sup> paragraph, define "mp" or add to Appendix C.	Replaced mp with military police

Cmt. No.	Comment	Action
20.	Second paragraph, 3 <sup>rd</sup> sentence: Add “ <i>site</i> ” after “A 6,000 plus acre”. Please define what a “Poorman” range is. Comment 1 above may accomplish this.	Concur, change made; added “A Poorman Range is a ground machine gun range named after it’s inventor, which simulates problems encountered in the air while firing at a fighter attacking on a pursuit curve.”
21.	Change “Rang” to “Range” in first sentence. Next to last bullet: Add “&14” to “Ranges 10-12”. Last bullet: Change “Know” to “ <i>Known</i> ”.	Concur, change made.
22.	Correct numbering. Also, should the statement regarding decontamination say “no decontamination work is deemed necessary” as shown in Appendix E, Section E-19? Under the “Summary of CWM Activities”, delete the subheading.	Concur, changes made.
23.	Add “ <i>District</i> ” after “The Sacramento” in the 2 <sup>nd</sup> sentence.	Concur, change made.
24.	The middle of 2 <sup>nd</sup> paragraph states: “Analysis of the aerial photographs referenced the site maps discussed in sections 4.4 above.” Section 4.4 states no site-specific layout plans could be located, only real estate maps. Change “sections” to “section” in same sentence.	Concur, change made.
25.	Second paragraph references “firing lanes” several times. Is this correct terminology? In the last sentence of this paragraph, change “one site” to “on site”. Last paragraph, 3 <sup>rd</sup> sentence: It would be helpful to add 5A to Plate 3; 4th line should read “(5A), similar to the ones noted for the jeep range,”; 8th line: insert “is” between “this” and “supposition”; 9 <sup>th</sup> line: Change “areas” to “area”.	Concur, changes made.

Cmt. No.	Comment	Action
26.	You indicate that persons were contacted for interviews. Were you able to locate any? Please provide contacts that you successfully found as well as those that you were unable to locate. Records of conversations would also be helpful, if applicable. Define "negative incident reports".	Paragraph rewritten to more clearly indicate that no persons with first hand knowledge of the historic use of the site was located and that there were no previous UXO incident reports for the site.
27.	Modify the second bullet to acreage 6,212.57 rather than 5,212.57.	Concur, change made.
28.	I understand this paragraph to mean there is potential OE beyond the FUDS boundary. If this is correct, please further define what "direct evidence" is considered in the same paragraph.	Correct but this is based on indirect evidence of the range safety fans as opposed to direct evidence of other sorts; No change made.
29.	Figures on this page are difficult, if not impossible, to read. On line 21 of text, change "used" to "use".	Concur, change made and figures enlarged.
30.	The INPR referenced in the 1 <sup>st</sup> paragraph is missing figures 3 and 4. In the 3 <sup>rd</sup> paragraph, add a ";" after "Poorman Ranges". In the 4 <sup>th</sup> paragraph, change "indicted" to "indicated".	Concur, change made.
30.a.	You identify Range Complex No. 1 (which appears to represent all ranges on site). This identification is not included on Plate 4 as indicated. Also, it is confusing because Range 1 is the skeet range. Is there another way we can identify this so it does not seem like the skeet range is 6,079 acres in size?	Deleted the "No. 1" from this section and elsewhere to eliminate confusion

Cmt. No.	Comment	Action
31.	If the “five adjacent 6-position mounts that are essentially a single range”, why not give them one designation? Last paragraph, 1 <sup>st</sup> sentence: Delete “in” after “gap” and reword this sentence as it implies that half of the one-mile gap is a drainage canal. Do you mean half-way between the two ranges? Second sentence: Delete “-in” after “present”.	Historically the High Tower Shotgun Turret Range is called Ranges 4-8, we do not believe a different designation would help; change not made; other changes made.
32.	Is there any way to get a better copy of this report?	Possibly but probably not worth the cost to do so.
33.	Please correlate the photos with the range number.	Reference document which is out of our control; no change.

Cmt. No.	Comment	Action
34.	<p>Please vary the color of the range fans by range and add a designation to the legend. As is, the fans are difficult to read. Also, a narrative as to how each fan was developed is necessary. As indicated the distances on maps are approximate. This information is important in developing future sampling plans. Each narrative should include, at a minimum, type of range, expected distances of shot for type of weapon used on each range, any assumptions used to develop fans, etc. It is assumed that the fans have been developed assuming the maximum projectile distance. It would be helpful to also estimate the expected fan based on the maximum height of 25 feet as stated in the report. If the angle of the weapon was likely to have been limited due to mounting constraints, please state. This would produce a much more realistic fan. Both should be included as maximum and expected. Please identify the Poorman range differently, so that this plate clearly states that it was never used. Change the range fans for the moving target (jeep type) ranges to be those of a .50 caliber weapon as that size spent bullets have been found on the front of the eastern most embankment (add to text as well).</p>	<p>Color of ranges are specified for loading Plate into FUDMIS; Plate changed to omit Poorman Range and extend Jeep Range cells for use with .50 caliber machine guns; added a section 8.2.1.2 MMR Area Delineation Criteria to report to address other concerns.</p>



RANDAL S. CURTIS, P.E.  
Project Manager/Civil Engineer

**APPENDIX M**

**REPORT DISTRIBUTION**

**REPORT DISTRIBUTION**

<u>Addressee</u>	<u>No. Copies</u>
Commander, U.S. Army Engineering and Support Center Huntsville, ATTN: CEHNC-ED-SY-O (D. MARDIS) P.O. Box 1600 Huntsville, Alabama 35807-4301	2

# **REPORT PLATES**

## REPORT PLATES

- 1     **Salt Lake City Army Air Base Gunnery Range** – [Vicinity Map](#)
- 2     **Salt Lake City Army Air Base Gunnery Range** – [Current Land Usage/Ownership](#)
- 3     **Salt Lake City Army Air Base Gunnery Range** – [Aerial Photography 1946](#)
- 4     **Salt Lake City Army Air Base Gunnery Range** – [Military Munitions Response Areas](#)

Thematic Computer-Aided Design and Drafting (CADD) map files completed in association with this Archives Search Report are based on historic cartographic, aerial and site visit data collected during this investigation. The thematic maps were created using Intergraph's Microstation.

The thematic maps were created by scanning and warping selected historic data to reference points collected from non-stable selected base maps such as U.S. Geological Survey (USGS) 7.5 minute, quadrangle sheets or National Imaging and Mapping Agency (NIMA) maps. The horizontal scale and horizontal datum of the base maps is generally known. In this case the datum used was 1927 North Atlantic Datum/World Geodetic System (WGS) 1984. Attempts have been made to rectify the data to the referenced base maps. However, distortions in scale and contortions of the features are present. These distortions are a result of inaccuracies in the source data, as well as the processes of scanning and rectifying the data. Much of the data on the maps lack sufficient information to support a determination of accuracy.

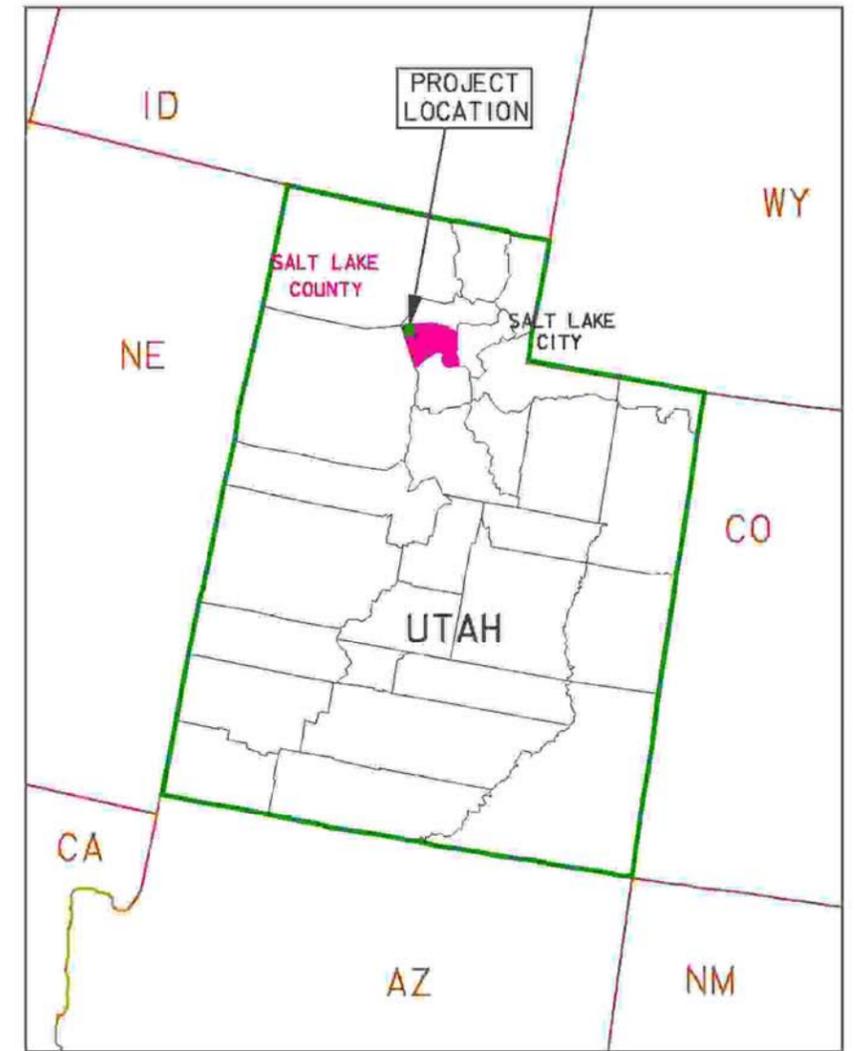
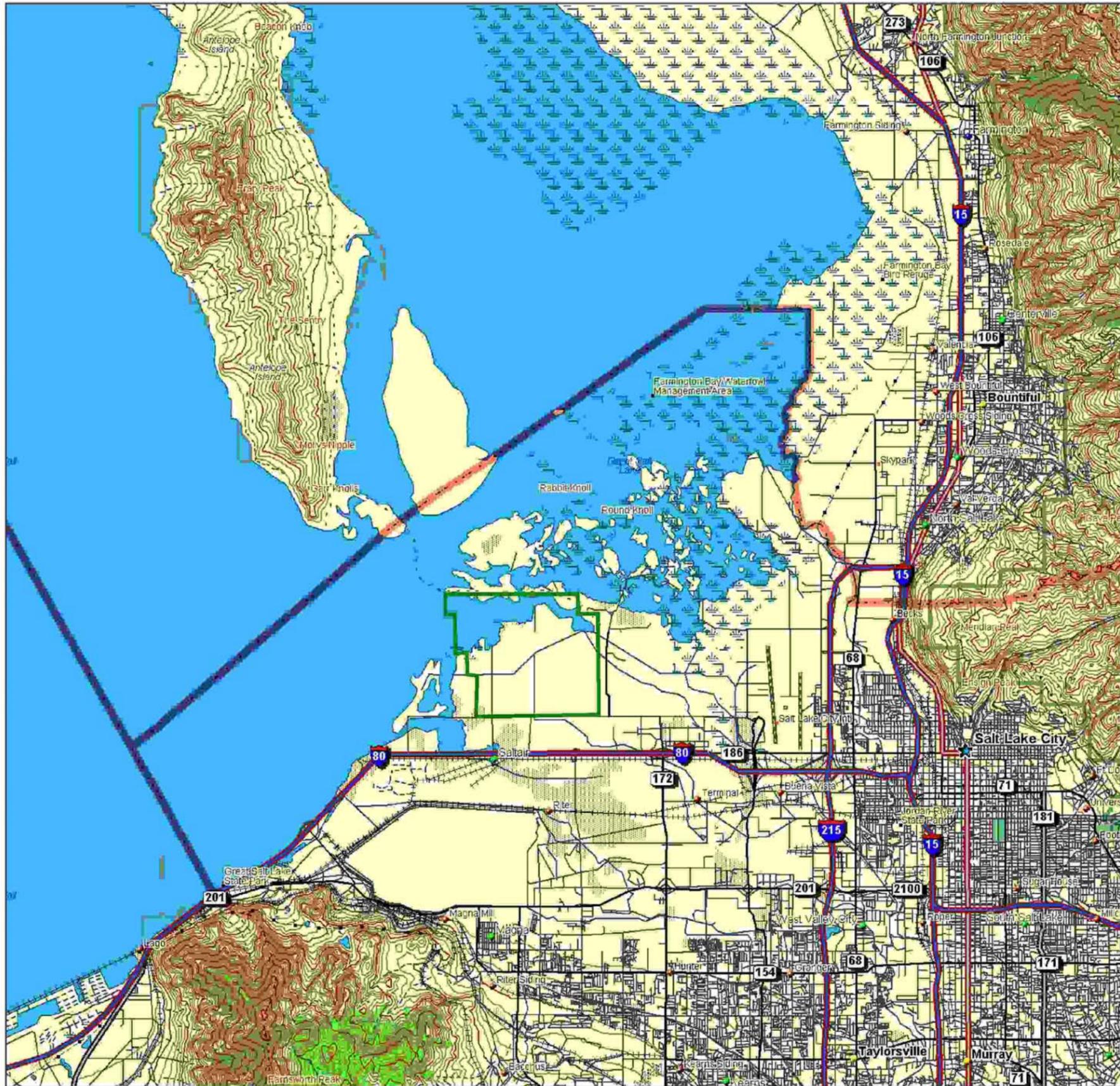
Many of the historic maps used were hand-drawn or built on locations that were inaccurate by modern standards. In general, historic map inaccuracies are unknown and not quantifiable. The unknown inaccuracies may then be magnified by the georeferencing process. Therefore, thematic maps generated from historic maps and drawings will have accuracy no greater than the least accurate source.

The historical aerial photography has been semi-rectified (georeferenced) to the base map; however, the photos have not been corrected for photogrammetric displacements such as those due to topography or the altitude of the aircraft at the time of imaging. They are not orthorectified images. Locations of features noted on aerial photography are not exact due to the rectifying of both the image and the base map.

The horizontal and vertical locations of selected features noted in the ASR and located on the thematic maps have been established utilizing Global Positioning System (GPS) technology. These coordinates were acquired using the Federal Version PLGR96+ GPS receiver. Features located utilizing GPS techniques are so noted in the ASR. The PLGR+96 uses the Precise Positioning Service (16 m SEP) and Wide Area GPS Enhancement (WAGE) 4 m CEP.

The lineage and source of the historic data used to generate the thematic maps is unknown. The majority of Federal Geographic Data Committee (FGDC) Metadata fields

are therefore unknown. A metadata file that gives all available pertinent information has been provided with this product. The statements above are inclusive of all available information regarding the historic data sources and the thematic maps generated. The thematic maps are not original digital mapping data; are scanned and warped data with selected unique feature annotation. The intended purpose of the mapping data is for photo-interpretation and not design. The vector data and associated symbology is unique to the intended purpose. The majority of the digitized features are not part of the current Tri-Service CADD Standards list of features and associated line types and symbology (ie. range fans, pits, disturbed land). The mapping data produced does comply with applicable Tri-Service Standards.



LEGEND

 SITE LOCATION



U.S. ARMY CORPS OF ENGINEERS  
ST. LOUIS DISTRICT

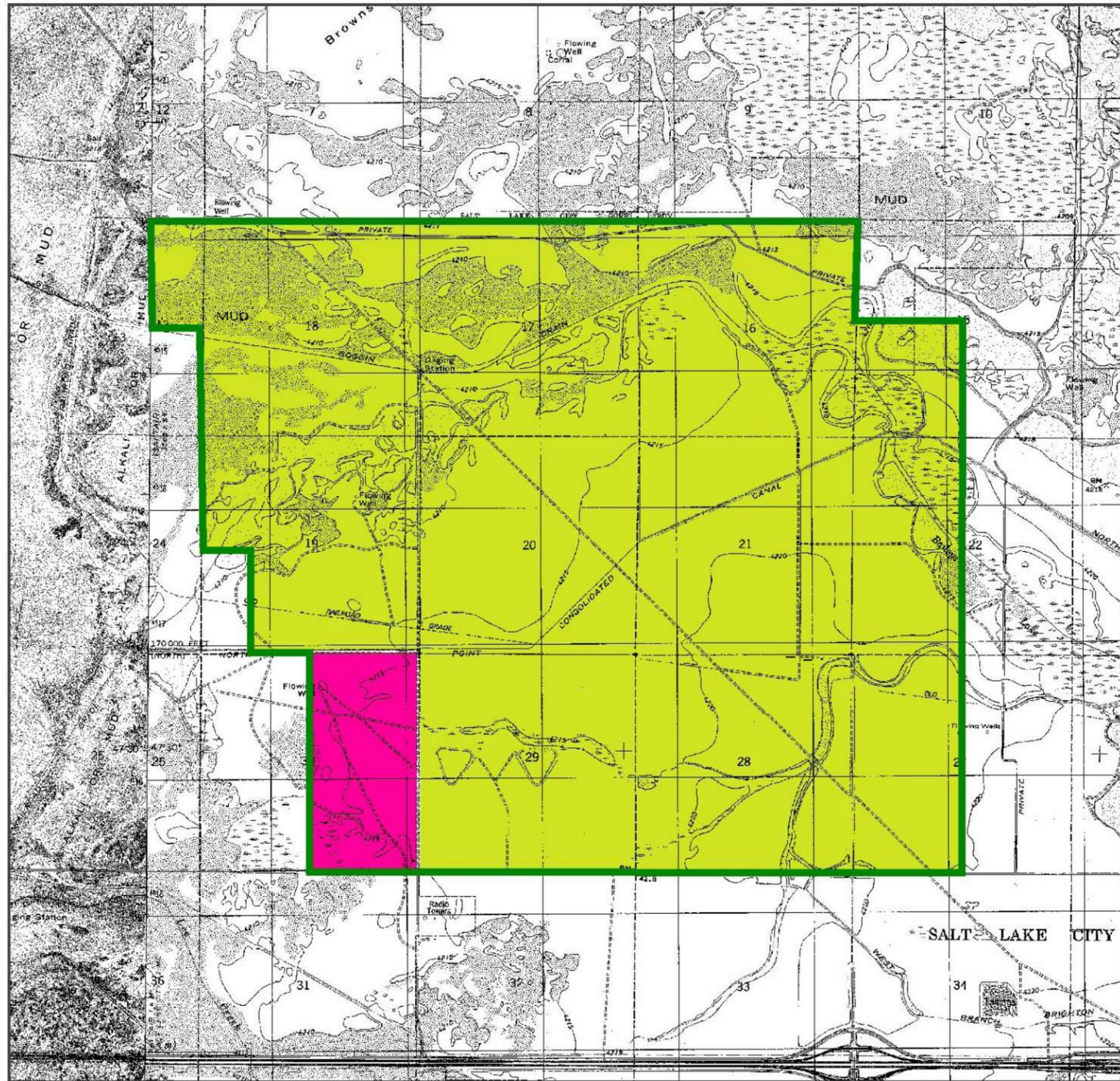
SALT LAKE CITY ARMY AIR  
BASE GUNNERY RANGE  
FUDS PROJECT NO. J08UT0951  
SALT LAKE CITY, UTAH  
SALT LAKE COUNTY  
VICINITY MAP

PROJ. DATE:  
15-JUL-2003 10:33

DATE OF YEAR

m:\proj\2003\UTAH\SR\_T\_LAKE\_AAB\SALT.LAKE.AAB.VICIN.MXD

PLATE NO. **1**



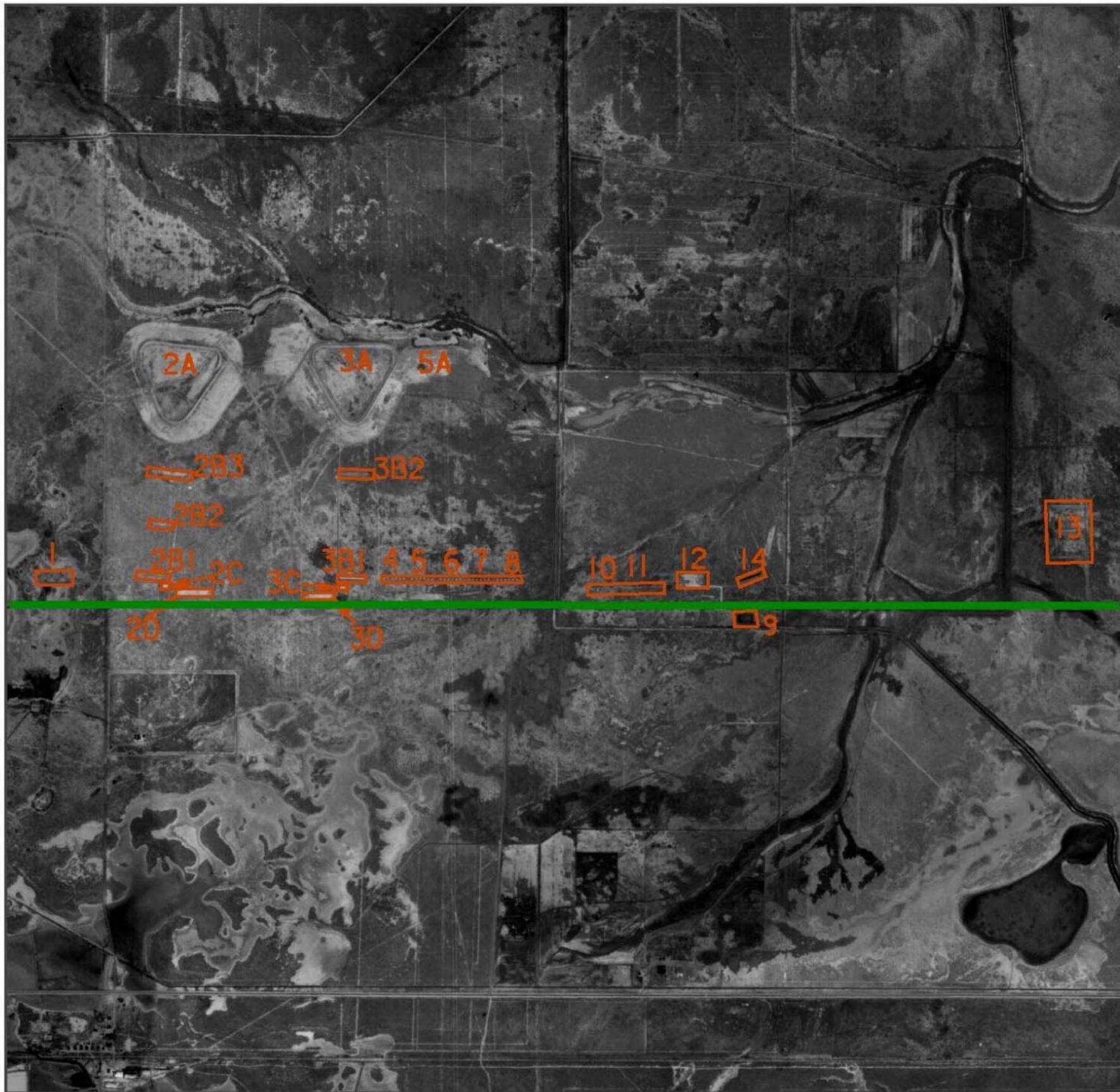
- AGRICULTURAL WITHOUT HOUSING AND RECREATIONAL USE
- INLAND SEA SHOREBIRD RESERVE (ESTIMATED BOUNDARY)

**LEGEND**

- FORMER SALT LAKE CITY AAB GUNNERY RANGE BOUNDARY



	U.S. ARMY CORPS OF ENGINEERS ST. LOUIS DISTRICT	
<b>SALT LAKE ARMY AIR BASE GUNNERY RANGE</b> <b>FUDS PROJECT NO. JOBUT0961</b> <b>SALT LAKE CITY, UTAH</b> <b>SALT LAKE COUNTY</b> <b>CURRENT LAND USE/MAP</b>		
PROJ. DATE: 25-SEP-2003 10:63	DATE OF X YEAR: nsoev2003\UTAH\SALT_LAKE_AAB-5d11.Lak.eCityAABGunneryRange_SITE.D01	PLATE NO. <b>2</b>

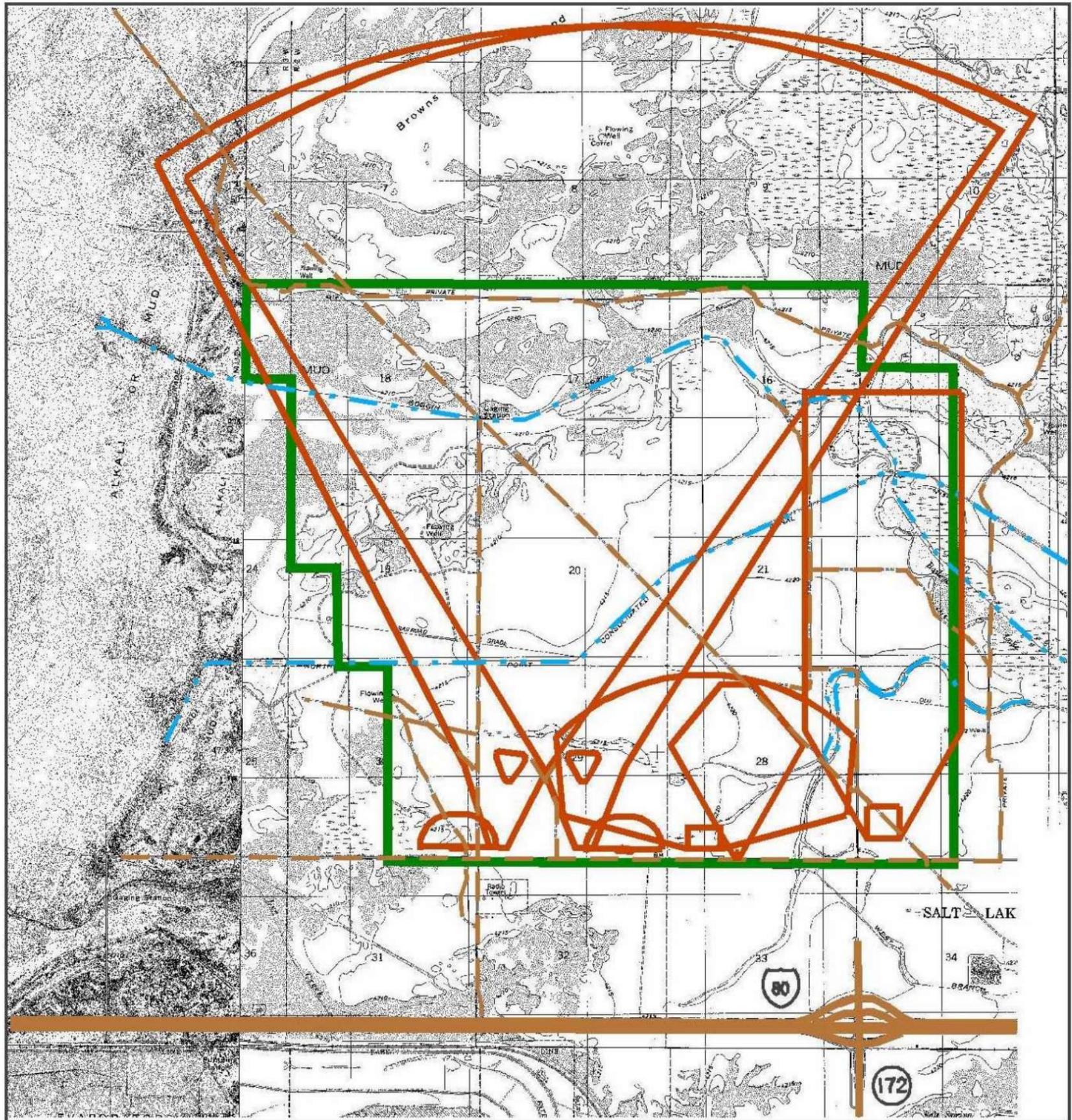


FEATURE NUMBER	FEATURE DESCRIPTION
1	RANGE 1, SKEET RANGE (3 POSITION)
2	RANGES 2 WEST MOVING TARGET (JEEP TYPE) RANGE
2A	TRIANGULAR EARTHEN EMBANKMENTS ABOUT 900 FEET ON A SIDE
2B	FIRING LINES
2B1	5 POSITIONS ABOUT 500 YARDS FROM EMBANKMENT APEX
2B2	APPROXIMATELY 10 POSITIONS ABOUT 1,000 FEET AWAY FROM EMBANKMENT APEX
2B3	FIRING LINE ABOUT 500 FEET AWAY FROM EMBANKMENT APEX WITH NO DISTINCT POSITIONS
2C	PROBABLE CONCRETE PADS ABOUT 20 BY 50 FEET
2D	DEVEGETATED/GRADED AREA ROUGHLY 50 BY 300 FEET
3	RANGES 3 EAST MOVING TARGET (JEEP TYPE) RANGE
3B1	250 FOOT LONG CONCRETE LINE ABOUT 500 YARDS FROM EMBANKMENT APEX
3B2	APPROXIMATELY 10 POSITIONS ABOUT 500 FEET AWAY FROM EMBANKMENT APEX
3C	PROBABLE CONCRETE PADS ABOUT 20 BY 50 FEET
3D	DEVEGETATED/GRADED AREA ROUGHLY 50 BY 300 FEET
4-8	RANGES 4-8, HIGH TOWER SHOTGUN TURRET RANGES; 5 GROUPS OF SIX 15-FOOT SQUARE CONCRETE EMBLEMMENTS SPACED ALONG 1,400 FEET
5A	DEVEGETATED AREA 50 BY 300 FEET
9	DARK RECTANGLE FEATURE ABOUT 80 BY 150 FEET, POSSIBLE RANGE 9, MALFUNCTION RANGE BUILDING BUT OUTSIDE SITE BOUNDARY
10-11	LINEATION ROUGHLY 800 FEET LONG, PROBABLE RANGES 10-11, SUB MACHINE GUN (2)
12	DEVEGETATED/GRADED AREAS ROUGHLY 200 FEET WIDE WITH 50 YARDS OF DEPTH, PROBABLE RANGE 12, PISTOL RANGE
13	RANGE 13, 200 YARD KD RIFLE RANGE, APPROXIMATELY 450 FEET WIDE WITH FIRING LINES DISCERNABLE AT 100 AND 200 YARDS
14	200 FEET LONG AND 25 FEET WIDE LINEATION, SKEWED ROUGHLY 30 DEGREES, PROBABLY FIRING TO POORMAN RANGE

Imagery Source: 18 August 1946, from AAL-28-127, stated scale 1:20,000 from RG 145, NARA-College Park, MD.

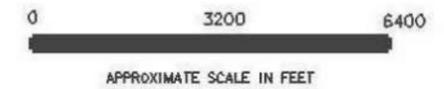


	U.S. ARMY CORPS OF ENGINEERS ST. LOUIS DISTRICT	
	<b>SALT LAKE CITY ARMY AIR          BASE GUNNERY RANGE          FUDS PROJECT NO. J08UT0951          SALT LAKE CITY, UTAH          SALT LAKE COUNTY          AERIAL PHOTOGRAPHY 1946</b>	
PROJ. DATE: 14-DEC-2004 07:00	DATE OF YEAR: 14-DEC-2004	PLATE NO. <b>3</b> <small>SummaryRange_1946010.DGN</small>



**LEGEND**

-  APPROXIMATE PROPERTY BOUNDARY
-  SMALL ARMS RANGES
-  MAIN ROAD
-  SECONDARY ROAD
-  SHORELINE
-  INTERSTATE
-  STATE ROUTE



	U.S. ARMY CORPS OF ENGINEERS ST. LOUIS DISTRICT	
	SALT LAKE CITY ARMY AIR BASE GUNNERY RANGE FUDS PROJECT NO. J08UT0961 SALT LAKE CITY, UTAH SALT LAKE COUNTY MILITARY MUNITIONS RESPONSE AREA	
FIG. DATE: 14-DEC-2004 06:52	DATE OF 2 YEAR L:\DEV\new2003\UTM\SALT_LAKE\A8\SaltLakeCity\gunnery_INSTALL.DWG	PLATE NO. <b>4</b>

# PRELIMINARY ASSESSMENT

## SALT AIR GUNNERY RANGE

Salt Lake County, Utah  
EPA ID: UT0001610880

Utah Department of Environmental Quality  
Division of Environmental Response and Remediation  
Prepared By: J. D. Keetley



SCANNED  
DERR - 1997-012535

## TABLE OF CONTENTS

1.0 INTRODUCTION .....	1
2.0 OBJECTIVES .....	1
3.0 SITE DESCRIPTION .....	1
3.1 Site Location and Description .....	2
3.2 Site History and Previous Work .....	2
4.0 POTENTIAL EXPOSURE PATHWAYS .....	4
4.1 Waste/Source Characteristics .....	4
4.2 Groundwater Pathway .....	5
4.2.1 Hydrogeologic Setting .....	5
4.2.2 Groundwater Exposure Targets .....	6
4.2.3 Groundwater Exposure Conclusions .....	7
4.3 Surface Water Pathway .....	7
4.3.1 Hydrologic Setting .....	7
4.3.2 Surface Water Exposure Targets .....	8
4.3.3 Surface Water Exposure Conclusions .....	8
4.4 Soil Pathway .....	9
4.4.1 Geologic Setting .....	9
4.4.2 Soil Exposure Targets .....	10
4.4.3 Soil Exposure Conclusions .....	10
4.5 Air Pathway .....	10
4.5.1 Meteorologic Setting .....	10
4.5.2 Air Exposure Targets .....	11
4.5.3 Air Exposure Conclusions .....	11
5.0 SUMMARY AND CONCLUSIONS .....	12
6.0 REFERENCES .....	13

## **1.0 INTRODUCTION**

The SaltAir Gunnery Range Site (UT0001610880), located approximately five miles west of the Salt Lake City International Airport, in Salt Lake County, Utah, consists of abandoned munitions testing ranges used during World War II. At the site today are two large earthen berms, triangular in shape, about eight feet high and several hundred feet long, and several concrete foundations of varying sizes and shapes in the surrounding area. All of these structures were used in the testing of large caliber arms during the war years. Since that time, no official government weapons testing activity has taken place at the site, although private companies and individuals have used the area for the storage of mining and blasting equipment and as a shooting range. Currently, the site stands idle.

The site was discovered October 28, 1996 by the Utah Division of Environmental Response and Remediation (UDERR). As part of this preliminary assessment, a site visit was conducted on August 7, 1997, by UDERR.

This Preliminary Assessment (PA) was conducted under the authority of the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA). UDERR conducted this investigation under cooperative agreement with the U.S. Environmental Protection Agency (EPA). The information obtained will be used for purposes of determining whether further action under the National Oil and Hazardous Substance Pollution Contingency Plan (NCP) will be necessary. Included in this report are "Preliminary Assessment Worksheets", "CERCLIS Eligibility Questionnaire", and "Potential Hazardous Waste Site Preliminary Assessment Form" as Appendices A, B, and C, respectively.

## **2.0 OBJECTIVES**

The purpose of this Preliminary Assessment is to check site conditions, determine the likelihood of contamination, identify potential exposure pathways, and gather information on the status of the site. This information will then be used to make decisions regarding the need for possible further action due to potential sources of hazardous materials at the site, potential off-site migration of hazardous material to the environment, and potential exposure of hazardous materials generated on-site to human health and environmental targets, or a no further action decision.

## **3.0 SITE DESCRIPTION**

Background information about the site was obtained from CERCLA files at UDERR; from records and files at Salt Lake City & County government offices; from publications of the Utah Department of Natural Resources and the U.S. Geological Survey (USGS); and from a report prepared for the U.S. Army Corps of Engineers (USACE). A recent site visit was made for the purpose of establishing the current conditions of the gunnery range site and surrounding area, including access routes, to identify wetlands and nearby population, to identify potential pathways, and to identify potential hazardous wastes. The site visit report and photographs are included in Appendix D.

### 3.1 Site Location and Description

The site is located in the northwest edge of the Salt Lake Valley, approximately six miles north of Magna, Utah, five miles west of the Salt Lake City International Airport, and barely within the western city limits of Salt Lake City, Utah (Figure 1). The site is within the Great Basin of the Basin and Range physiographic province, and between the north-south trending Wasatch and Oquirrh mountain ranges. The elevation of the site is approximately 4215 feet above mean sea level (USGS, 1972). Topography of the site is relatively flat, as the Salt Lake Valley floor slopes ever so gently west toward the Great Salt Lake (UDERR, 1997). The site is situated approximately two and a half miles east of the Great Salt Lake (Figure 2A). No running surface water streams exist at the site, although there are drainage ditches and canals within one mile from the immediate area. Wetlands described as emergent and seasonal occupy and surround the site on all sides, and continue onward to the Great Salt Lake (USFWS, 1981). There is an old railroad grade less than a mile north of the property that trends east-west. A dirt road connects the range site to other dirt/gravel roads which eventually connect to Interstate 80, about one and a-half mile south of the site. Access to the site is roughly at 8400 West and 700 North. The site is fenced, and access to the site is by a restricted (gated) dirt road (UDERR, 1997).

The gunnery range site is now in disuse, and is located on private property. There are several concrete foundations on the site, and two large earthen berms in triangular shapes, approximately 900 feet long on each side, and ten feet high (USACE, 1992). The site is well over 100 acres in size, including all the areas with foundations and berms. There are no abandoned buildings or other structures on the site at this time, and the site is criss-crossed with several dirt roads apparently made in more recent times by four-wheel drive enthusiasts (UDERR, 1997). The surrounding lands are, for the most part, privately owned by individuals, businesses, or duck hunting clubs (UDERR, 1997).

### 3.2 Site History and Previous Work

The area around the SaltAir Gunnery Range has been used very little for industrial-type purposes except during the time the military used it. According to property ownership records at the Salt Lake County Recorder's Office, Section 29, T1N, R2W, which contains the two large triangular-shaped earthen bermed ranges, was bought in 1929 by Glenn Bothwell and James Hogle. The property has stayed in the Bothwell and Hogle (and later Morehouse) families up to the present time, with the exception of the World War II years when the military used it. The property was leased to mining and chemical companies, such as E.I. Du Pont de Nemours Company in the 1970's and '80's, and possibly earlier. These companies apparently used the abandoned bunker buildings for storing mining explosives (USACE, 1992). Since that time, the land has been only intermittently used for cattle grazing and occasional motorized recreational use.

In 1943 and 1944, during World War II, the Department of the Army and the Department of the Air Force (then known as the Army Air Corps) acquired transfer, leasing, and easement donations over several thousand acres of land in the area of the SaltAir Gunnery Range site. Their combined land holdings totaled 6,276 acres, and included all or portions of Sections 16, 17, 18, 19, 20, 21, 22, 27, 28, 29, and 30, in Township 1 North, Range 2 West, Salt Lake Baseline and Meridian (USACE,

1992). This expanse of land includes and surrounds on the east, north, and west, the two large triangular-shaped earthen berms in Section 29, which are the most conspicuous remnants of the gunnery range and were the focus of the UDERR site visit conducted as a part of this investigation. This large tract of land can be seen in the USACE map (Figure 2B), which is also included as part of the UDERR site visit report in Appendix D.

The military used this large tract of land to test large caliber weapons. Conventional ordnance and ammunition evidently used at the site at the time included bullets up to .50 caliber (USACE, 1992), and some smaller caliber bullets such as .45, .38, .30, and 9 millimeter (UDERR, 1997). It was stated in Appendix C of the 1992 USACE report that "20 mm and larger" ordnance may have been used on the site at that time, although no corroborating evidence to document this claim was presented in the report (USACE, 1992).

The range was referred to by the military as the Salt Lake City Army Air Base Gunnery Range, and was also known as the Salt Lake Aerial Gunnery Range (USACE, 1992). It seems that the testing range was used by both the U.S. Army and the U.S. Air Force, at that time a part of the Army and known as the "Army Air Corps" (Wheelwright, 1997). Even though the facility was occasionally referred to as an aerial range, there is nothing in the historical documentation to show that it was ever used as a testing or target range for aircraft bombs or guns (Wheelwright, 1997).

The range consisted of not only the two large earthen bermed triangular-shaped areas located in Section 29, but also at least three other areas used as firing ranges containing gun mounts, bunkers, a total of eight support buildings, and latrines. The facilities were mostly located in the southern part of the 6,276-acre area, and presumably constructed during or shortly before World War II (USACE, 1992). It appears that the site may have been used by the Remington Arms Plant, EPA #UTD 0001307743 (Neville, 1997; Wheelwright, 1997).

In 1944, the military discontinued its use of the ranges and terminated the lease, easement, and transfer agreements, and the land went back to the original owners. In 1950, the U.S. Army Corps of Engineers determined that "...no restoration nor decontamination work was necessary" (USACE, 1992). After the military was through using the gunnery range, the site was abandoned and left unattended. No government activity has occurred at the site since that time.

A visual inspection of the site was performed by a contractor for the U.S. Army Corps of Engineers in 1992. They found no evidence of contamination at the site at the time, no evidence of underground storage tanks, and received no reports of any live ammunition ever having been found on-site (USACE, 1992). The report says that several spent bullets and casings were found on the ground surface at the site, mainly in the area of the triangular berms (one .50 caliber spent bullet was found in the USACE's "Figure 5 area"), and that several dirt roads cross the site. The support buildings were reportedly burned down in 1985 (USACE, 1992). Within the large bermed triangles, eight 55-gallon drums, a car battery, shotgun shell casings, clay pigeon disks, and other miscellaneous debris were found (1997 UDERR site visit saw only one drum on-site). The report documented its findings with photographs, and concluded that: "Action (is) required to evaluate potential threat to personnel," and that a "confirmation study is appropriate" (USACE, 1992).

The study area of the USACE report included all 6,276 acres of the property owned or leased by the U.S. Government at the time (Figure 2B). The study area at the time of the UDERR site visit and assessment focused mainly on that part of Section 29 which contains the two large earthen bermed triangles and the immediately surrounding concrete foundations, since that is the primary location where spent bullets were found (Figure 2A).

The site area today has been fenced, and access to the site is restricted with a locked, gated fence. Only the two large earthen triangular berms and several concrete foundations exist today (UDERR, 1997). The area is used only for occasional cattle grazing (USACE, 1992). Plans are in place to turn large portions of the area near the site into a wetlands by Kennecott Utah Copper mining company as part of their tailings pond expansion and wetlands mitigation plans (Neville, 1997).

The site was placed on the Comprehensive Environmental Response, Compensation, and Liability Information System (CERCLIS) list ("Discovered") by UDERR on October 28, 1996, as an EPA fund-lead site, with a Preliminary Assessment scheduled to be performed on it as soon as possible.

Other than the Corps of Engineers' determination in 1950 that the site needed no restoration or decontamination work, there has been no other local, state, or federal government agency action or oversight regarding this site. There has been no testing or sampling of the soil or groundwater at the site to determine whether a release of potentially hazardous substances has occurred. The lead from the spent bullets or chemicals from the ordnance or possibly even live munitions may now pose a threat to human health or the environment by way of groundwater, surface water, direct contact, or inhalation pathways. The landowners of the property are not aware of any potential threat the site and the historical operations may now pose. Nothing in the documented records indicate that any cleanup activity, reclamation, or restoration work has been performed to ensure that the site is free of live munitions or other potentially hazardous materials (USACE, 1992).

No National Priority List Superfund sites are immediately adjacent to the SaltAir Gunnery Range site. The nearest CERCLIS sites are the Portland Cement Site No. 1 (UTD# 980952832), less than one mile southwest of the site, and the North Temple Landfill (UTD# 000463489), less than one mile to the south.

This Preliminary Assessment will address only the southern portion (bermed area) of the Salt Lake City Army Air Base Gunnery Range.

## **4.0 POTENTIAL EXPOSURE PATHWAYS**

### **4.1 Waste/Source Characteristics**

Source materials at the site are lead and possibly other metals from spent bullets and casings, other chemicals incidentally associated with munitions and ordnance, and possibly any live ammunition still on the site.

Spent casings and actual bullets as large as .50 caliber have been documented as having been found at the site (USACE, 1992). It is also possible that some chemicals may have been left behind from the munitions testing operations. Although no live munitions have been recorded as having been found at the site, this does not preclude the possibility that live munitions may be there currently. At the nearby former Remington Arms Plant, UTD#0001307743, chemicals of concern at that site include lead and other metals such as magnesium, sodium, arsenic, mercury, tetrazene and other explosives, explosive residues, solvents and degreasers including tetrachloroethylene (TCE), pesticides, and perhaps other volatiles and semi-volatiles as well (Yeomans, 1997). There is some evidence to show that the Remington plant did indeed test its munitions at the Saltair gunnery range site, and that the range may have been part of the Remington Arms Plant (Neville, 1997).

## **4.2 Ground Water Pathway**

### **4.2.1 Hydrogeologic Setting**

Groundwater in the Salt Lake Valley occurs in valley fill deposits under both confined and unconfined conditions. All aquifers in the valley are in unconsolidated materials of Quaternary age and are hydraulically connected to some degree. The "principal aquifer" system is found in both confined and in deep unconfined aquifers, depending on location, and are composed of sand and gravel. The confined aquifer attains a thickness of 1,000 feet or more in the northern part of the valley (Waddell, et al, 1987). It is underlain by relatively impermeable, semi-consolidated rocks of Tertiary age and earlier, and is overlain by tight formations of clay, silt, and fine sand. In most parts of the valley there is also a shallow, unconfined aquifer near the ground surface that is not considered part of the "principal aquifer" because of its shallowness and salinity (Hely, et al, 1971).

The shallow aquifer in the site area exists within unconsolidated materials at approximately 4 to 20 feet below ground surface (Hely, et al, 1971). Depth to groundwater in the shallow unconfined aquifer in the site area is less than 5 feet below ground surface (Seiler and Waddell, 1984; and Hely, et al, 1971). The shallow aquifer is recharged mainly by an upward flow of water (upward vertical gradient) from the deeper portion of the aquifer, and secondly by downward infiltration of surface water and precipitation. While the current situation suggests the upper, shallow aquifer receives water via an upward flow from the underlying principal aquifer, this condition has been shown in modeling tests to reverse when groundwater is pumped out of the shallow aquifer at double the 1982 withdrawal rates for the area wells (Baskin, 1990). The shallow portion of the aquifer may discharge into surface courses such as canals and the Great Salt Lake (Waddell, et al, 1987).

The deeper confined aquifer (the principal aquifer) is separated from the shallow aquifer by silt and clay lenses and is known to be laterally extensive throughout the Salt Lake Valley with a maximum thickness of more than 1,000 feet (Waddell, et al; 1987). Most deep wells in the valley are completed in sediments at depths of less than 1,200 feet. The deeper portion of the aquifer is recharged by infiltration of rain water and snow melt on the flanks of the surrounding mountains (Hely, et al, 1971). The deep confined aquifer is the principal groundwater source for domestic use in the Salt Lake Valley.

Regionally, groundwater originates at recharge areas along the base of the mountains, moves northward beneath the Salt Lake Valley, and discharges in the northern and western parts of the valley near the Great Salt Lake. The overall direction of groundwater flow is to the north or northwest, although local variations do occur. Groundwater is frequently found between 40 to 100 feet below ground surface throughout most parts of the valley, with diminishing depth to groundwater near major drainages and to the north and west parts of the valley near the Great Salt Lake. The shallow groundwater aquifer in the Salt Lake Valley has notable dissolved concentrations of minerals such as calcium, magnesium bicarbonate, sodium chloride (salt), and/or sulfates (Waddell, et al, 1981).

At the gunnery range site itself, the direction of groundwater flow most likely is to the northwest toward the Great Salt Lake. In a well drilled about one mile northeast of the site, water is at approximately three feet below ground surface. Lithology of the area is sand with silty clays down to about 15 feet below ground surface (Thiros, 1992) In another well about one mile southwest of the site, water is encountered at approximately two feet below ground surface (Seiler and Waddell, 1984). Depth to the water table, hydraulic conductivity, transmissivity, yield, storage, and other specific characteristics of the aquifer system at or near the site will require further investigation to quantify.

#### **4.2.2 Groundwater Exposure Targets**

Data provided by the Utah Division of Drinking Water indicates that there are no municipal or public drinking water wells serving as drinking water sources located within a four-mile radius of the site (Appendix H). A public drinking water source is defined by the Division of Drinking Water as a system that consists of at least 15 connections or serving 25 persons for at least 60 days of the year (Birkes, 1997).

Data provided by the Utah State Division of Water Rights indicates that there are existing rights to 60 underground Points of Diversion (PODs) within a four-mile radius (Appendix G). Of the 60 underground PODs, 18 were listed as being used for domestic purposes. Calls placed to the owners of these wells verified that none of them are actually being used for drinking water purposes at this time.

One part-time and one full-time business located one and two miles southwest of the site, respectively, were contacted to ascertain the source of their drinking water. In both cases, the source was bottled water. Both businesses also used treated water from pumps several miles away for the restrooms.

The town of Magna, six miles south and upgradient of the site, obtains its drinking water from wells east of town, several miles from the gunnery range site, and definitely outside the four-mile radius of the site (Zabriskie, 1997).

### 4.2.3 Groundwater Exposure Conclusions

A potential for groundwater contamination at this site is possible since no reclamation or decontamination work was performed at the site after the closing down of operations (USACE, 1992). If any of the chemicals described in the above section, "4.1, Waste/Source Characteristics," are present at the site, there is the possibility that natural percolation and infiltration of rain water could lead to contamination of the groundwater.

No monitoring wells are known to have been installed at the site. There has been no sampling to determine whether groundwater has been contaminated by previous site activities. Despite this lack of evidence, there is the potential that a contamination pathway to groundwater exists and that leftover chemicals or explosives at the site may pose a threat to this medium. The lack of drinking water wells in the area, however, and the lack of residential targets, may limit exposure to any targets. There is also the possibility of a groundwater to surface water pathway. This pathway would have few if any human targets, but would likely have environmental targets since the Great Salt Lake is only two or three miles northwest of the site, and numerous wetland areas occupy the testing range itself and most of the surrounding land, and serve as breeding, nesting, and feeding areas for numerous waterfowl.

## 4.3 Surface Water Pathway

### 4.3.1 Hydrologic Setting

Due to the arid nature of the environment (approximately 13 inches of precipitation a year), there are no perennial streams that flow through the site. There are a few intermittent (ephemeral) drainages within a few miles of the site that flow during periods of heavy rain or rapidly melting mountain snowpacks. The water from these drainages generally infiltrates directly into the unconsolidated deposits of the valley floor, recharging groundwater, or evaporates. There are also some human-built canals or "drains" used for agricultural purposes, to drain water from low areas, or in some cases for use by waterfowl management areas. The most prominent of these are the Goggin Drain and the North Point Canal about one to two miles north of the site, and the Ridgeland Canal, Lee Creek, and Brighton Drain two miles south of the site. The West Branch of the Brighton Drain flows within 1/2-mile east of the site. The Goggin Drain and the North Point Canal both receive some water from the Surplus Canal about 4 miles east of the site. During the water years 1964-68, mean annual discharge into the Great Salt Lake of the North Point Canal was measured at 24 cubic feet per second; the Goggin Drain was measured at 60 cubic feet per second (Hely, et al, 1971). Discharge of Lee Creek, which drains a low-lying area a few miles northeast of Magna and then flows by the Kennecott tailings pond and the abandoned Morton salt evaporators located north of Magna (and south of the site), was estimated to flow 13 cubic feet per second in the same period. At the time of the UDERR site visit, Lee Creek was flowing at 90 cubic feet per second (Neville, 1997). There were no flow rates available for the Ridgeland Canal or Brighton Drain.

These drainages flow west into the Great Salt Lake, about two to three miles west of the site, which is a saline lake with no outlets. The lake supports no aquatic life except for brine shrimp and brine

flies, although there are large terrestrial life groups such as birds living on its shores. There are wetlands and alkaline mudflats less than a mile from the site on all sides. These are considered sensitive environments. A fresh water lake, Baileys Lake, is two miles northeast of the site. It is apparently fed by incoming water in the Goggin Drain. Although it is fresh water, it is ephemeral (seasonal), and no fish are known to inhabit this lake (Mizzi, 1997).

#### **4.3.2 Surface Water Exposure Targets**

Overland flow routes from the site are to the northwest toward the Great Salt Lake. Data provided by the Utah State Division of Water Rights indicates that there are existing rights to 35 surface Points of Diversion (PODs) within a four-mile radius (Appendix G). Of the 35 surface PODs, none were listed as being used for domestic (drinking water) purposes. Uses listed in the surface water rights descriptions included irrigation, stock watering, or "other." No surface water intakes for culinary purposes exist downgradient of the site or within four miles of the site. There are no residences along the downstream reach of any drainages coming from the site vicinity. The nearest resident lives approximately six miles to the south, in Magna, away from the flow of any surface water from the site.

There are no fisheries in the Great Salt Lake that are near the site. However, there are designated wetlands within one mile of the site and in the surrounding area (USFWS, 1981). These wetlands are described as emergent and seasonal. Approximately seven miles to the northeast is the Farmington Bay Waterfowl Management Area. Although this would constitute a sensitive area, it seems unlikely that any surface water could ever reach that wetlands area from this site.

Ducks and other waterfowl were observed in the area during the site visit (UDERR, 1997). The bald eagle, listed as a threatened species, occurs in the area but is not known to nest there (Mizzi, 1997). Other migratory species of birds occasionally visit the area. No fish are known to be in the area (Mizzi, 1997). During the UDERR site visit, birds such as the white-faced ibis, stilts, and Virginia rail were observed; carp (fish) were observed in the Goggin Drain, two miles north of the site.

There are several privately-owned duck hunting clubs located approximately two to four miles northeast of the site. These include the Lake Front, Ambassador, Browns, Harrison, Wasatch, Rudy, and Utah duck clubs (Neville, 1997).

#### **4.3.3 Surface Water Exposure Conclusions**

While none were found during the site visit, the abandoned gunnery range may contain left-behind chemicals and/or live munitions. Fortunately, the lack of residents in the area and the fact that there are no surface drinking water sources in the area or downstream from the site leads to the conclusion that there is little likelihood of any exposure to any human targets from a surface water release of contaminants from the site. The presence of wetlands or other sensitive habitats near or downstream from the site could mean a possibility of exposure to environmental targets via surface water.

The berms and other features serve somewhat as a containment structure for surface water during rainstorms. While there may be little chance for this surface water to flow beyond these containment structures, there is a good possibility that the surface water will percolate downward into the underlying aquifer and resurface in nearby canals or springs. Contaminant sources on the outside of the berms could enter surface water during storm events and potentially be transported off-site.

#### 4.4 Soil Pathway

##### 4.4.1 Geologic Setting

The SaltAir Gunnery Range site is located in the Salt Lake Valley which is bounded on the east by the Wasatch Range, on the west by the Oquirrh Mountains, to the north by the Great Salt Lake, and to the south by the Traverse Mountains. This north-south trending intermontane valley lies on the eastern edge of the Basin and Range Physiographic Province, and on the western edge of the Colorado Plateau Province. The elevation of the valley floor in this area varies between 4,210 and 4,220 feet above mean sea level. The general geology of the valley is characterized by fine grained sediments, silts, and clays which were deposited from prehistoric Lake Bonneville, and by extensive Quaternary and Tertiary deposits of conglomerate, sands, and silts deposited by erosion of and deposition from the surrounding mountain ranges (Hintze, 1988).

The geology and soil conditions at the SaltAir Gunnery Range site are determined by its northwest location in the Salt Lake Valley, with the Wasatch Mountains to the east and the Oquirrh Mountains to the west. The Wasatch Mountains, 15 miles east of the site, are fault-block mountains. They are composed of Paleozoic and Mesozoic sedimentary rocks, with some Cenozoic igneous rocks in places. The down-dropped block is on the west side of the fault, under the Salt Lake Valley, and is buried under thousands of feet of lake-bed sediments and alluvium worn from the adjacent mountains. In some cases, the depth of this sediment cover is as great as 7,000 feet (Stokes, 1986, page 253). Basin-fill deposits were eroded from these adjacent mountain ranges and deposited in the Salt Lake Valley and other local valleys. The general stratigraphy of the area is characterized by several hundred feet of unconsolidated to poorly consolidated alluvial and lacustrine deposits (Hintze, 1988). These interbedded and highly lenticular sands, silty sands, silts, and clays of the Salt Lake Formation are estimated to be more than 500 feet thick. Mountain streams carried most of the sediment into the basins of ancient Lake Bonneville. The fine-grained sediments were deposited in the deeper portions of ancient Lake Bonneville while the coarser-grained sediments were deposited along the margins of the ancient lake as its level fluctuated and receded to its present level (Hely, et al, 1971).

A soil survey of the Salt Lake area identified the soils at the gunnery range site as primarily of Saltair-Jordan-Lasil associated soils (USDA, 1974): This soil profile is poorly drained, strongly saline-alkaline silt and clay loams found on lake plains near the Great Salt Lake with 0 to 2 percent slopes. Intake of water and permeability are slow to moderate. Surface runoff is slow. These soils are commonly used for range, pasture, and wildlife habitat. Vegetation in the area includes saltgrass, greasewood, alkali sacaton, and other alkali-tolerant plants (USDA, 1974). Elevation of the ground surface at the site is approximately 4215 feet above mean sea level (USGS, 1972).

#### **4.4.2 Soil Exposure Targets**

The threat to nearby population may be considered extremely low. A review of the 1990 census data shows there are no persons living within four miles of the site (Appendix F). A visit to the site area confirmed this data (UDERR, 1997). Although some older maps of the area show the town of Saltair and the Morton salt evaporators as being located just two miles south of the site, these facilities have been abandoned and relocated elsewhere (Neville, 1997).

The site is located in the isolated flats and scrub lands of the Salt Lake Desert, near the Great Salt Lake. There is plant and animal life typical of a desert environment at the site and in the surrounding area: rabbit brush, salt grass, rabbits, waterfowl and marsh grass in the seasonal wetland areas. Cattle occasionally graze in the area (UDERR, 1997). The gated and locked dirt road which accesses the site is somewhat of a deterrent to site visitors, although trespassing is possible if one is willing to walk or drive around the gate and climb over the fence (UDERR, 1997).

#### **4.4.3 Soil Exposure Conclusions**

The gunnery range has been abandoned by the military now for over 50 years, although private citizens have undoubtedly used it as a target practice area in recent years since smaller calibers of spent bullet casings were found at the site other than the large .50 caliber size used by the military. These other caliber sizes have been tentatively identified as .45, .38, .30, and 9 millimeter (UDERR, 1997).

While a recent site visit revealed no obvious contamination or live munitions from past activities, it is conceivable that the site may pose a health problem if such contaminants or live munitions are present but so far undetected. There could exist at the site a relatively high potential for exposure to any trespassers or infrequent visitors to the site. The site visit showed that there have been occasional persons trespassing the property, ignoring the signs, and walking around the site or using the site for a target practice range. Children are known to have dug up bullets at the site (Baran, 1997). Four-wheel drive enthusiasts or motorized trail bikers may use the dirt roads next to the site and can create an inhalation hazard due to airborne contaminants. These roads connect the site to the Interstate 80, and also go toward the Great Salt Lake "beaches."

Therefore, the inference can be made that direct exposure via inhalation or incidental ingestion of contamination is a possibility at this site. This could result in irritation or injury to the eyes or mucus membrane lining the respiratory tract.

### **4.5 Air Pathway**

#### **4.5.1 Meteorologic Setting**

The area experiences relatively cold winters and hot summers. The following meteorological information was collected at the Saltair, Utah, weather station, one mile south of the site. Mean annual precipitation is 13.34 inches (Ashcroft, et al, 1992). The record daily precipitation was 2.25

inches, which fell in a September (year not specified). Most precipitation occurs in the spring and fall. The area is subject to occasional severe summer thunderstorms, which may cause flash-flooding in the nearby mountains and streams. This will also have an effect on the lake level of the Great Salt Lake, which fluctuates both seasonally and long-term over several decades. The average daily high temperature is 61.3°F and the average daily low temperature is 40.1°F (Ashcroft, et al, 1992). Pan evaporation is 83.91 inches per year. The average frost-free period is 161 days (Brough, et al, 1983). The climate is quite arid.

#### **4.5.2 Air Exposure Targets**

The target population would be similar to that listed in the soil exposure section above. No residents live within 4 miles of the site, according to 1990 U.S. Census block data (Appendix F). The nearest residents are in Magna, Utah, six miles to the south. The four-mile radius includes an area of alkali mudflats, seasonal wetlands, scrub desert vegetation, and occasional [spring-time] cattle grazing fields.

There is an active earth-moving operation about two miles southwest of the site, the Kennecott tailing pond expansion. If contaminated soil particles from the site were to become wind-borne, in a wind blowing southwest, it is feasible that workers at this plant may be exposed to contaminated airborne particles.

The area of the site is likely the habitat for such typical desert-dwelling animals as deer, rabbit, coyote, fox, other small mammals, birds and reptiles. The bald eagle, a threatened species, is likely an occasional visitor in the area but is not known to nest there (Mizzi, 1997). Sensitive environments nearby include the designated wetlands within one mile of the site, and the Farmington Bay Waterfowl Management Area, adjacent to the Great Salt Lake, seven miles to the northeast.

#### **4.5.3 Air Exposure Conclusions**

There are no workers or residents on the site. There are no resident within four miles of the site, and only two businesses within four miles of the site, the KSL radio towers one mile southwest which have two or three maintenance workers there only part-time in the summer months (Finch, 1997), and the Kennecott evaporation pond expansion operation two miles southwest (Neville, 1997). Ranch workers have access to the site to graze their cattle in the area, and there is evidence that this has occurred (UDERR, 1997). The area is fenced, with a locked gate, has "No Trespassing" signs posted at the gate and along the fence along the frontage road by the Interstate, and is in a rather remote locale. Contaminated particles could become airborne "fugitive dust" by strong winds, causing a problem for the eyes or membranes, although it is not suspected at this time that any contaminated particles have been transported out of the gunnery range site by wind activity. The nonexistent resident population targets in the area and the small areal size of any actual surface expression of contamination serve as a good buffer.

## 5.0 SUMMARY AND CONCLUSIONS

Based on visual observations made during the UDERR site visit on August 7, 1997, and partly on documents describing the historical operations of the site, UDERR has ascertained that spent munitions have been left behind on the site from previous site activities and that there is the possibility that live munitions, discarded chemicals, and potentially hazardous wastes may have been left behind since site operations connected to the military gunnery range ceased (UDERR, 1997).

No reclamation or decontamination work was performed after these operations (USACE, 1992), and if not properly disposed of or cleaned up, these munitions and wastes could present a threat of release to the environment. No as-built plans showing the nature of site activities or the disposal of any wastes have been provided to UDERR.

Contamination of groundwater by infiltration and percolation of rainwater is a possibility. Upgradient surface water flowing across or near to the site could come into contact with site-related wastes. This would likely lead to percolation of contaminated water into the groundwater. Surface water contact is also a possibility via ponding of water during rainstorms. Direct human contact with contaminated soils is possible. The possibility of the contaminants becoming airborne and thus effecting a contact this way is also feasible, but unlikely.

In conclusion, these exposure scenarios are potential, since there are no residents or workers on-site, no residents within four miles of the site and only one full-time business within four miles of the site (it is two miles southwest of the site). The area near the site is gated and locked. There are few people in the area to serve as targets. There are no drinking water sources within four miles of the site, either. There are sensitive environments such as wetlands and lakes, and desert plant life and animals in the area which would be of concern.

The estimated size of the overall site area under investigation is approximately 100 acres, possibly more (UDERR, 1997). While the original testing range apparently incorporated 6,276 acres either owned or leased by the U.S. Government during World War II according to the USACE 1992 report, the study area at the time of the UDERR site visit and assessment focused mainly on that part of Section 29 which contains the two large earthen bermed triangles and the concrete foundations less than 2,000 feet to the south of these triangles, since that is the primary location where spent bullets were found (Figure 2A). UDERR also investigated the foundations somewhat further away to the southeast and southwest of the triangles since these were associated with the military testing operations. These areas all lie within the southern portion of what was the Salt Lake City Army Air Base Gunnery Range, and were known to encompass areas used as firing ranges containing gun mounts, bunkers, and support buildings (USACE, 1992). It appears that the site may have been part of the Remington Arms Plant (Neville, 1997; Wheelwright, 1997). It is also possible that the firing range may have included other areas not yet so identified, since during World War II it was not uncommon for the government to use vacant lands to advance the "war effort" (Klinko, 1997).

The large tract of land referred to as the Salt Lake City Army Air Base Gunnery Range can be seen in the USACE map (Figure 2B), included as part of the UDERR site visit report in Appendix D. Determining the exact size and boundaries of the affected area may be a subject for future investigation.

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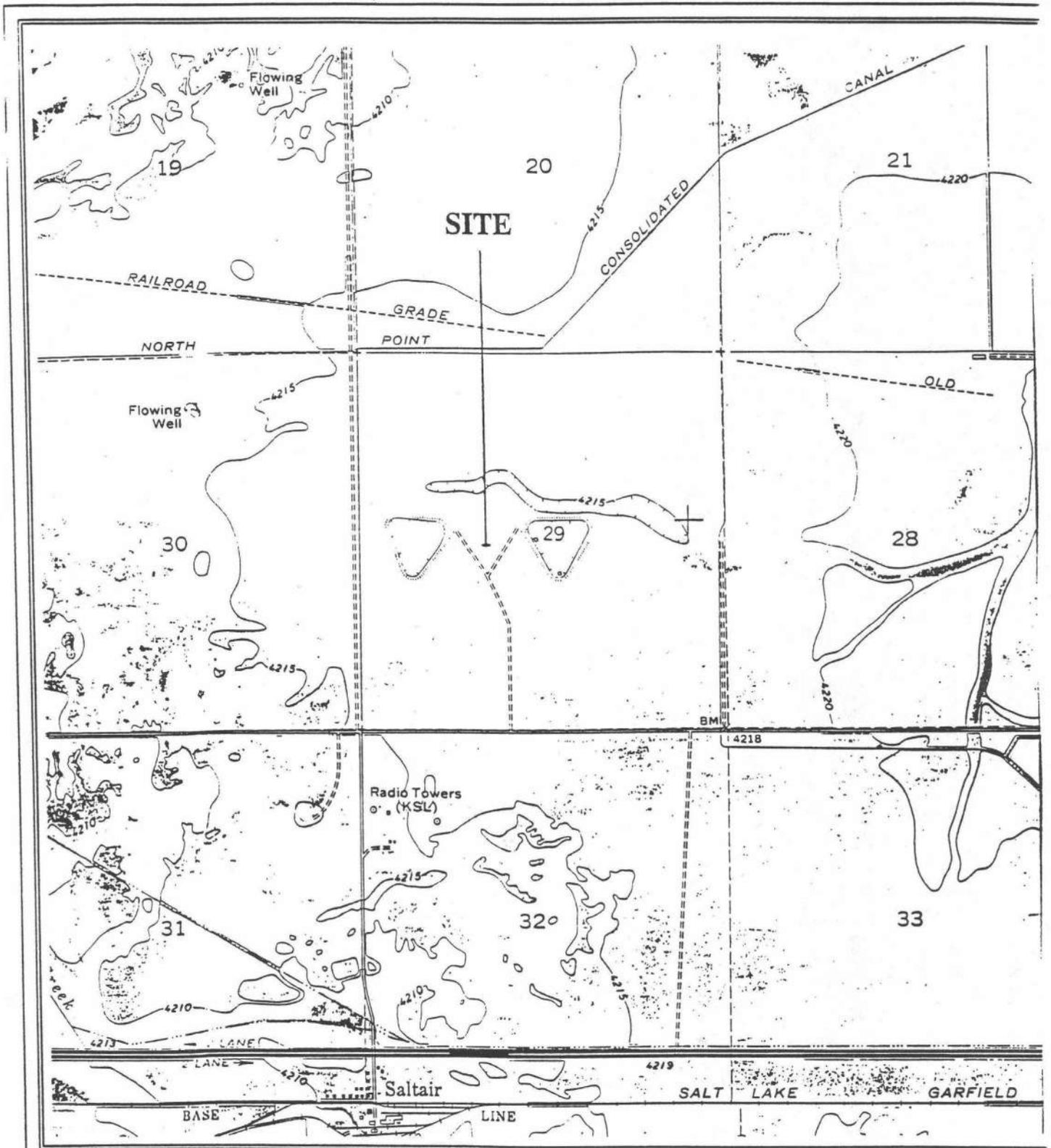
**Figures**



UTAH DEPT. OF ENVIRONMENTAL QUALITY  
 DIVISION OF ENVIRONMENTAL RESPONSE AND REMEDIATION

Figure 1  
 REGIONAL SITE LOCATION  
 SaltAir Gunnery Range Site  
 Salt Lake County, Utah

Source: Utah Travel Council Map Series,  
 Map #1: Northern Utah, 1975



UTAH DEPT. OF ENVIRONMENTAL QUALITY  
 DIVISION OF ENVIRONMENTAL RESPONSE AND REMEDIATION

Figure 2

DETAILED SITE MAP

SaltAir Gunnery Range Site  
 Salt Lake County, Utah

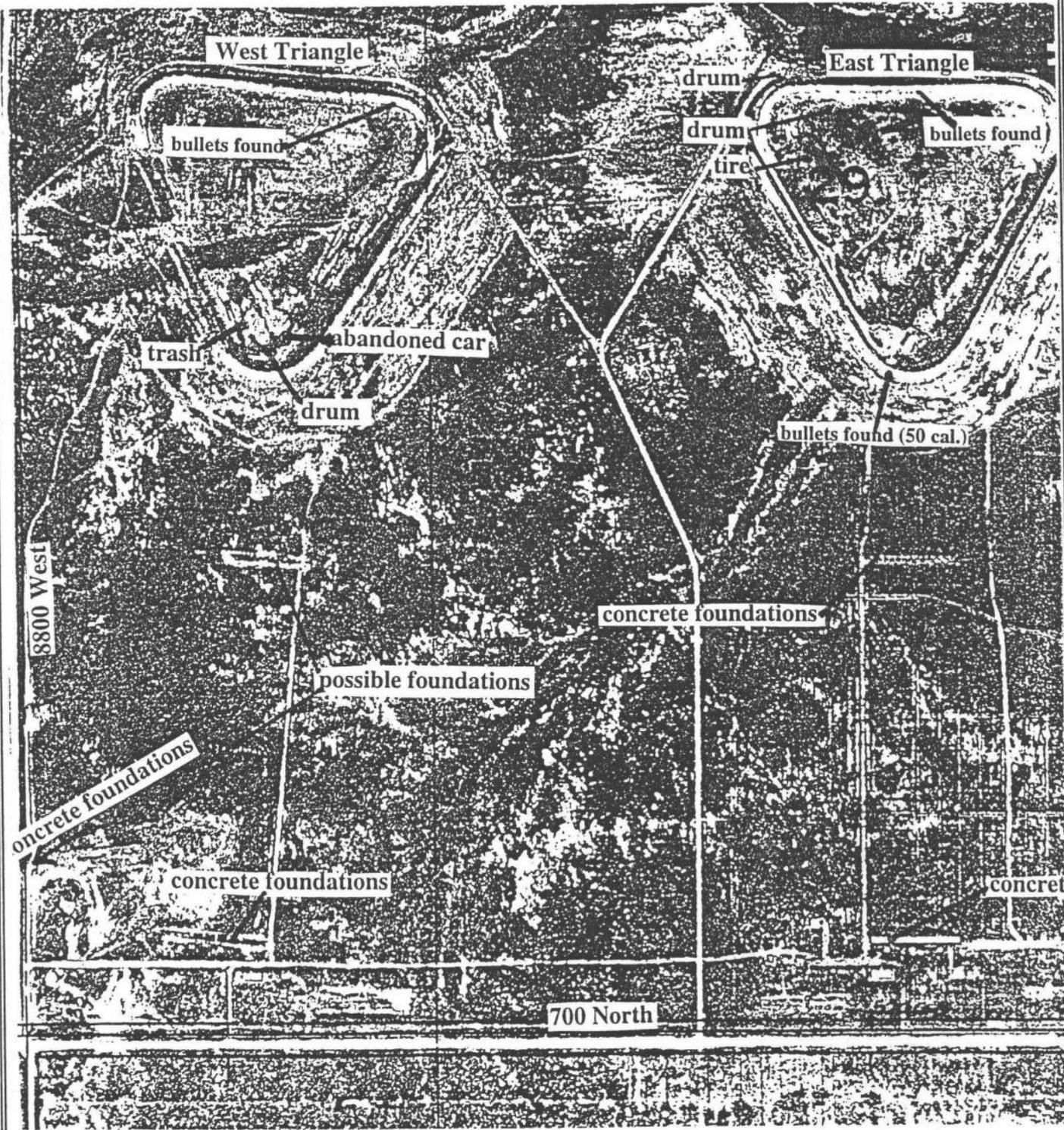
By JDK

Date 7/23/97

Scale 1: 24,000

Source: U.S.G.S. 7.5-Minute Series  
 Saltair, Utah, Quadrangle, 1972





UTAH DEPT. OF ENVIRONMENTAL QUALITY  
 DIVISION OF ENVIRONMENTAL RESPONSE AND REMEDIATION

Figure 3  
 SITE SKETCH MAP  
 SaltAir Gunnery Range Site  
 Salt Lake County, Utah

Source: UDEQ Site Visit  
 Date: 07 August 1997

By JDK Date 08/11/97 Scale 1: 6,000

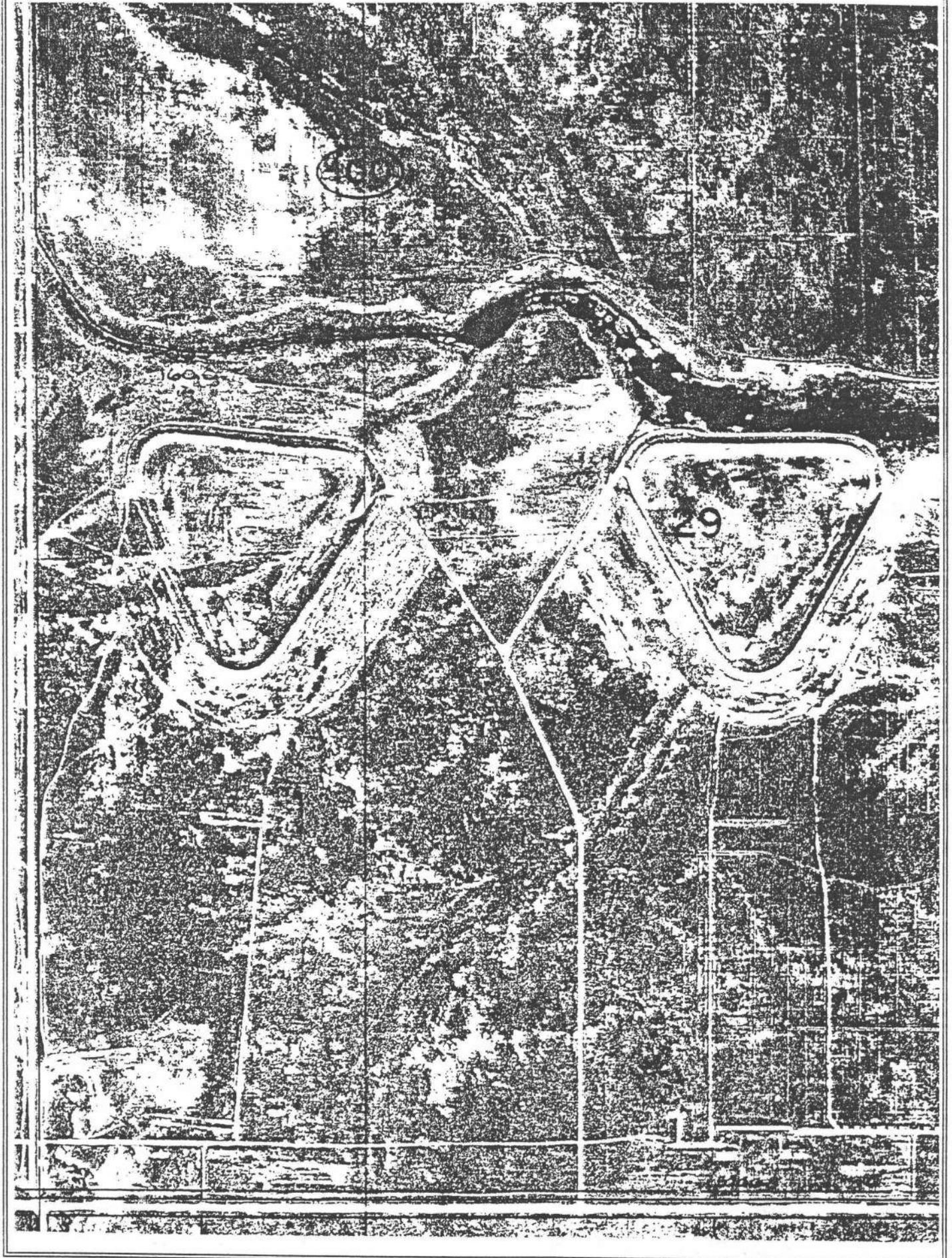


Figure 4. Salt Lake County Recorder's Office 1980 aerial photograph of Section 29, T1N, R2W.

## Appendices

**Appendix A**

**Preliminary Assessment Worksheets**

PRELIMINARY ASSESSMENT WORKSHEET

PREPARER'S NAME: J. D. Keetley

SITE NAME: SaltAir Gunnery Range

DATE: 08/08/97

**MAJOR CONSIDERATIONS**

- A) DOES ANY QUALITATIVE OR QUANTITATIVE INFORMATION EXIST THAT MAY INDICATE AN OBSERVED RELEASE TO AIR, GROUNDWATER, SOIL OR SURFACE WATER? Yes

Describe: There are several earthen berms and other structures (concrete foundations, metal gun mounts) on the site which were part of a munitions testing range during World War II. There is the possibility that lead from the bullets or other chemicals from the munitions may have been left behind.

- B) IF THE ANSWER TO #1 IS YES, IS THERE EVIDENCE OF DRINKING WATER SUPPLY CONTAMINATION OR ANY OTHER TARGET CONTAMINATION (i.e. food chain, recreation areas, or sensitive environments)? No

Describe: There are no publicly-owned or privately-owned drinking water wells in the area. The area is sparsely populated, with no business and no residents within a 4-mile radius of the site. The Great Salt Lake is located 2.5 miles to the west. Baileys Lake, a freshwater ephemeral lake, is located 2 miles to the northeast. There are no perennial streams located at the site, although there are some irrigation canals within 1 or miles of the site. There are wetlands of various types surrounding the site. Farmington Bay Waterfowl Management Area is 7 miles to the northeast. There is no evidence, however, that any of these sensitive areas are being nor have been impacted by contamination from the SaltAir Gunnery Range site.

- C) ARE THERE SENSITIVE ENVIRONMENTS WITHIN A 4-MILE RADIUS OR 15 DOWNSTREAM MILES OF THE SITE? Yes IF YES, DESCRIBE IF ANY OF THE FOLLOWING APPLY:

1) Multiple sensitive environments? \_\_\_\_\_

2) Federally designated sensitive environment(s)? As described in the above section, there are wetlands within 1 mile of the site. These wetlands are described on a National Wetlands Inventory map published by the U.S. Fish and Wildlife Service as "emergent" and "temporary" (seasonal). On a site visit to the area, dry wetlands (alkali mudflats) were observed at the designated locations.

3) Sensitive environment(s) downstream on a small or slow flowing surface water body? The Great Salt Lake, a saline lake, is located 2.5 miles west of the site. There are no streams connecting the site to the lake.

- D) IS THE SITE LOCATED IN AN AREA OF KARST TERRAIN? No

Describe: \_\_\_\_\_

- E) DOES THE WASTE SOURCE LIE FULLY OR PARTIALLY WITHIN A WELLHEAD PROTECTION AREA AS DESIGNATED ACCORDING TO SECTION 1428 OF THE SAFE DRINKING WATER ACT? No

Describe: No wellhead protection areas have been delineated here.

- F) DOES ANY QUALITATIVE OR QUANTITATIVE INFORMATION EXIST THAT PEOPLE LIVE OR ATTEND SCHOOL ON ONSITE CONTAMINATED PROPERTY? No

Describe: There are no resident within 4 miles of the gunnery range site. There are no businesses within 4 miles of the site. The nearest town is Magna, 6 miles to the south.

**SITE INFORMATION**

1. SITE NAME: SaltAir Gunnery Range Site

ADDRESS: Part of Section 29, T1N, R2W, Saltair quadrangle map

CITY: Magna COUNTY: Salt Lake STATE: Utah

ZIP: 84044 EPA ID: UTD001610880 LATITUDE: 40°47'28" LONGITUDE: 112°05'28"

2. DIRECTIONS TO SITE (From nearest public road): Take Interstate Highway 80 west from Salt Lake City for about 7 miles to the 7200 West exit. Exit onto frontage road and continue west for 2 more miles to 8800 West. Turn right onto a gravel road and, if access is granted, go through the locked gate and head north past the KSL radio towers on the right. About 1 mile north of the interstate, turn right onto another gravel road. Head east on this road for approximately half a mile, then turn left onto a dirt road heading north. Entrance to this dirt road will be gated but not locked. Continue for approximately another quarter- to half-mile until arriving at the gunnery range site. The range is landmarked by two large, triangular-shaped earthen berms about 10 feet in height and several hundred feet long. The range included these two earthen structures as well several concrete foundations and metal gun mounts on the surrounding land.

3. SITE OWNERSHIP HISTORY (Use additional sheets, if necessary):

A. Name of current owner: Connie Morehouse, et. al.

Address: 4198 Blanton Road

City: Eugene County: \_\_\_\_\_

State: OR. Zip: 97405 Dates: From 1990 To present

Phone: (541) 485-4694

B. Name of previous owner: Christine (Morehouse) Pedroncelli/Consolidated Realty

Address: \_\_\_\_\_

City: Gevserville County: \_\_\_\_\_

State: CA. Zip: \_\_\_\_\_ Dates: From 1982 To 1990

Phone: \_\_\_\_\_

C. Name of previous owner: Bothwell and Swaner Company

Address: \_\_\_\_\_

City: Salt Lake City County: \_\_\_\_\_

State: UT. Zip: \_\_\_\_\_ Dates: From 1960 To 1982

Phone: \_\_\_\_\_

D. Name of previous owner: Bonneville on the Hill Company

Address: \_\_\_\_\_

City: \_\_\_\_\_ County: \_\_\_\_\_

State: \_\_\_\_\_ Zip: \_\_\_\_\_ Dates: From 1943 To 1960

Phone: \_\_\_\_\_

Source of ownership data: Reference 1

4. TYPE OF OWNERSHIP (Check all that apply):

Private \_\_\_\_\_ State \_\_\_\_\_ Municipal \_\_\_\_\_ Federal \_\_\_\_\_ County \_\_\_\_\_  
 Other (describe): \_\_\_\_\_

5. NAME OF SITE OPERATOR: Departments of the Air Force and Army

Address: \_\_\_\_\_

City: Arlington, VA. and Bethesda, MD. County: \_\_\_\_\_

State: \_\_\_\_\_ Zip: \_\_\_\_\_ Phone: 703-545-6700 & 301-295-1632

**BACKGROUND/OPERATING HISTORY**

6. DESCRIBE OPERATING HISTORY OF SITE: Site was used historically as a gunnery testing range during World War II. In the years 1943 and '44, large caliber machine guns and other firearms were tested at the site, which consisted of large earthen berms and concrete bunkers, foundations of which are still there today. In 1950, the U.S. Army Corps of Engineers determined that the site did not pose a threat, and that no restoration or decontamination work was necessary.

Source of information: References 2 and 7.

7. DESCRIBE THE NATURE OF SITE OPERATIONS (property size, manufacturing, waste disposal, storage, etc.): Site was used as gunnery testing range during the World War II years 1943-44. Large caliber machine guns were tested there by being fired from bunkers and into surrounding earthen berms. Today there are several abandoned concrete foundations on-site, and the earthen berms are still in place. The berms are triangular in shape, about 10 feet high, roughly one thousand feet long. Overall size of the gunnery range area may have been several thousand acres, although the size of the actual property containing the earthen berms and concrete bunkers is probably around 100 to 200 acres.

Source of information: References 2 and 7.

8. DESCRIBE ANY EMERGENCY OR REMEDIAL ACTIONS THAT HAVE OCCURRED AT THE SITE: None.

Source of information: References 2 and 7.

9. ARE THERE RECORDS OR KNOWLEDGE OF ACCIDENTS OR SPILLS INVOLVING SITE WASTES? No

Describe: No accidents or spills are known to have occurred.

Source of information: References 2 and 7.

10. DISCUSS EXISTING SAMPLING DATA AND BRIEFLY SUMMARIZE DATA QUALITY (e.g., sample objective, age/comparability, analytical methods, detections limits and QA/QC): No sampling has been performed at the site.

Source of information: Reference 7

**WASTE CONTAINMENT/HAZARDOUS SUBSTANCE IDENTIFICATION**

11. FOR EACH SOURCE AT THE SITE, SUMMARIZE ON TABLE 1 (attached): 1) Methods of hazardous substance disposal, storage or handling; 2) size/volume/area of all features/structures that might contain hazardous waste; 3) condition/integrity of each storage disposal feature or structure; 4) types of hazardous substances handled.

12. BRIEFLY EXPLAIN HOW WASTE QUANTITY WAS ESTIMATED (e.g., historical records or manifests, permit applications, air photo measurements, etc.): Best estimate is a guess from the site visit. Also relied on the U.S. Army Corps of Engineers report, 1992.

Source of information: References 2 and 7.

13. DESCRIBE ANY RESTRICTIONS OR BARRIERS ON ACCESSIBILITY TO ONSITE WASTE MATERIALS: A dirt/gravel road goes from the paved interstate north towards the site. This dirt road has a gate with a lock, so access permission is necessary. A second, unlocked gate is encountered at the dirt road leading directly to the site. A person could access the site if he or she were willing to walk to the site from the interstate or drive around the locked gate, over the fence, and trespass to the site.

Source of Information: Reference 2

**GROUND WATER CHARACTERISTICS**

14. IS THERE ANY POSITIVE OR CIRCUMSTANTIAL EVIDENCE OF A RELEASE TO GROUND WATER? No  
Describe: While the site has been abandoned for years and percolation of rain water is possible, there are no monitoring wells on-site nor in the area and so there is no data to indicate any contamination of the groundwater at the site.  
Source of information: References 2 and 7.
15. ON TABLE 2 (attached), GIVE NAMES, DESCRIPTIONS, AND CHARACTERISTICS OR GEOLOGIC/HYDROGEOLOGIC UNITS UNDERLYING THE SITE.
16. NET PRECIPITATION: 13.34 inches per year (average)  
Source of information: Reference 3.

**SURFACE WATER CHARACTERISTICS**

17. ARE THERE SURFACE WATER BODIES WITHIN 2 MILES OF THE SITE? Yes  
X Ditches    X Lakes    X Pond    \_\_\_ Creeks    \_\_\_ Rivers  
\_\_\_ Other (Describe) \_\_\_\_\_
18. DISCUSS THE PROBABLE SURFACE RUNOFF PATTERNS FROM THE SITE TO SURFACE WATERS: The site is located in the western edge of the Salt Lake Valley adjacent to the Great Salt Lake. The valley floor slopes gently toward the Great Salt Lake. It is approximately 2 to 3 miles to the edge of the Great Salt Lake, depending on the level of the lake which fluctuates seasonally and yearly. I saw no streams that flowed from the site area to the lake. There are wetlands described as "emergent" and "temporary" within 1 mile of the site, according to the U.S. Fish and Wildlife Service. These wetlands were observed during a site visit to the area.
19. PROVIDE A SIMPLIFIED SKETCH OF SURFACE RUNOFF AND SURFACE WATER FLOW SYSTEM FOR 15 DOWNSTREAM MILES (see item #35).
20. IS THERE ANY POSITIVE OR CIRCUMSTANTIAL EVIDENCE OF SURFACE WATER CONTAMINATION? No  
Describe: I saw no flowing streams coming from the site on a site visit.  
Source of information: Reference 2
21. ESTIMATE THE SIZE OF THE UPGRADIENT DRAINAGE AREA FROM THE SITE: Difficult to estimate. The area is rather flat, with seasonal wetlands, scrub lands, and alkali mudflats surrounding the site.  
Source of information: References 2 and 8.
22. DETERMINE THE AVERAGE ANNUAL STREAM FLOW OF DOWNSTREAM SURFACE WATERS  
Water Body: There is no flowing water body downstream    Flow: ---- cfs  
Water Body: Great Salt Lake, approximately 2.5 miles downstream    Flow: ---- cf.
23. IS THE SITE OR PORTIONS THEREOF LOCATED IN SURFACE WATER? No
24. IS THE SITE LOCATED IN A FLOODPLAIN (indicate flood frequency)? No
25. IDENTIFY AND LOCATE (see item #35) ANY SURFACE WATER RECREATION AREA WITHIN 15 DOWNSTREAM MILES OF THE SITE: Great Salt Lake, approximately 2.5 miles "downstream", serves as recreation area for windsurfing, sailing, etc.
26. TWO YEAR 24-HOUR RAINFALL: 2.25 inches (maximum)  
Source of information: Reference 3

**TARGETS**

27. DISCUSS GROUNDWATER USAGE WITHIN FOUR MILES OF THE SITE: No public drinking water wells are in use in the area. There are several points of diversion within a 4-mile radius of the site; however, none of them are used for drinking water. Also, some groundwater is used for stock watering, or for irrigation.

Source of information: References 4 and 5.

28. SUMMARIZE THE POPULATION SERVED BY GROUND WATER ON THE TABLE BELOW:

<u>Distance (Miles)</u>	<u>Population</u>
0 - 1/4	<u>0</u>
1/4 - 1/2	<u>0</u>
1/2 - 1	<u>0</u>
1 - 2	<u>0</u>
2 - 3	<u>0</u>
3 - 4	<u>0</u>

Source of information: References 4, 5, and 6.

29. IDENTIFY AND LOCATE (see item #35) POPULATION SERVED BY SURFACE WATER INTAKES WITHIN 15 DOWNSTREAM MILES OF THE SITE: There is no population being served, nor surface water intakes, within 15 downstream miles of the site.

Source of information: References 2, 4, 5, and 6.

30. DESCRIBE AND LOCATE FISHERIES WITHIN 15 DOWNSTREAM MILES OF THE SITE (i.e., provide standing crop of production and acreage, etc.): There are no fisheries nor sport fishing areas within 15 downstream miles of the site. The Great Salt Lake is 2.5 miles from the site, but this lake is saline and has no fish. *Brine fishery*

Source of information: Reference 2.

31. DETERMINE THE DISTANCE FROM THE SITE TO THE NEAREST OF EACH OF THE FOLLOWING LAND USES

<u>Description</u>	<u>Distance (Miles)</u>
Commercial/Industrial/Institutional	<u>4</u>
Single Family Residential	<u>6</u>
Multi-Family Residential	<u>6</u>
Park	<u>10</u>
Agricultural <i>grazing</i>	<u>50</u>

Source of information: References 2 and 6.

32. SUMMARIZE THE POPULATION WITHIN A FOUR-MILE RADIUS OF THE SITE:

<u>Distance (Miles)</u>	<u>Population</u>
0 - 1/4	<u>0</u>
1/4 - 1/2	<u>0</u>
1/2 - 1	<u>0</u>
1 - 2	<u>0</u>
2 - 3	<u>0</u>
3 - 4	<u>0</u>

Source of information: Reference 6.

**OTHER REGULATORY INVOLVEMENT**

33. DISCUSS ANY PERMITS:

County: No County involvement other than perhaps occasional visits by inspectors to oversee the abandoned structures.

State: Utah Department of Natural Resources, Division of Water Rights, administers water rights.

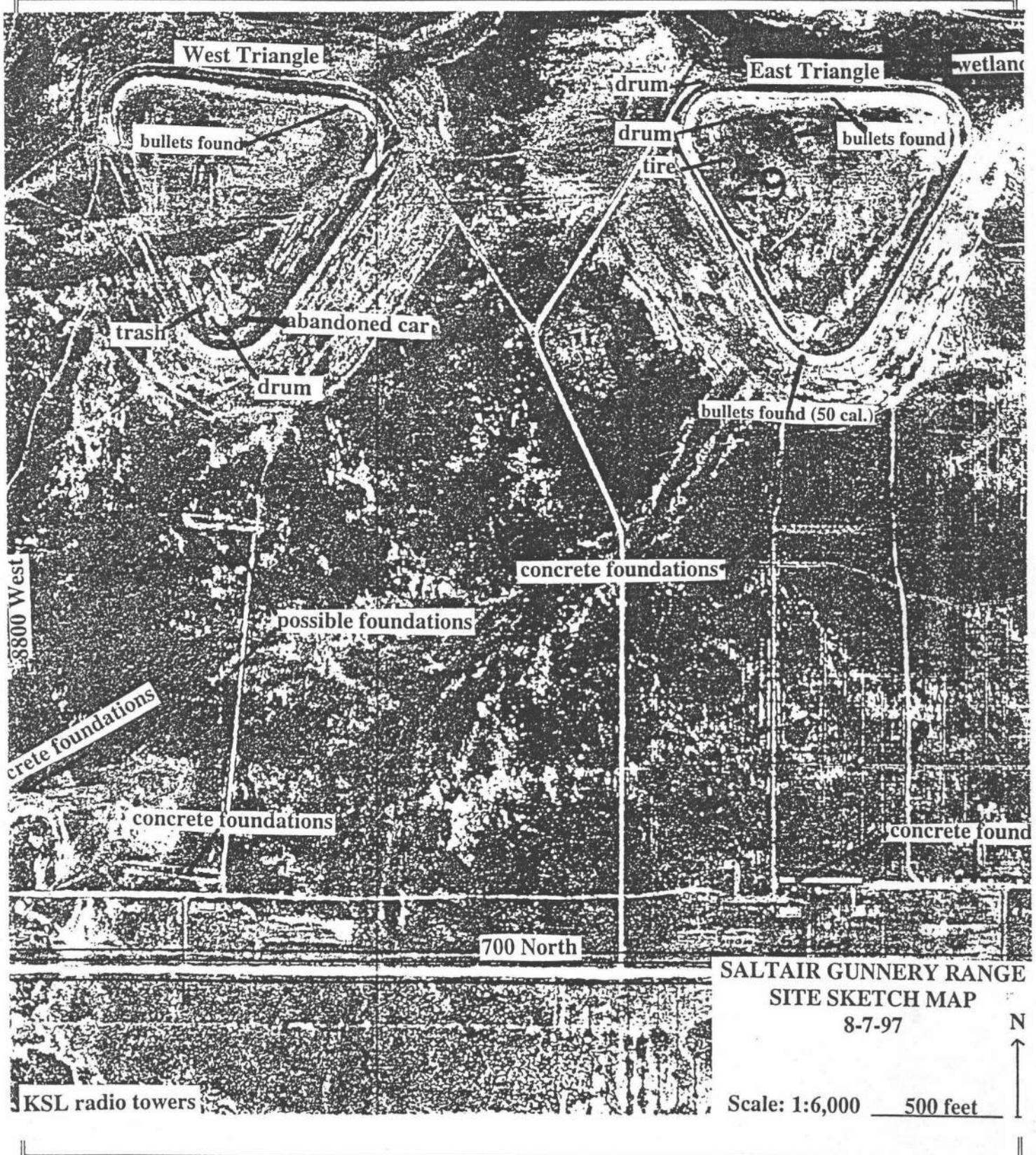
Federal: The U.S. Army Corps of Engineers administers the designated wetlands that are within 1 mile of the site, and extend intermittently the 2.5 miles to the Great Salt Lake.

Other: \_\_\_\_\_

Source of information: References 1, 2, 4, 7, and 8.

34. SKETCH OF SITE

Include all pertinent features, e.g., wells, storage areas, underground storage tanks, waste areas, buildings, access roads, areas of ponded water, etc. Attach additional sheets with sketches of enlarged areas, if necessary.



35. SURFACE WATER FEATURES

Provide a simplified sketch of the surface runoff and surface water flow system for 15 downstream miles. Include all pertinent features, e.g., intakes, recreation areas, fisheries, gauging stations, etc.

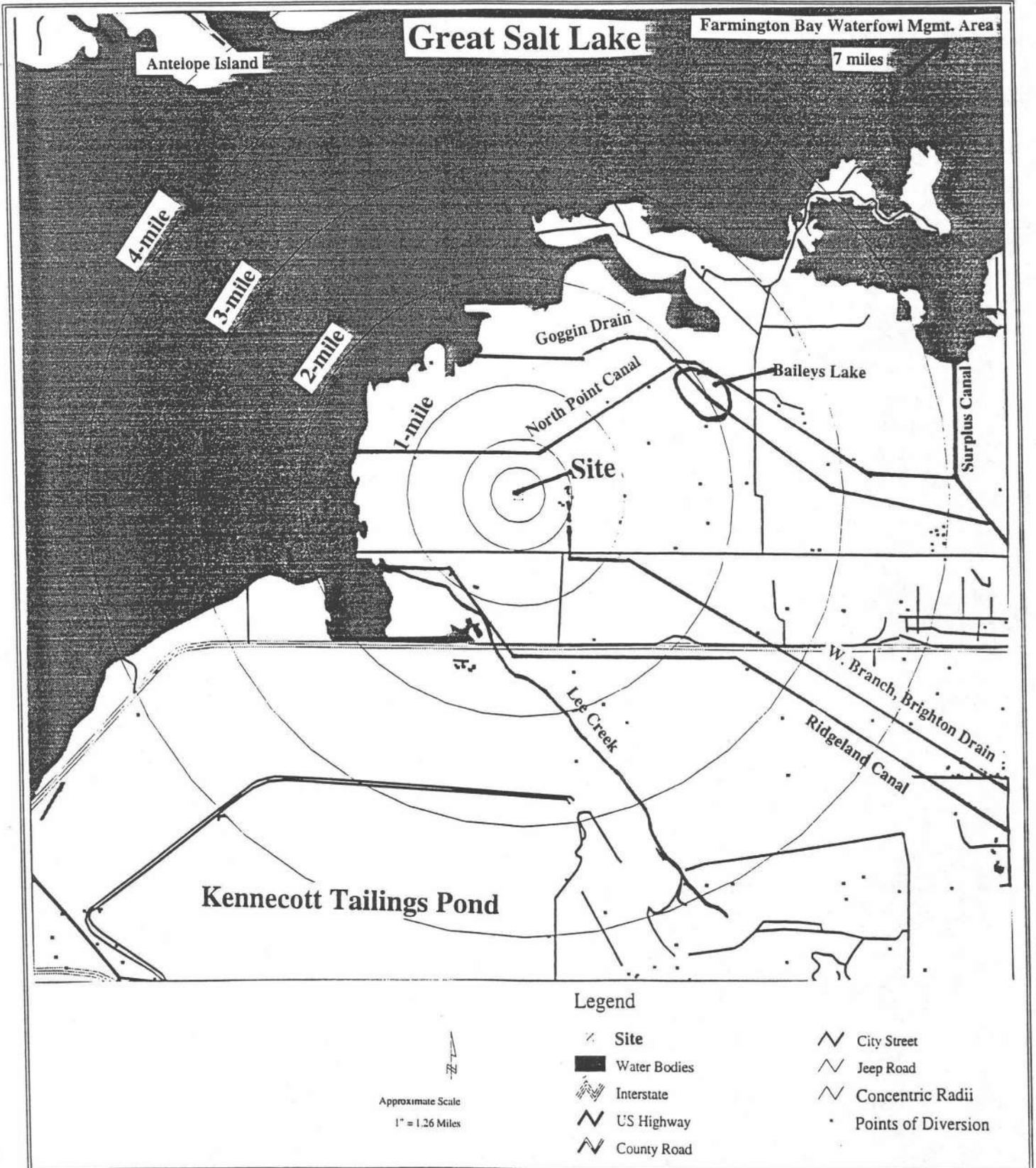


TABLE 1

## WASTE CONTAINMENT AND HAZARDOUS SUBSTANCE IDENTIFICATION \*

SOURCE TYPE	SIZE (Volume/Area)	ESTIMATED WASTE QUANTITY	SPECIFIC COMPOUNDS	CONTAINMENT	SOURCE OF INFORMATION
Spent munitions, ordnance; possibly unexploded, live ordnance; also possibly chemicals involved in the testing of munitions.	Estimated area: approx. 100 acres.	Unknown.	Possibly lead, other metals; explosives such as tetrazene or others, degreasers such as TCE, solvents, pesticides, other chemicals may be on-site.	No containment structures were observed; site has two large triangular earthen berms used as firing ranges, and several concrete foundations and gun mounts probably connected with munitions testing. Leaching of chemicals to ground and surface waters possible. Windborne air exposure possible. Soil contact possible to trespassers.	References 2 and 7.

\* Use additional sheets if necessary.

\*\* Evaluate containment of each source from the perspective of each migration pathway (e.g., ground water pathway - non-existent, natural or synthetic liner, corroding underground storage tank; surface water - inadequate freeboard, corroding bulk tanks; air - unstable slag piles, leaking drums, etc.)

TABLE 2

## HYDROGEOLOGIC INFORMATION \*

STRATA NAME/DESCRIPTION	THICKNESS (ft)	HYDRAULIC CONDUCTIVITY (cm/sec)	TYPE OF DISCONTINUITY **	SOURCE OF INFORMATION
Saltair-Jordan-Lasil association. Poorly drained, strongly saline-alkali soils (silt and clay loams) on lake plains. Not consolidated.	0-4 feet	$\sim 10^{-6}$ to $10^{-8}$	Top layer of soils lie conformably (?) atop unconsolidated alluvium.	References 2, 9, and 12.
Quaternary Alluvium: Mainly deltaic and lacustrine deposits. Clays, silts, fine sands. Contains the shallow, unconfined aquifer. Not consolidated.	4-20 feet	$\sim 10^{-2}$ to $10^{-3}$	Quaternary alluvium lies atop older alluvium.	References 11 and 12.
Quaternary Alluvium: Composed of sand, silty sand, sandy gravel. Deltaic and lacustrine deposits. Contains the deep, confined aquifer. Not consolidated.	Up to 1200 feet	$\sim 10^{-4}$ to $10^{-5}$	Formation lies atop bedrock of consolidated sedimentary rock, several hundred feet thick.	References 10, 11, 12, and 13.

\* Use additional sheets if necessary.

\*\* Identify the type of discontinuity within four-miles from the site (e.g., river, strata "pinches out", etc.)

#### REFERENCES

1. Salt Lake County Grantee-Grantor Property Ownership Records as of June 19, 1997.
2. UDERR Visit to Site Area, August 7, 1997.
3. Utah Climate, 1992, Ashcroft, Gaylen L., Jensen, Donald T., Brown, Jeffrey L.
4. Utah Division Of Water Rights, 1997 plot from GIS database.
5. Utah Division Of Drinking Water, 1997 plot from GIS database.
6. Utah Division of Environmental Response and Remediation, plot from GIS database, from U.S. Census Bureau 1990 Data.
7. U.S. Army Corps of Engineers, Sacramento District, 1992, Defense Environmental Restoration Program Report.
8. U.S. Fish and Wildlife Service, 1981, National Wetlands Inventory map for Saltair, Utah.
9. U.S. Department of Agriculture, Soil Conservation Service, 1974, Soil Survey of Salt Lake Area, Utah.
10. Stokes, William, 1986, Geology of Utah, Utah Museum of Natural History publishers, Salt Lake City, UT.
11. Hely, A.G., Mower, R.W., Harr, C.A., 1971, Water Resources of Salt Lake County, Utah Dept. of Natural Resources.
12. Waddell, et al, 1987, Groundwater Conditions in Salt Lake Valley, Utah, 1969-83, Utah Dept. Of Natural Resources.
13. Bryant, Bruce, 1992, Geologic and Structure Maps of the Salt Lake City 1° X 2° Quadrangle. U.S. Geological Survey.

**Appendix B**

**CERCLA Eligibility Questionnaire**

**CERCLA ELIGIBILITY QUESTIONNAIRE**

SITE NAME: SaltAir Gunnery Range

CITY: Magna STATE: Utah

PA ID NUMBER: UT0001610220

I. CERCLA ELIGIBILITY Yes No

Did the facility cease operation prior to November 19, 1980? X    

If answer YES, STOP, facility is probably a CERCLA site.

If answer is NO, Continue to Part II.

II. RCRA ELIGIBILITY Yes No

Did the Facility file a RCRA Part A application?        

If YES:

1. Does the facility currently have interim status?
2. Did the facility withdraw its Part A application?
3. Is the facility a known or possible protective filer?  
(Facility filed in error).
4. Type of facility:  
Generator     Transporter     Recycler      
TSD (Treatment/Storage/Disposal)

Does the facility have a RCRA operating or post closure permit?        

Is the facility a late (after 11/19/80) or non-filer that has been identified by the EPA or the State? (Facility did not know it needed to file under RCRA).        

If all answers to question in Part II are NO, STOP, the facility is a CERCLA eligible site.

If the answer to #2 or #3 is YES, STOP, the facility is a CERCLA eligible site.

If answer #2 and #3 are NO and any OTHER answer is YES, site is RCRA, continue to Part III.

III. RCRA SITES ELIGIBLE FOR NPL Yes No

Has the facility owner filed for bankruptcy under federal or state laws?        

Has the facility lost RCRA authorization to operate or shown probable unwillingness to carry out corrective action?        

Is the facility a TSD that converted to a generator, transporter or recycler facility after November 19, 1980?        

IV. EXEMPTED SUBSTANCES

Does the release involve hazardous substances other than petroleum? X

The site may never reach the NPL. We need to be able to refer it to any other program in EPA or state agencies which may have jurisdiction, and thus be able to effect a cleanup. Responses should summarize available information pertaining to the question.

1) Is there an owner or operator?

Yes. The U.S. Department of the Air Force was the operator and part-owner of the site at the time of operations.

2) (NPDES-CWA) Is there a discharge water containing pollutants with surface water through a point source (pipe, ditch, channel, conduit, etc.)?

No.

3) (Sec. 404-CWA) Have fill or dredged material been deposited in a wetland or on the banks of a stream? Is there evidence of heavy equipment operating in ponds, streams or wetlands?

No, none of this. There are earthen berms and other structures built at the site which were used as part of a munitions testing range.

4) (UIC-SDWA) Are fluids being disposed of to the subsurface through a well, cesspool, septic system, pit, etc.?

No.

5) (TSCA) Is it suspected that there are PCB's on the site which came from a source with greater than 50 ppm PCB's such as oil from electrical transformers or capacitors?

No.

6) (FIFRA) Is there a suspected release of pesticides from a pesticide storage site? Are there pesticide containers on site?

No.

7) (RCRA - Subtitle D) Is there an owner or operator who is obligated to manage solid waste storage or disposal units under State solid waste or groundwater protection regulations?

No, site is abandoned. No RCRA permit was necessary at the time of operations.

8) (UST) Is it suspected that there is a leaking underground storage tank containing a product which is a hazardous substance or petroleum?

No.

**Appendix C**

**PA Form**

<b>POTENTIAL HAZARDOUS WASTE SITE</b>  <b>PRELIMINARY ASSESSMENT FORM</b>	IDENTIFICATION	
	State: UT	CERCLIS Number: UT0001610880
	CERCLIS Discovery Date: 10/28/96	

**1. GENERAL SITE INFORMATION:**

Name: SALTAIR GUNNERY RANGE		Street Address: PART OF SECTION 29, T1N, R2W	
City: MAGNA		State: UT	Zip Code: 84044
County: SALT LAKE	County Code: 035	Congressional District: 2	
Latitude: <u>40°</u> <u>47'</u> <u>28"</u>		Status of Site: <input type="checkbox"/> Active <input checked="" type="checkbox"/> Inactive <input type="checkbox"/> Not Specified <input type="checkbox"/> Not Applicable	
Longitude: <u>112°</u> <u>05'</u> <u>28"</u>			
Approximate Area of Site: <u>1,000+</u> Acres <u>43,560,000</u> Square Feet			

**2. OWNER/OPERATOR INFORMATION**

Owner: CONNIE MOREHOUSE		Operator: INACTIVE (PREV: U.S. AIR FORCE)	
Street Address: 4198 BLANTON ROAD		Street Address:	
City: EUGENE		City:	
State: OR.	Zip Code: 97405	State:	Zip Code:
Telephone: (541) 485-4694		Telephone:	
Type of Ownership: <input checked="" type="checkbox"/> Private <input type="checkbox"/> State <input type="checkbox"/> Municipal <input type="checkbox"/> Indian <input type="checkbox"/> County <input type="checkbox"/> Not Specified <input type="checkbox"/> Federal Agency <input type="checkbox"/> Other		How Initially Identified: <input type="checkbox"/> Citizen Complaint <input type="checkbox"/> RCRA/CERCLA Notification <input type="checkbox"/> PA Petition <input checked="" type="checkbox"/> State/Local Program <input type="checkbox"/> Not Specified <input type="checkbox"/> Incidental <input type="checkbox"/> Other <input type="checkbox"/> Federal Program	

**3. SITE EVALUATOR INFORMATION**

Name of Evaluator: J. D. Keetley	Agency/Organization: UTAH DEQ	Date: 7/25/97
Street Address: 168 N. 1950 WEST	City: SALT LAKE CITY	State: UT
Name of EPA or State Agency Contact: LUKE CHAVEZ, EPA	Telephone: 303/312-6512	
Street Address: 999 - 18TH ST., SUITE 500	City: DENVER	State: CO

**4. SITE DISPOSITION (for EPA use only)**

Emergency Response/Removal Assessment Recommendation:  <input type="checkbox"/> Yes <input type="checkbox"/> No  Date: ___/___/___	CERCLIS Recommendation:  <input type="checkbox"/> Higher Priority SI <input type="checkbox"/> Lower Priority SI <input type="checkbox"/> NFRAP <input type="checkbox"/> RCRA <input type="checkbox"/> Other: _____  Date: ___/___/___	Signature:  Name (typed): _____  Position: _____
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**Appendix D**

**Site Visit Report and Photographs**

## SALTAIR GUNNERY RANGE SITE VISIT REPORT

**Introduction:** On August 7, 1997, J.D. Keetley and Liz Yeomans from the Utah Department of Environmental Quality, Division of Environmental Response and Remediation, performed a site visit to the old "Salt Air Gunnery Range" CERCLIS site. The property is now owned by private landowners. The weather was hot, in the 90's, clear, and sunny.

The purpose of the site visit was to look over the property for any evidence of contamination which has been or could be released to the environment and threaten human health or the environment. We especially looked at the large earthen berms that had been used as part of the gunnery range by the military during World War II. Taking photographs of the site and surrounding area was also a goal. Access had been arranged ahead of time with Ms. Connie Morehouse, a property owner, and Mr. Tom Monson, attorney for Bothwell and Swaner, another property owner. The signed Consent for Access to Property forms are included in this site visit report.

**Access:** We first exited off the Interstate 80 at 7200 West and traveled along the frontage road for one mile west to the first white gate on the right (8000 West). This gate was locked, but one of the lessees of the property had given me the combination number and the approval to enter. We entered drove north for a mile to a gravel road, 700 North.

**Figures 5 and 6 areas:** We then turned east on 700 North and did a general reconnaissance of the area for a few miles east of the main site, observing wetlands and some concrete foundations apparently a part of the original gunnery range. These foundations had earlier been described and photographed in the U.S. Army Corps of Engineers (USACE) report on this site in 1992 (see site map from 1992 USACE report in this Appendix). The authors of that report stated they had found a .50 caliber bullet in this area during their reconnaissance. Because these structures had already been photographed, and we have copies of them, and because access to the structures was difficult due to a fence and a wide canal carrying water, we decided not to walk to them and photograph them (Figure 5 area in the USACE report; the small Figure 6 area in this report was observed by J.D. Keetley in a follow-up visit to the site on August 14).

**Figure 4 area:** We arrived at the main Gunnery Range site gate at 10:15 am, address approximately 8400 West on 700 North. The gate had no lock on it, so we proceeded onto the major part of the site by driving north on a dirt road. There was no one else accompanying us on this site visit. Along this dirt road, we noticed several tubs (approximately 5 - 10 gallons) holding a dark, oil-like liquid. The label on the tubs said it was a molasses-based vitamin and mineral supplement for cattle. We saw cattle in the area.

Just 100 feet north on this road, we observed more concrete foundations (Figure 4 area in the USACE report). Approximately 300 feet east of the road was a concrete foundations large enough (55 feet by 20 feet) and of the proper shape (rectangular) that it may have been an office

building. This foundation also a smaller, rectangular foundation off its center north wall, which may have served as a porch or front entranceway. East of this foundation was a long concrete foundation, approximately 250 feet long (east-west) by 15 feet wide. And less than 100 feet east of this structure were 30 or more square concrete foundations, measuring 15 feet on a side, spaced about 25 feet apart, with a 5' X 5' square outline of mounting bolts sticking up through the concrete. These probably served as mounts for the guns. These foundations were approximately 1,700 feet south of the triangular-shaped berms.

Approximately 1,200 feet north of these foundations, 700 feet east of the dirt road, were another cluster of foundations, apparently unidentified in the 1992 USACE report. These foundations were observed during the follow-up site visit made on August 14. They consisted of an east-west row of about ten square concrete foundations, 3.5 feet on a side, with metal mounting bolts sticking up.

**East Triangle:** Approximately 500 feet further north on the dirt road was the main part of the site: two large, triangular shaped earthen berms, approximately eight feet high and 1,000 feet long on each of their three sides. The triangles, labeled "East Triangle" and "West Triangle" in the site sketch map included in this appendix, have roads running on the outside as well as the inside of the berms. The tops of the berms have a level walking area about two to three feet wide. These berms were used as probable backdrops to targets erected for use by military personnel training with automatic and semi-automatic weapons, firing rifles and machine guns from the concrete foundations and remnant metal gun mounts we observed several hundred feet south of this triangle. It is conjectured that military testing of and training with high caliber weapons took place here by firing the weapons from these foundations and mounts toward targets placed at or near the berms to the north. *Large.*

Once inside the east triangular berm, we used a metal detector and a shovel in an attempt to locate and retrieve spent bullets. In the course of about one hour we found one, a .50 caliber slug (a "boat-tail", copper jacket, lead inside). This was found on the inside of the western wall of the east triangle. At the very southernmost point of this berm, we located several smaller caliber slugs (.45, .38, .30, and 9 mm) on the surface of the berm. Moving to the outside (southern side) of this berm, we located over a dozen of the large .50 caliber spent bullets. These, we presumed, had been fired from the area of the concrete foundations to the south. We also found several smaller caliber bullets, likely from more recent periods of civilian target practice since the range was abandoned.

The soils in this area of the berm showed signs of recent erosion, with no vegetation growing out of them. This is probably why these bullets were so easily found: heavy rains and runoff had exposed the buried slugs, and since the area north of the Interstate has been gated and locked to deny access to the general public in recent years, these bullets have laid there for awhile exposed to the elements. The .50 caliber bullets are copper-coated, and have oxidized on the surface to a greenish-brown.

We found other bullets and shells on the inside of the northern wall of this triangle, although none were .50 caliber slugs. Looking over the top of this earthen wall to the north, just 200 or 300 feet away, is low-lying land, a wetlands containing reeds and grasses, with intermittent dry patches of land. This is the area of an old "river" bed on some maps and air photos. There was an empty, rusty 55-gallon drum about 100 feet beyond this north wall. There was also one empty drum and one old tire within this triangle, near the northwest entrance.

**West Triangle:** The west triangle was less interesting. There was one rusted, abandoned car and an empty 55-gallon drum in the southern part of the triangle, and some trash (bedsprings) in the southwest portion. The southern third of the earthen berm in this triangle had been dug away on the outside by persons unknown using a tractor or backhoe, fairly recently. And the northern third of the west wall was gone entirely, or perhaps it had never been completed. We found only a few small caliber bullets and casings along the inside of the northern wall, and these may have been from recent activity, rather than from military testing of weapons during World War II.

It is also possible that there are other foundations that have yet to be identified south of this west triangle. The 1980 air photo shows what may be foundations approximately 500 feet and 1100 feet south of the triangle. And there may be yet other foundations or structures which are undetected throughout the area.

**Figure 3 area:** As we left this area driving south and west of the west triangle, we observed more concrete foundations just north of the 700 North gravel road (Figure 3 area in the USACE report).

**Kennecott Wetlands:** At 1:00 PM, we met Ann Neville with Kennecott Utah Copper, Inland Sea Shorebird Reserve division. She showed us around the area to the west of the site: the newly created Kennecott wetlands west and northwest of the berms, and the North Point Consolidated Canal and Goggin Drain one-half and two miles north of the berms, respectively. She identified several species of birds for us: white-faced ibis, stilts, Virginia rail. We observed carp in the Goggin Drain. Vegetation we observed seemed typical of the desert: salt grass, rabbit brush, marsh grass, and sunflowers. We also saw rabbits, and cattle.

**Figure 2 area:** We located some concrete foundations on the Kennecott property that had been a minor part of the gunnery range (Figure 2 area in the USACE report). One photograph of these foundations was taken. Ann also informed us that the Saltair "community", mostly abandoned buildings, and the Morton Salt evaporators are no longer situated where the map shows them, just 2 or 3 miles south of the site. The town of Saltair no longer exists, and the Morton plant has been moved to the Stansbury area, near Tooele, 20 miles to the southwest. She had an in-house map of the area which referred to the two bermed triangles as the "existing inactive Remington shooting range."

**Surrounding area:** Other useful information she relayed to us was on the drainages in the area. She said the Ridgeland Drain (1.5 miles south of the berms) carries precipitation water only, while the North Point Canal and Goggin Drain carry water from the Jordan River Surplus Canal

and that this water is used for waterfowl management and agriculture. Lee Creek, 2 miles south of the berms, was at the time running 90 cubic feet per second, and drains the entire northeast portion of the Oquirrh Mountains closest to this area. She said the U.S. Army Corps of Engineers had sampled this area before the wetlands were developed (no samples taken from the gunnery range site as far as she knew), and the contact for that information would be Mike Schwinn with the USACE in Bountiful. She also said that Kennecott's CERCLA contact is Bill Adams. ~~Liz has the telephone number.~~

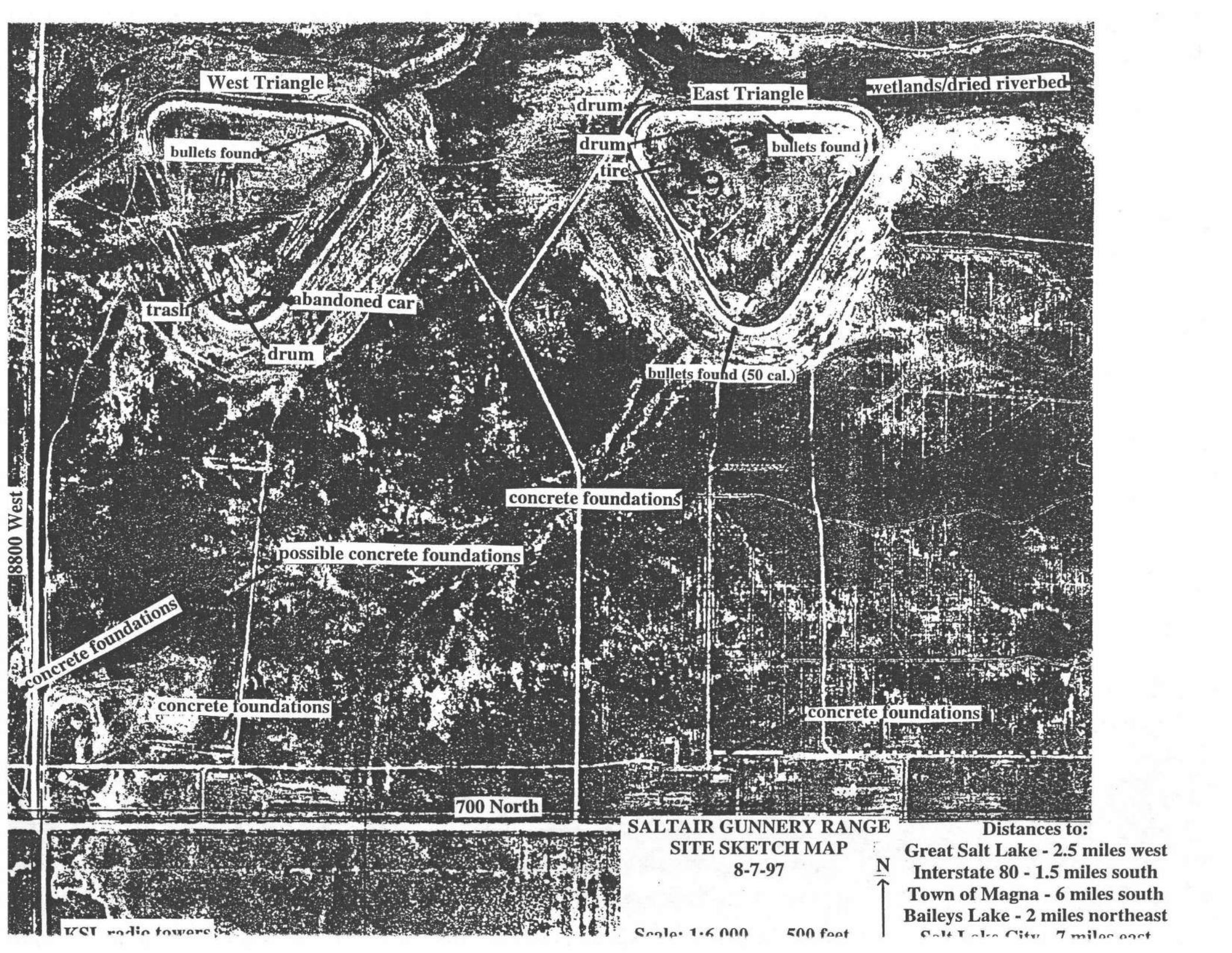
We also met and spoke with Randy Finch, engineer with KSL, who was at the KSL radio towers for just a few minutes to accept a truck delivery. He said there are no permanent, year-round employees at the radio station towers, only two or three persons there in the summer doing maintenance.

The area surrounding the gunnery range is used mainly for grazing cattle. David Hinckley grazes cattle in this area part of the year, although he does not own the land. There are wetlands and diversion ditches and canals in the area, some within one mile of the triangular berms. Land to the north is privately owned by the Gilmoors; land to the east is owned and operated by the L.D.S. Church for cattle grazing and agricultural purposes; land to the west is owned by Kennecott Utah Copper as part of their wetlands mitigation project; and land immediately to the south is owned by KSL and other businesses. Approximately 3 to 4 miles south of the site, work is progressing on the expansion of the Kennecott tailings dam.

There are no residents living within four miles of the site. There are no full-time businesses within four miles of the site. The Great Salt Lake is two to three miles to the west, and the intervening land between the lake and the site was mostly alkaline mudflats and wetlands. No flowing streams were observed at or near the two large triangular berms, although irrigation canals do exist in areas near the concrete foundations considered part of the gunnery range. The site is fenced, and access to the area is limited due to Kennecott and other businesses maintaining locked gates across the access roads from the highway.

Photographs of the site and surrounding area taken during the site visit are included at the end of this report, along with a site sketch map, the site map from the 1992 USACE report, and the two signed access agreements. No samples were taken at this time.

- END -



West Triangle

East Triangle

wetlands/dried riverbed

bullets found

drum

bullets found

drum

tire

trash

abandoned car

drum

bullets found (50 cal.)

concrete foundations

possible concrete foundations

concrete foundations

concrete foundations

concrete foundations

700 North

SALT AIR GUNNERY RANGE  
SITE SKETCH MAP  
8-7-97

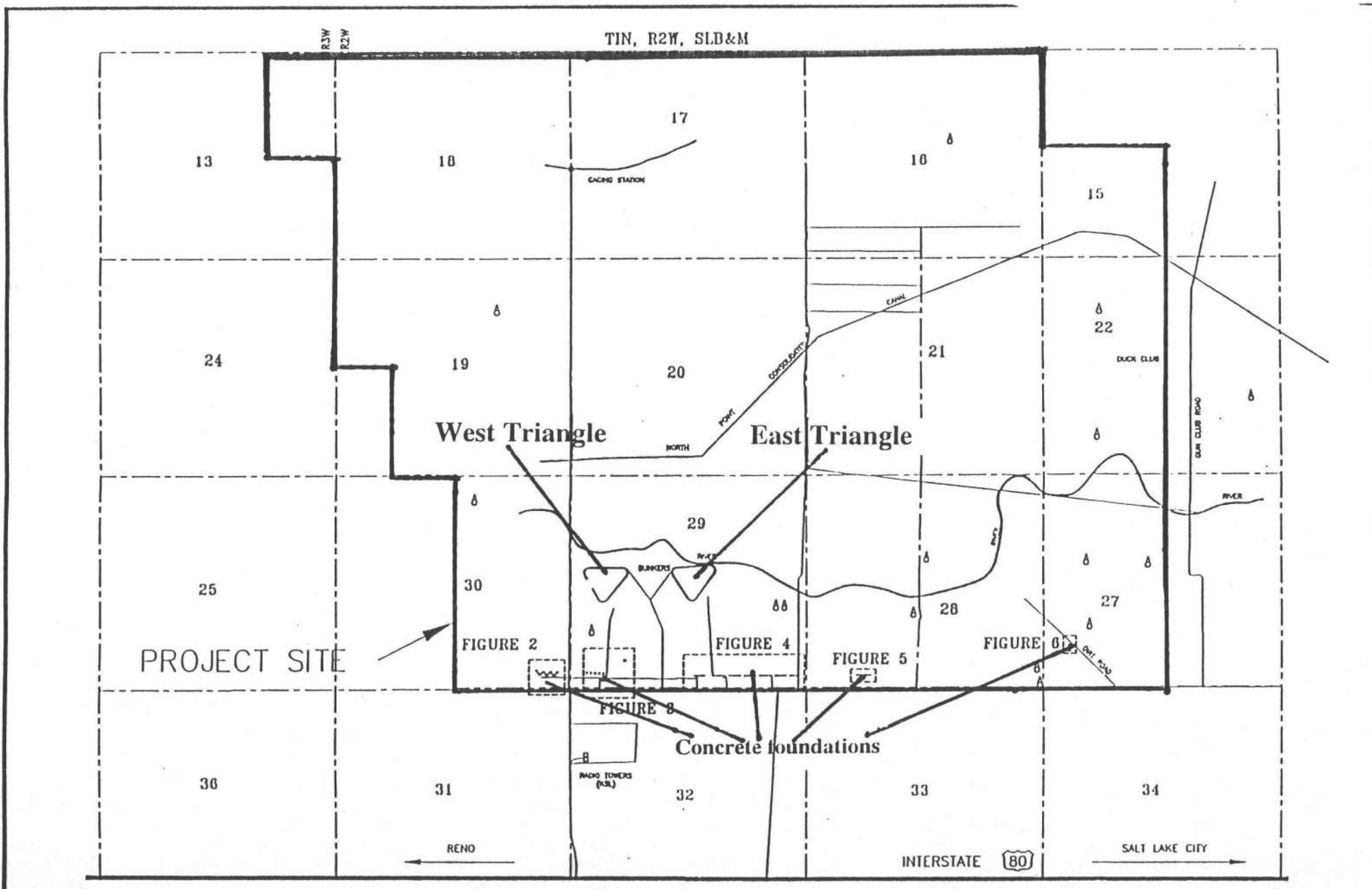
Distances to:

- Great Salt Lake - 2.5 miles west
- Interstate 80 - 1.5 miles south
- Town of Magna - 6 miles south
- Baileys Lake - 2 miles northeast
- Salt Lake City - 7 miles east



Scale: 1:6,000 500 feet

KSI radio towers



**DYNAMAC**  
CORPORATION  
Environmental Services

DRAWN BY: *[Signature]*  
APPROVED: *[Signature]*

[From USACE report, 1992,  
"Defense Environmental  
Restoration Program"]

**FIGURE 1**  
SITE MAP  
SALT LAKE CITY ARMY AIR BASE  
GUNNERY RANGE  
Site No. 10811005100

LEGEND  
δ WATER WELL



TO: J.D. KEETLEY 1-801-536-4242

Utah Department of Environmental Quality  
Division of Environmental Response and Remediation  
CERCLA Branch

GRANT OF ACCESS TO PROPERTY

Name, Title, Mailing Address:

Connie Morehouse  
4198 Blanton Road  
Eugene, OR. 97405



Property Address: (If different from above)

The property, known as the Salt Air Gunnery Range site, is located on Section 29, Township 1 North, Range 2 West, 7 miles west of Salt Lake City, Utah

I am an owner of record, title holder or authorized agent for the record owner, of the certain real property ("Property") described above (the property located on Section 29, Township 1 North, Range 2 West, 7 miles west of Salt Lake City, Utah).

I hereby grant consent to the officers, employees, authorized representatives, and consultants of the Utah Division of Environmental Response and Remediation ("DERR") access, including ingress and egress, to the Property for the following purposes:

1. the inspection of this property, including the taking of photographs, to determine the presence or potential presence of hazardous substances or hazardous wastes,
2. the taking of soil, sediment, and/or water samples,
3. any other such actions <sup>require further notice and consent by me.</sup> ~~related to the taking of the above samples or the definition of the contamination on the Property as may be necessary.~~

~~The tasks described above may be altered if conditions change or if the DERR obtains additional information requiring further investigation.~~ The DERR will notify me in writing of any new planned tasks.



THOMAS L. MONSON  
ATTORNEY AT LAW  
139 E. South Temple, Suite 400  
Salt Lake City, Utah 84111

Mailing Address:  
P.O. Box 11590  
Salt Lake City, UT 84147-0590

DEO / DERR RECEIVED
AUG - 7 1997
<input type="checkbox"/> HAND DELIVERED

Telephone (801) 538-0066  
FAX (801) 538-0073

August 6, 1997

J. D. Keetley, Environmental Scientist  
Superfund Remedial Projects Manager  
Division of Environmental Response and Remediation  
Utah Department of Environmental Quality  
168 North 1950 West  
P.O. Box 144840  
Salt Lake City UT 84114-4840

Re: Salt Air Gunnery Range Site, Salt Lake City, Utah

Dear Mr. Keetley:

Thank you for speaking with me today. As I explained over the telephone, I represent the several owners of certain real property (the "Property") located on Section 29, Township 1 North, Range 2 West, SLB&M including, as applicable, Bothwell and Swaner Company, Connie Morehouse, Richard Morehouse, and Maureen M. Davison (the "Property Owners").

You have requested authorization to enter upon the Property for a "preliminary examination," to take photographs and obtain a general idea of the possibility of environmental contamination or the presence of hazardous substances upon the Property.

On behalf of so many of the foregoing owners who hold record title interest to the Property, this letter will serve to grant consent, subject to the conditions set out herein, to the officers, employees, authorized representatives, and consultants of the Utah Division of Environmental Response and Remediation ("DERR") for access, including ingress and egress, to the Property for the sole purpose of conducting a preliminary inspection of the Property, including the taking of photographs, to determine the possibility of the presence or potential presence of hazardous substances or hazardous wastes.

J. D. Keetley, Environmental Scientist  
Superfund Remedial Projects Manager  
Division of Environmental Response and Remediation  
Utah Department of Environmental Quality  
Page Two

This grant of access shall be subject to the following conditions:

1. Oral or written approval shall also be required from the Property Owners' grazing lessee, Mr. David O. Hinckley, Cross-E Ranch, 1501 North 2300 West, Salt Lake City, Utah 84116 (801) 595-6339, particularly inasmuch as much of the Property is fenced and locked to protect cattle thereon.

2. The DERR and/or its agents shall be responsible and liable for damage, if any, to persons or property, including cattle, roads, fences, and grazing lands, and this access right shall not waive any claims against the DERR, and/or its agents for any damages suffered by reason of their entry upon the Property. In the event damages are suffered by reason of such entry upon the Property, the DERR and/or its agents shall also be liable for attorneys fees and costs of collection of such damages, with or without the filing of a lawsuit.

3. This letter does not authorize the DERR, its agents officers, employees, representatives and consultants are to obtain soil, sediment or water samples. From out telephone conversation, I understand that the taking of soil, sediment, and/or water samples is not presently contemplated, but that the taking of samples is "down the road" from your present preliminary investigation. The Property Owners will be happy to consider your further request to enter upon the Property to obtain such samples after your investigation is further developed and the DERR has furnished a copy of its written plan, setting out the hazardous substances for which the samples will be tested, the duration of access required, and other relevant detail. Any other similar actions upon the Property by the DERR shall require further notice to, and written consent from, the Property Owners. It is understood that the DERR will notify this office in writing of any new planned tasks.

4. You have advised the Property Owners that the above-described work will be performed as soon as access is obtained; accordingly, this grant of access to the Property shall expire September 30, 1997.

By entering upon the Property, the DERR and/or its agents shall acknowledge agreement with all of the terms and conditions of this grant of access.

This grant of access is given voluntarily by the Property Owners with knowledge of their right to refuse access. It is acknowledged that no other promises, representations, or claims of any kind, written or oral, have been made by the DERR to induce this grant of access.

J. D. Keetley, Environmental Scientist  
Superfund Remedial Projects Manager  
Division of Environmental Response and Remediation  
Utah Department of Environmental Quality  
Page Three

You have informed the Property Owners that these actions by the DERR are undertaken pursuant to the authorities provided in the Comprehensive Environmental Response, Compensation and Liabilities Act ("CERCLA"), 42 USC §9601, et seq., and in particular 42 USC §9604(e).

I am forwarding a copy of this letter to the Property Owners' environmental consultant, Mr. Tom Cline of JBR Environmental Consultants, Inc., 8160 South Highland Drive, Sandy, Utah 84093 (801) 943-4144.

Should you have any questions, please contact me.

Very truly yours,



Thomas L. Monson

cc: Bothwell and Swaner Company  
Maureen Morehouse Davison  
Richard and Lynn Morehouse  
Connie Morehouse  
David O. Hinckley  
Tom Cline, JBR Environmental Consultants, Inc.



PHOTO 1: View to the west. View is of the long concrete foundations used to hold gun mounts during testing, approximately 250 feet long (east-west) by 15 feet across. In foreground is a metal gun mount (12" X 12").

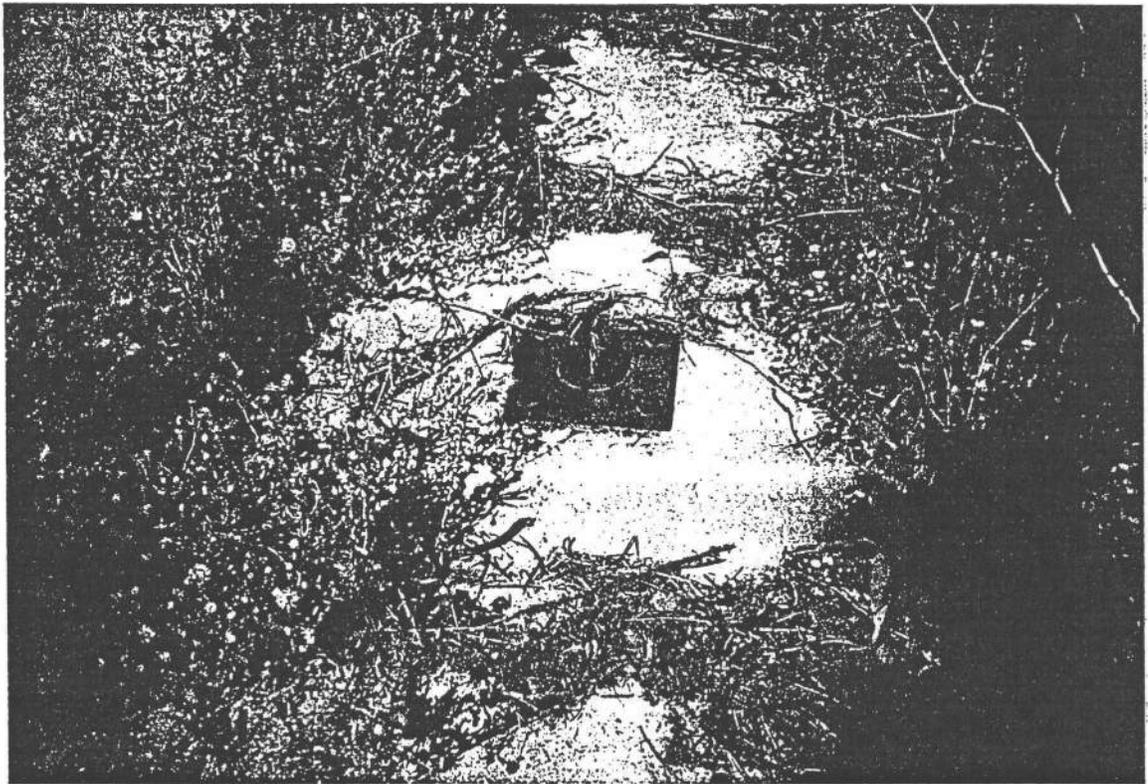


PHOTO 2: Closeup of the metal gun mount, 12" X 12".

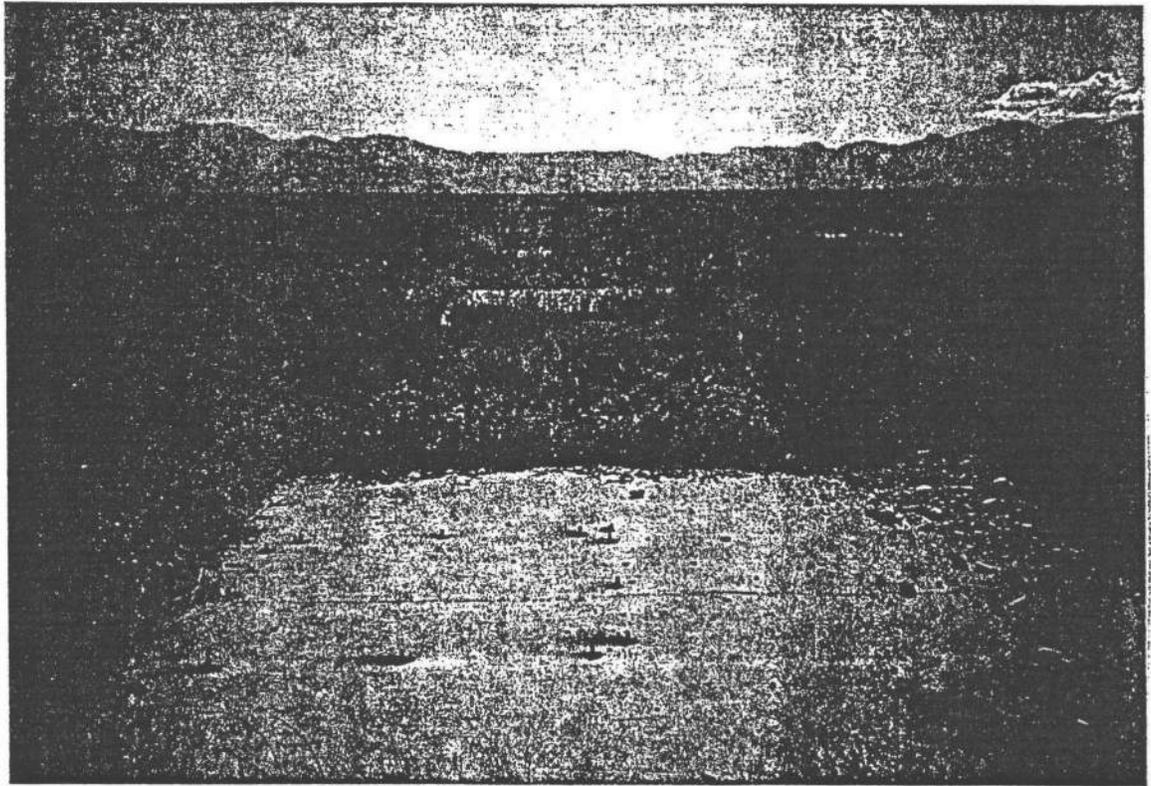


PHOTO 3: View east of 15' by 15' square concrete foundation with mounting bolts in base, forming a 5' by 5' square. Used to mount rifles.

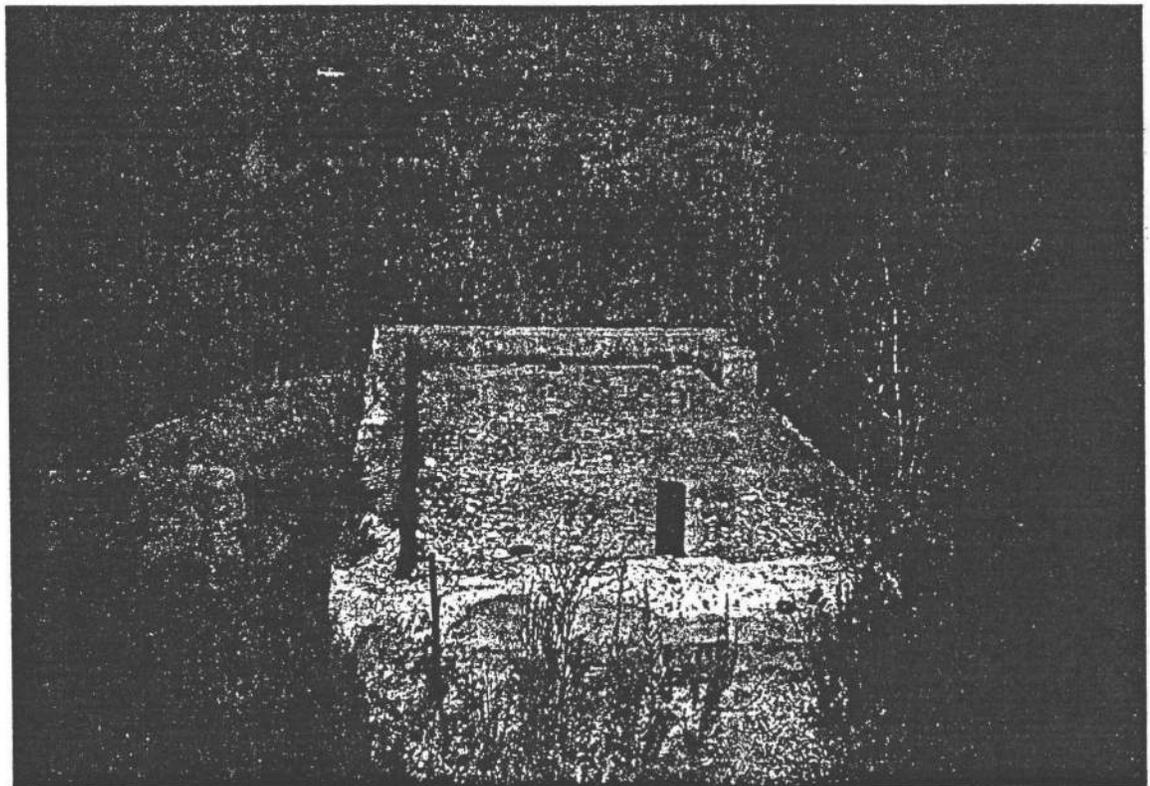


PHOTO 4: View west of other concrete foundations found in same area, with metal pipes sticking up.

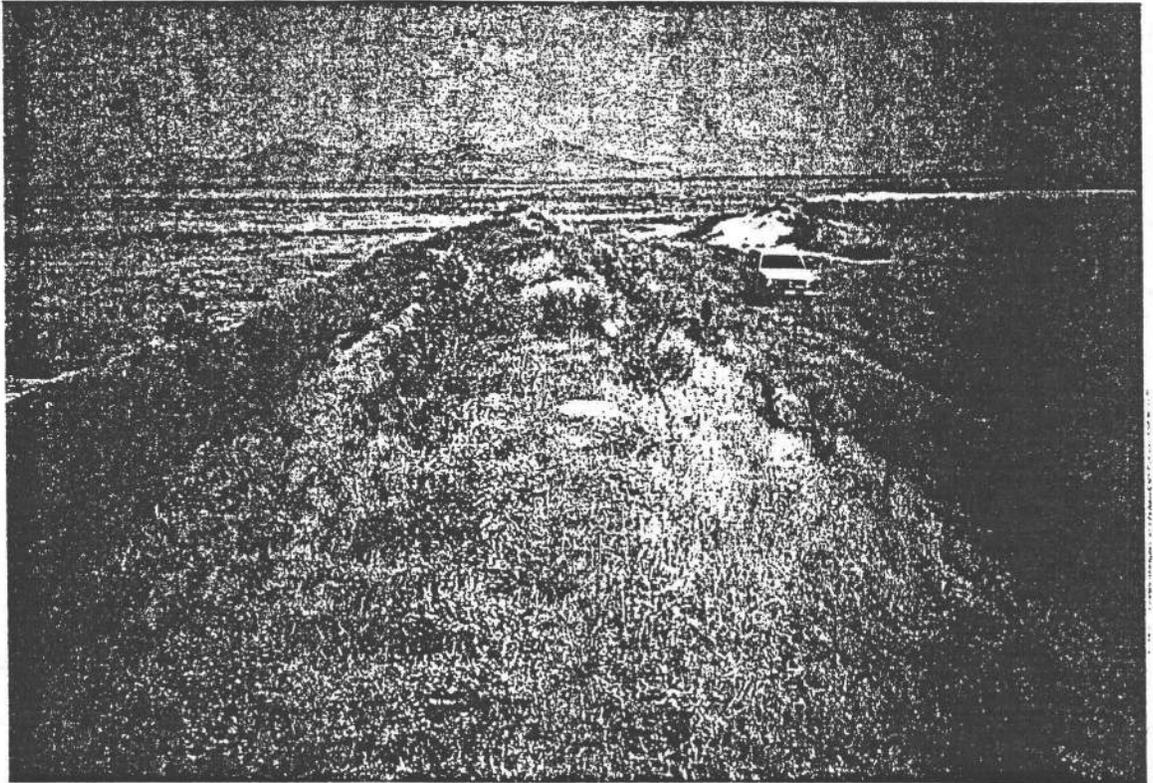


PHOTO 5: View northwest atop west wall of the East Triangle. Berms are about eight feet high. Note State vehicle at entrance into triangle area, in northwest corner.



PHOTO 6: View northwest from atop north wall of East Triangle. Note 55-gallon drum in foreground; background is dry "riverbed" wetlands just north of this triangle.

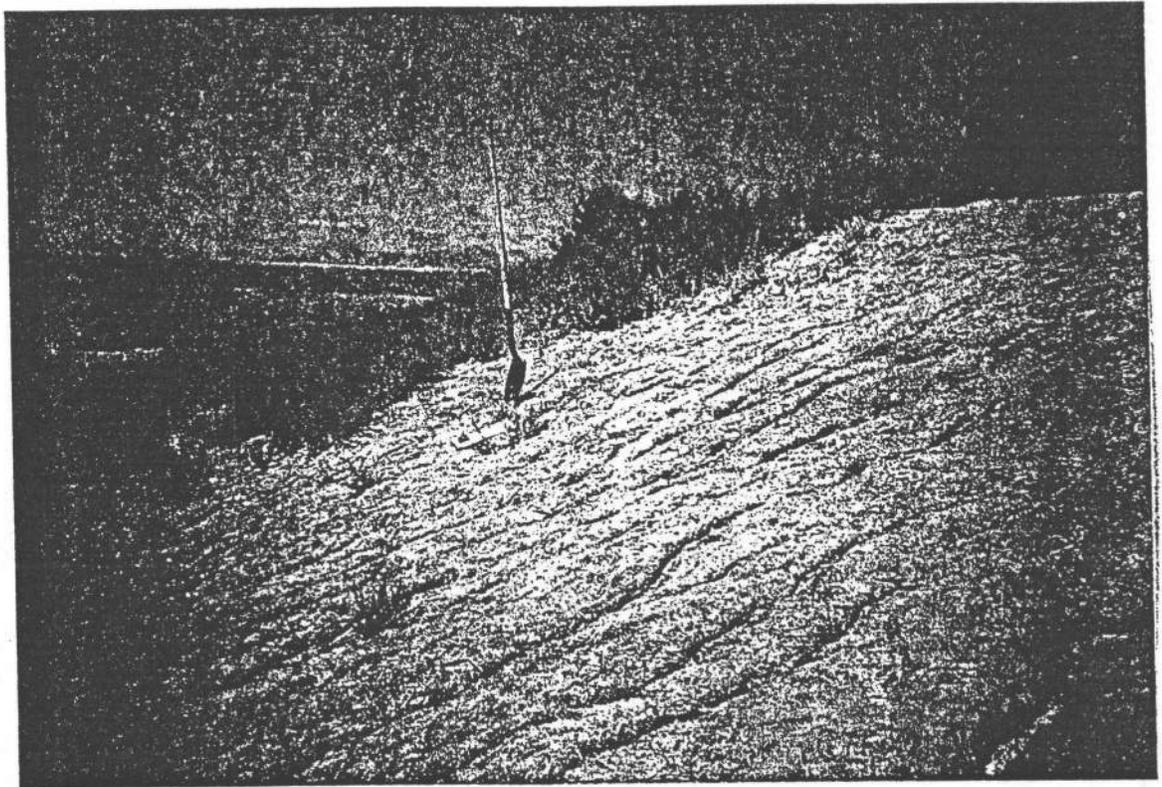


PHOTO 7: View west, at south apex (corner) of East Triangle. Berm is eroded, revealing buried bullets. Shovel is in area of 50-caliber bullets found on surface (no shovel needed).

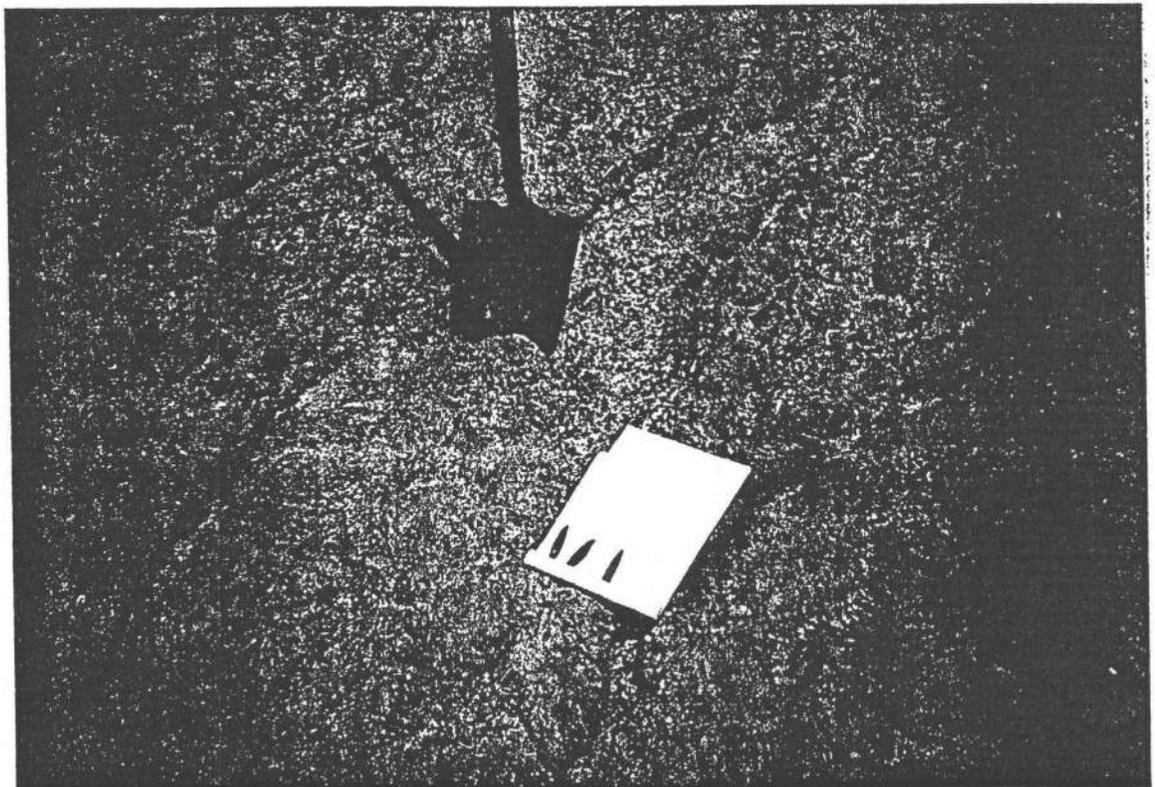


PHOTO 8: Closeup of eroded berm showing three recovered bullets, and several more lying on surface of soils and in small eroded gullies.

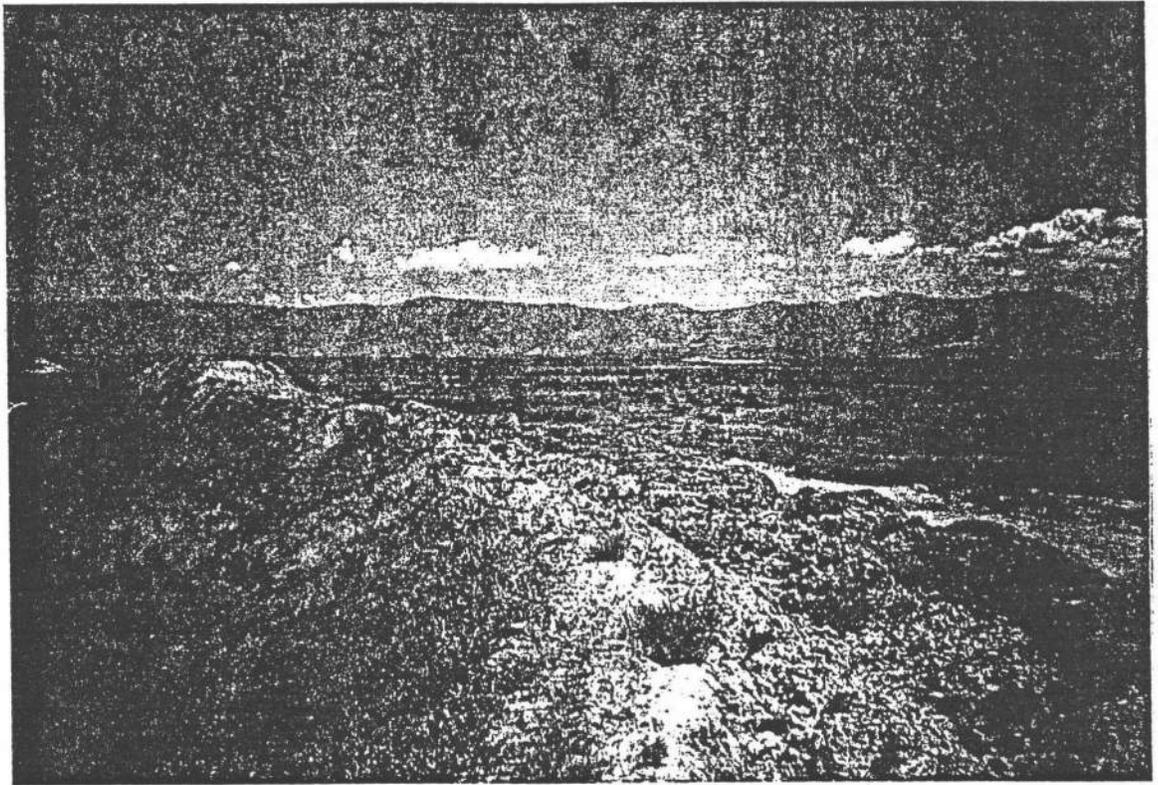


PHOTO 9: View northeast. Shows the south half of the eastern wall of the West Triangle which has been partly removed by a bulldozer (?).

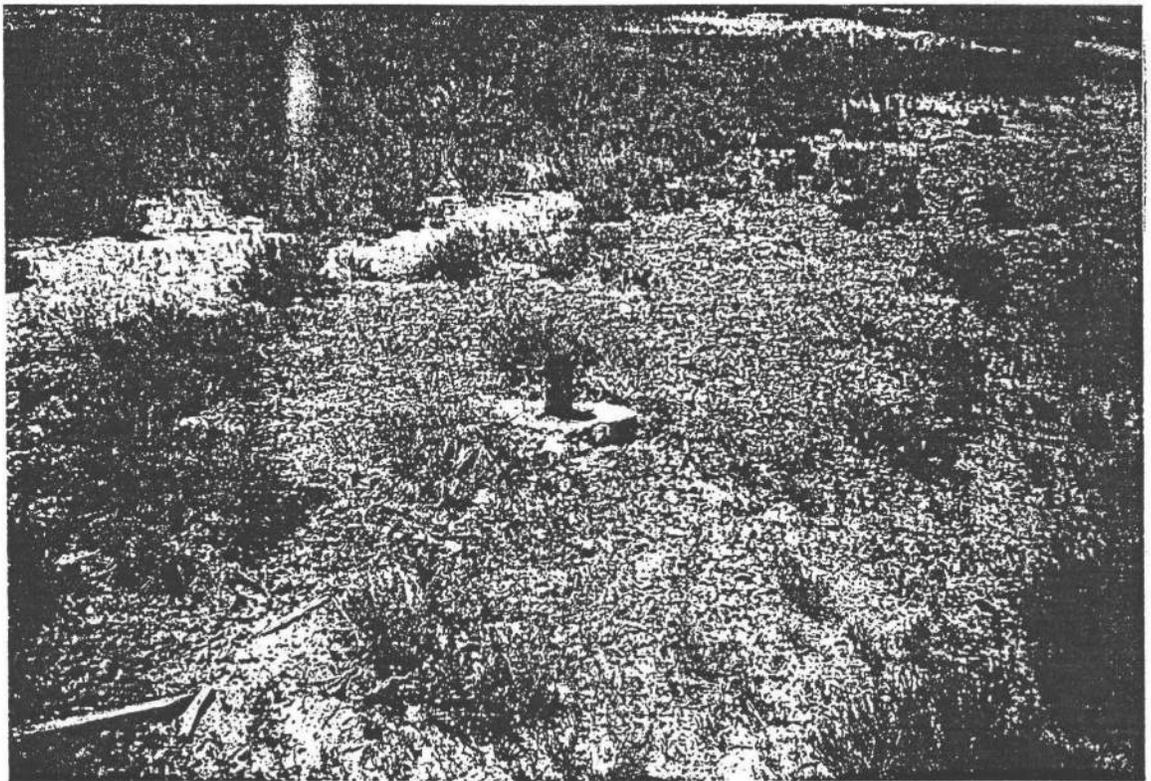


PHOTO 10: View to the west. Shows a gun mount on Kennecott property, southwest of large triangles. Part of a semi-circular "foundation"

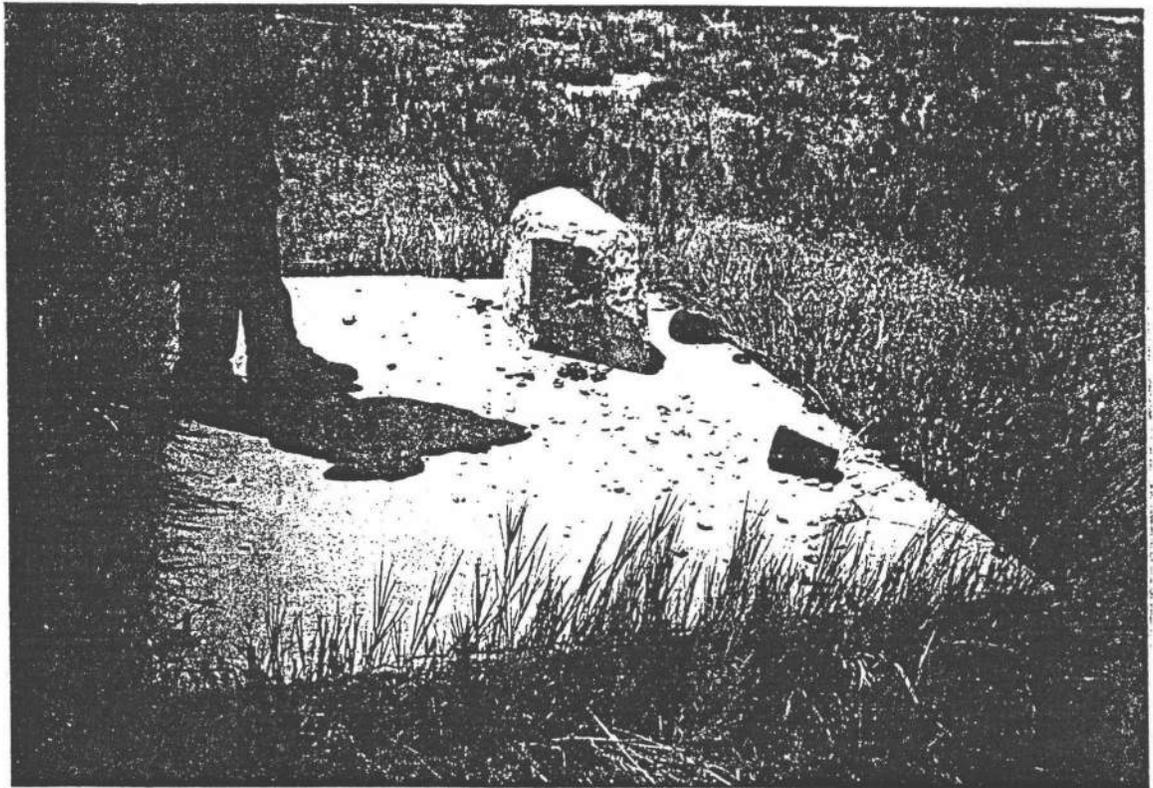


PHOTO 11: Concrete foundation, 5' X 8', on Kennecott property southwest of large triangles. From USACE report, 1992 (Figure 2 area).

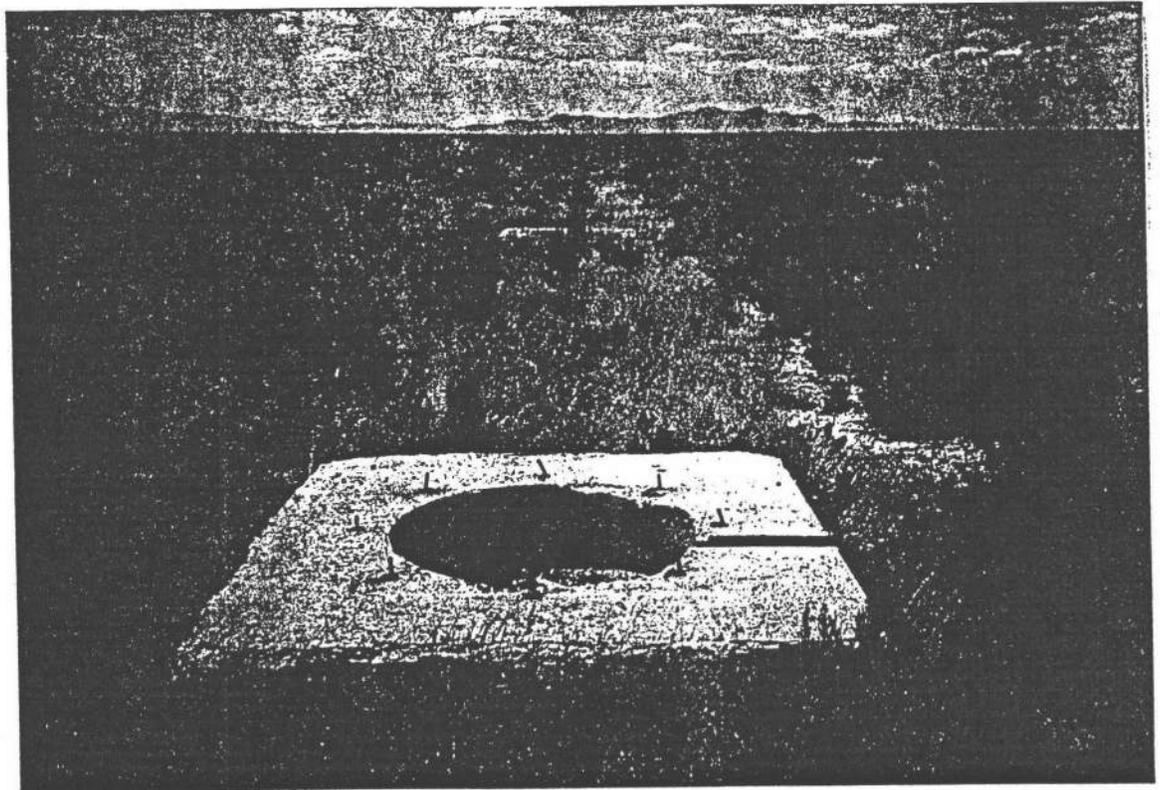


PHOTO 12: South of berms. One of five such foundations: 5' X 5', with 3' diameter hole (1' deep). From USACE 1992 report (Figure 3 area).

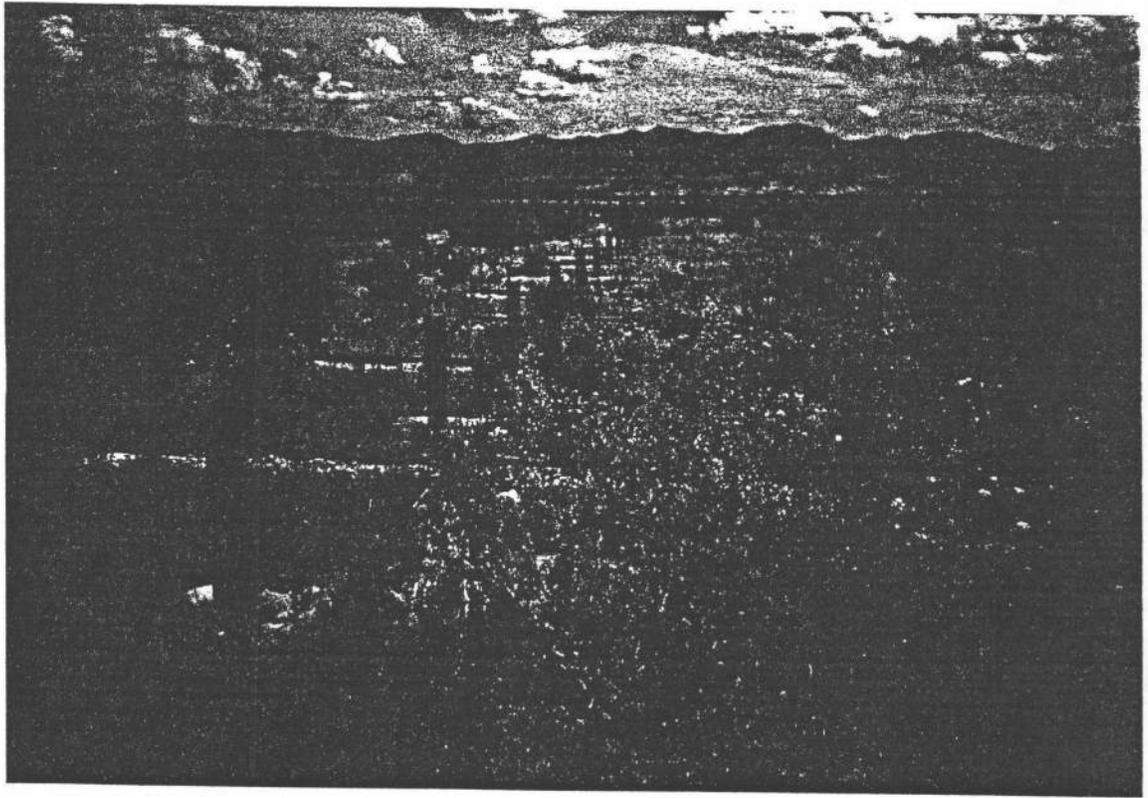


PHOTO 13: Southeast of berms. Row of 20 gun mounts, with 2' high (4" diam.) metal pipes sticking out. From USACE report (Figure 5 area). Area observed by but not visited by UDERR on site visit.

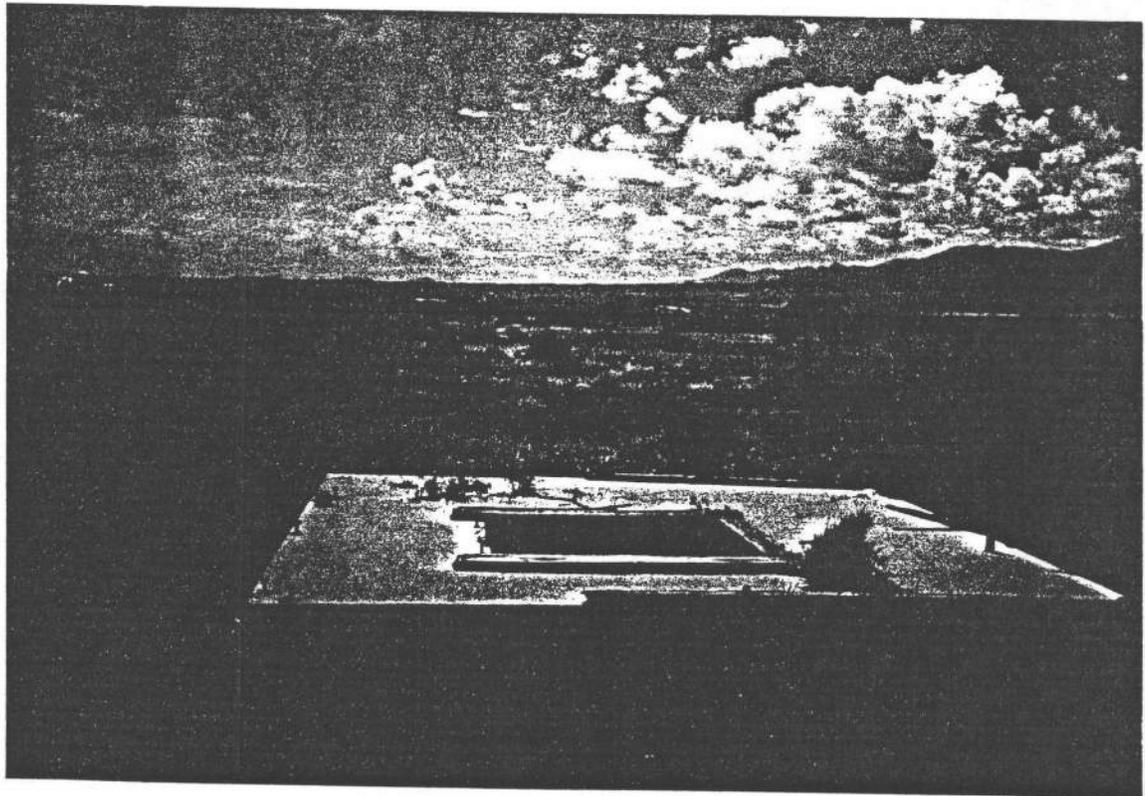
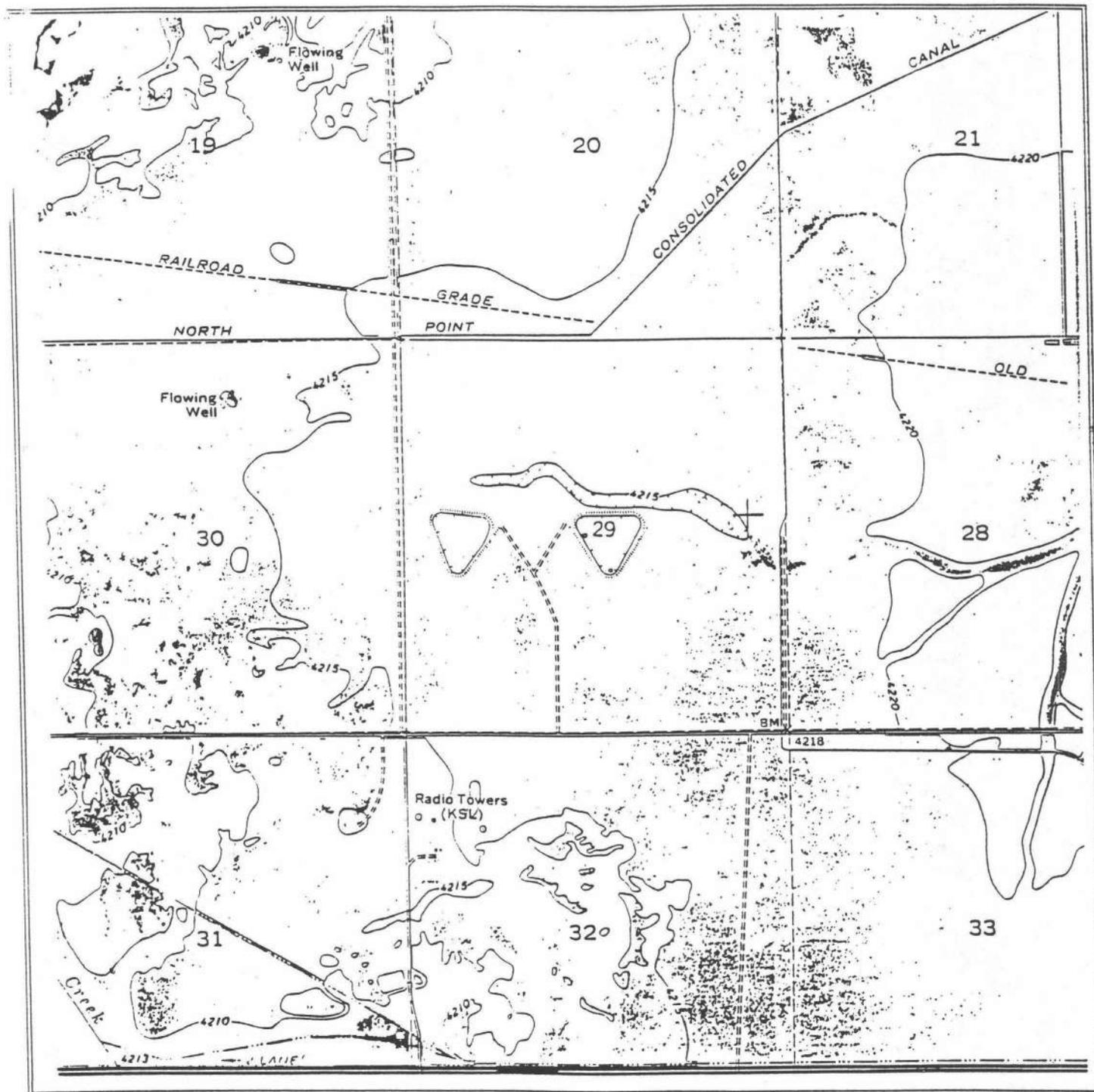


PHOTO 14: 12' X 12' concrete foundation, with pit in middle 4'X8'X4' deep. From USACE report (Figure 6 area).

**Appendix E**  
**Latitude and Longitude Calculations**

LATITUDE/LONGITUDE DOCUMENT RECORD FORM



SITE NAME: SaltAir Gunnery Range

NUMBER: UT0001610880

MAP NAME: Saltair, Utah

SCALE: 1:24,000

DATUM: 1972

COORDINATES OF LOWER RIGHT HAND CORNER OF 2.5 MINUTE GRID

LATITUDE 40° 45' 00"

LONGITUDE 112° 05' 00"

LATITUDE AND LONGITUDE CALCULATION WORKSHEET  
WHEN USING CUSTOM RULER OR COORDINATOR (TM)

ITE: SaltAir Gunnery Range NUMBER: UT0001610880  
KA: \_\_\_\_\_ SSID: UT0001610880  
ADDRESS: Part of Section 29, T1N, R2W, Saltair 7.5 Quadrangle map  
CITY: Magna STATE: Utah ZIP CODE: 84044  
SITE REFERENCE POINT: 6 miles west of Salt Lake City International Airport, north of I-80  
TOPO MAP: Saltair, Utah TOWNSHIP: 1 N N/S RANGE: 2 W E/W  
SCALE: 1:24,000 MAP DATE: 1972 SECTION: 29 NW  $\frac{1}{4}$  NW  $\frac{1}{4}$  SE  $\frac{1}{4}$   
MAP DATUM: Vertical-National Geodetic of 1929 MERIDIAN: Salt Lake

COORDINATES FROM LOWER RIGHT (SOUTHEAST) CORNER OF 7.5' MAP:

LONGITUDE: 112° 00' 00" LATITUDE: 40° 45' 00"

COORDINATES FROM LOWER RIGHT (SOUTHEAST) CORNER OF 2.5' SUB-MAP:

LONGITUDE: 112° 05' 00" LATITUDE: 40° 45' 00"

CALCULATIONS: LATITUDE (7.5 MINUTE QUADRANGLE MAP)

- A) ALIGN THE BOTTOM OF THE SCALE WITH BOTTOM OF GRID. ALIGN THE TOP OF THE SCALE WITH THE TOP OF GRID. POSITION EDGE OF RULER OVER SITE REFERENCE POINT WHILE KEEPING TOP AND BOTTOM ALIGNED.
- B) READ TICS ON RULER AT 1 OR 0.5 SECOND INTERVALS (INTERPOLATE IF POSSIBLE).
- C) RECORD LATITUDE: 40° 47' 28" \_\_\_\_\_

CALCULATIONS: LONGITUDE (7.5 MINUTE QUADRANGLE MAP)

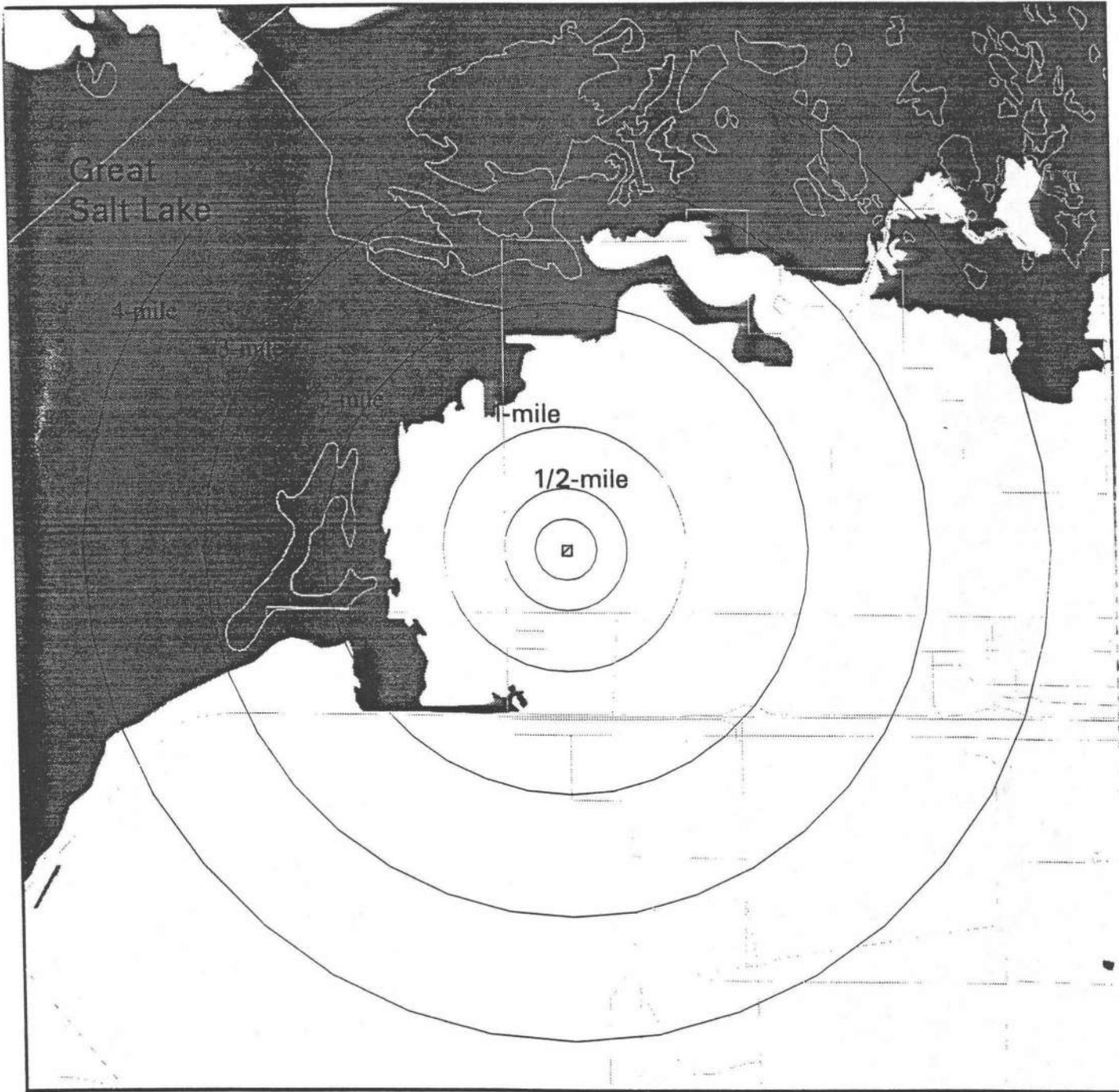
- A) ALIGN THE BOTTOM OF THE SCALE WITH RIGHT SIDE OF GRID. ALIGN THE TOP OF THE SCALE WITH THE LEFT SIDE OF GRID. POSITION EDGE OF RULER OVER SITE REFERENCE POINT WHILE KEEPING TOP AND BOTTOM ALIGNED.
- B) READ TICS ON RULER AT 1 SECOND INTERVALS (INTERPOLATE IF POSSIBLE).
- C) RECORD LONGITUDE: 112° 05' 28" \_\_\_\_\_

INVESTIGATOR: J. D. Keetley

DATE: July 25, 1997

**Appendix F**

**Population by Census Block (1990)**



## POPULATION BY CENSUS BLOCK SALTAIR GUNNERY RANGE

### Legend

- ☐ Salt Air Gunnery Site
- Water Bodies
- ∕ Concentric Radii
- Census Blocks

Approximate Scale  
1" = 1.26 Miles



UDEQ  
Division of Environmental  
Response and Remediation

Population by Concetric Bands  
culated from Census Blocks  
e Theme: cercla  
e Name: gunnerypt  
ated By: jkeetley  
ated On: 07/25/97

TAL 0.25 MILE	0.000000
TAL 0.50 MILE	0.000000
TAL 1.00 MILE	0.000000
TAL 2.00 MILE	0.000000
TAL 3.00 MILE	0.000000
TAL 4.00 MILE	0.000000

## **Appendix G**

### **Water Rights Points of Diversion**

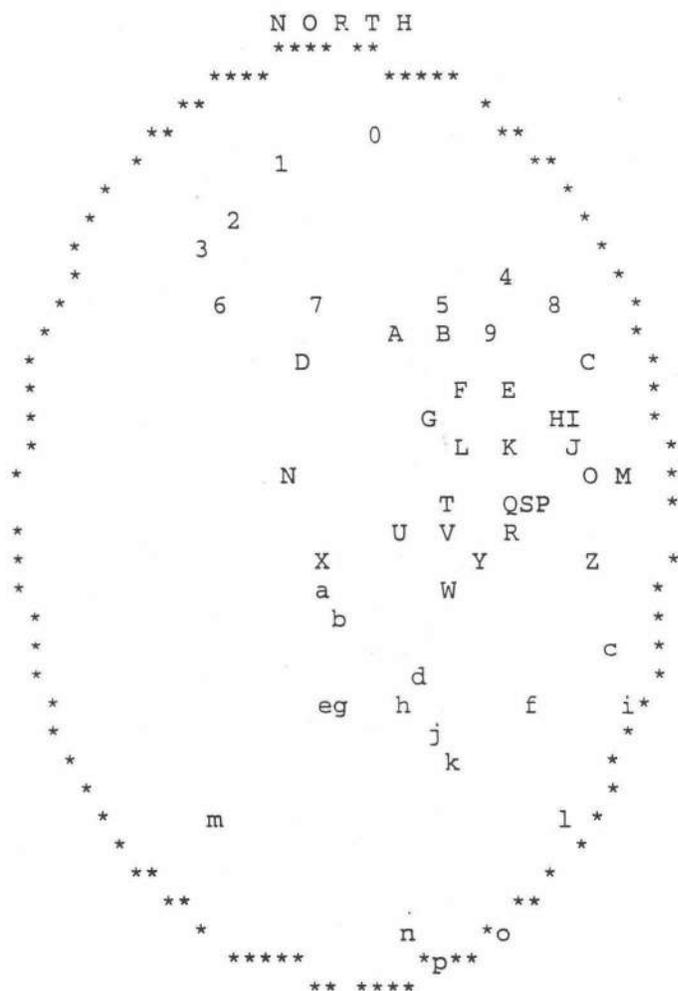


ONE MOMENT. HARDCOPY BEING PRINTED ON DEVICE 0

UTAH DIVISION OF WATER RIGHTS  
 WATER RIGHT POINT OF DIVERSION PLOT CREATED WED, JUL 23,  
 PLOT SHOWS LOCATION OF 95 POINTS OF DIVER

PLOT OF AN AREA WITH A RADIUS OF 21120 FEET FF  
 S 2640 FEET, E 1320 FEET OF THE NW CORNER,  
 SECTION 29 TOWNSHIP 1N RANGE 2W SL BASE AN

PLOT SCALE IS APPROXIMATELY 1 INCH = 10000 FEET



1

UTAH DIVISION OF WATER RIGHTS  
 NWPLAT POINT OF DIVERSION LOCATION PROGE

MAP CHAR	WATER RIGHT	QUANTITY CFS	AND/OR AC-FT	SOURCE DIAMETER	DEPTH	or WELL INFO YEAR LOG	POINT NORTH	EA
0	59 2716	.0150	.00	2	300	1920 N	S 1160	W
WATER USE(S): STOCKWATERING Gillmor, Edward Leslie				3819 South 2000 East				

0	<u>59 3476</u>	.0150	.00	2	300	1920	N	S	1160	W
	WATER USE(S): STOCKWATERING Gillmor, Edward Leslie									
	3819 South 20th East									
0	<u>59 3477</u>	.0150	.00	2	300	1920	N	S	1160	W
	WATER USE(S): STOCKWATERING Gillmor, Edward Leslie									
	3819 South 2000 East									
1	<u>59 3038</u>	.0020	.00	2	400	1937	Y	N	2525	W
	WATER USE(S): STOCKWATERING Gillmor, Florence J.									
	1235 East 200 South									
1	<u>59 3545</u>	.0020	.00	2	400	1937	Y	N	2525	W
	WATER USE(S): STOCKWATERING Gillmor, Florence J.									
	1235 East 200 South									
1	<u>59 3546</u>	.0020	.00	2	400	1937	Y	N	2525	W
	WATER USE(S): STOCKWATERING Gillmor, Florence J.									
	1235 East 200 South									
2	<u>59 1511</u>	.0150	.00	2	389	1959	Y	N	430	E
	WATER USE(S): STOCKWATERING Gillmor, Florence J.									
	1235 East 2nd South Apt. 201									
2	<u>59 3724</u>	.0150	.00	2	389	1959	Y	N	430	E
	WATER USE(S): STOCKWATERING Gillmor, Edward Leslie									
	3819 South 20th East									
2	<u>59 3726</u>	.0150	.00	2	389	1959	Y	N	430	E
	WATER USE(S): STOCKWATERING Gillmor, Charles F.									
	428 J Street									
3	<u>59 5421</u>	30.0000	.00						S 1497	E
	WATER USE(S): IRRIGATION STOCKWATERING OTHER North Point Consolidated Irrigation Comp 10 East South Temple, Suite 400									
4	<u>59 3474</u>	.0400	.00	2	400	1920	N	S	2090	E
	WATER USE(S): STOCKWATERING Gillmor, Edward Leslie									
	3819 South 20th East									
4	<u>59 3475</u>	.0400	.00	2	400	1920	N	S	2090	E
	WATER USE(S): STOCKWATERING Gillmor, Charles F.									
	136 South 7th East									
4	<u>59 2717</u>	.0400	.00	2	400	1920	N	S	2090	E
	WATER USE(S): DOMESTIC STOCKWATERING Gillmor, Edward L.									
	962 South 5th East									
5	<u>59 3286</u>	.0150	.00	2	636	1966	Y	N	1910	E
	WATER USE(S): DOMESTIC STOCKWATERING LDS Church, Corporation of the Presiding 50 East North Temple									
6	<u>59 5560</u>	.0000	739.75	6	100 - 700				N 1800	W
	WATER USE(S): IRRIGATION Diversified Habitats LLC									
	3900 South 470 East									
7	<u>59 4049</u>	15.0000	.00							
	WATER USE(S): IRRIGATION STOCKWATERING OTHER First Interstate Bank Trust Dept									
	180 South Main Street									

MAP CHAR	WATER RIGHT	QUANTITY CFS	AND/OR AC-FT	SOURCE DIAMETER	DESCRIPTION or DEPTH	WELL INFO YEAR LOG	POINT NORTH	EA
8	<u>59 3471</u>	.0070	.00			1850 N	N 1250	W
	WATER USE(S): STOCKWATERING Gillmor, Charles F.				428 J Street			
8	<u>59 3472</u>	.0070	.00			1850 N	N 1250	W
	WATER USE(S): STOCKWATERING Gillmor, Charles F.				428 J Street			
8	<u>59 3473</u>	.0070	.00			1850 N	N 1250	W
	WATER USE(S): STOCKWATERING Gillmor, Charles F.				136 South 7th East			
9	<u>59 5467</u>	15.0000	.00		Goggin Drain		N 100	E
	WATER USE(S): IRRIGATION STOCKWATERING OTHER National Audubon Society				50 West Broadway, Suite 800			
A	<u>59 2567</u>	.0070	.00	2	577	1966 Y	S 30	E
	WATER USE(S): IRRIGATION DOMESTIC STOCKWATERING LDS Church				50 E. N. Temple			
B	<u>59 1734</u>	.0620	.00	4	558	1966 Y	S 42	E
	WATER USE(S): IRRIGATION DOMESTIC STOCKWATERING LDS Church, Corporation of the Presiding				50 East North Temple			
C	<u>59 3485</u>	.0150	.00				N S 1350	E
	WATER USE(S): STOCKWATERING Gillmor, Charles F.				136 South 7th East			
C	<u>59 3484</u>	.0150	.00				N S 1350	E
	WATER USE(S): STOCKWATERING Gillmor, Charles F.				428 J Street			
C	<u>59 3483</u>	.0150	.00				N S 1350	E
	WATER USE(S): STOCKWATERING Gillmor, Charles F.				428 J Street			
D	<u>59 2917</u>	.1110	.00	2	450	1920 N	S 1500	W
	WATER USE(S): STOCKWATERING Jeremy, Thomas E.				180 South Main			
D	<u>59 3670</u>	.1110	.00	2	450		N S 1500	W
	WATER USE(S): STOCKWATERING Jeremy, Thomas E.				180 South Main			
E	<u>59 3285</u>	.0150	.00	2	560	1966 Y	S 1730	E
	WATER USE(S): DOMESTIC STOCKWATERING LDS Church, Corporation of the Presiding				50 East North Temple			
F	<u>59 3284</u>	.0150	.00	2	600	1966 Y	S 2595	W
	WATER USE(S): DOMESTIC STOCKWATERING LDS Church, Corporation of the Presiding				50 East North Temple			
G	<u>59 2566</u>	.0070	.00	2	250	1930 N	N 1900	E
	WATER USE(S): DOMESTIC STOCKWATERING LDS Church				50 E. N. Temple			
H	<u>59 1273</u>	.0150	.00	2	270	1956 Y	S 810	W
	WATER USE(S): STOCKWATERING Peck, Tom E.				3294 West 3800 South			
T	<u>59 1944</u>	.0330	.00	2	200	1896 N	N 1425	E

WATER USE(S): DOMESTIC STOCKWATERING  
Peck, Tom E.

3294 West 3800 South

1

UTAH DIVISION OF WATER RIGHTS  
NWPLAT POINT OF DIVERSION LOCATION PROG

MAP CHAR	WATER RIGHT	CFS	QUANTITY AND/OR	AC-FT	SOURCE DESCRIPTION or WELL INFO DIAMETER	DEPTH	YEAR LOG	POINT NORTH	EA
J	59 1272	.0150		.00	2	148	1956 Y	N	960 E
			WATER USE(S): STOCKWATERING Peck, Tom E.						3294 West 3800 South
K	59 3541	.0150		.00				N N	750 E
			WATER USE(S): STOCKWATERING Gillmor, Edward Leslie Gillmor, Charles F.						3819 South 20th East
L	59 3277	.0150		.00	2	561	1966 N	S	48 W
			WATER USE(S): DOMESTIC LDS Church, Corporation of the Presiding						50 East North Temple
M	59 2929	.1110		.00	2	450	1870 N	S	740 E
			WATER USE(S): Gillmor, Florence J.						1235 East 200 South
M	59 3486	.1110		.00	2	450	1870 N	S	740 E
			WATER USE(S): STOCKWATERING Gillmor, Florence J.						1235 East 200 South
M	59 3487	.1110		.00	2	250	1870 N	S	740 E
			WATER USE(S): STOCKWATERING Gillmor, Florence J.						1235 East 200 South
N	59 2921	.1110		.00	2	450	1920 N	S	820 W
			WATER USE(S): Jeremy, Thomas E.						180 South Main
N	59 3666	.1110		.00	2	450		N S	820 W
			WATER USE(S): Jeremy, Thomas E.						180 South Main
O	59 2918	.0780		.00	2	450	1870 N	S	1000 E
			WATER USE(S): Gillmor, Florence J.						1235 East 200 South
O	59 3553	.0780		.00	2	450		N S	1000 E
			WATER USE(S): Gillmor, Florence J.						1235 East 200 South
O	59 3554	.0780		.00	2	450		N S	1000 E
			WATER USE(S): Gillmor, Florence J.						1235 East 200 South
P	59 3542	.0090		.00				N S	1915 W
			WATER USE(S): Gillmor, Edward Leslie						3819 South 2000 East
P	59 3543	.0090		.00				N S	1915 W
			WATER USE(S): Gillmor, Edward Leslie						3819 South 20th East

P 59 3544 .0090 .00 N S 1915 W  
 WATER USE(S):  
 Gillmor, Charles F. 136 South 7th East

Q 59 3550 .0090 .00 N S 2000 E  
 WATER USE(S):  
 Gillmor, Edward Leslie 3819 south 2000 East

Q 59 3551 .0090 .00 N S 2000 E  
 WATER USE(S):  
 Gillmor, Edward Leslie 3819 South 20th East

1

UTAH DIVISION OF WATER RIGHTS  
 NWPLAT POINT OF DIVERSION LOCATION PROG

MAP CHAR	WATER RIGHT	QUANTITY CFS	AND/OR AC-FT	SOURCE DESCRIPTION or WELL INFO	DIAMETER	DEPTH	YEAR LOG	POINT NORTH	EA
Q	<u>59 3552</u>	.0090	.00	Gillmor, Charles F.				N S 2000 E	
				136 South 7th East					
R	<u>a18300</u>	.0000	1.17	Underground Water Well & Emig.				N 1760 E	
				IRRIGATION DOMESTIC					
				Biggs, William F. and Pheobe				6207 Emigration Canyon	
R	<u>59 3280</u>	.0150	.00	2	618	1966	Y	N 1388 E	
				DOMESTIC					
				LDS Church, Corporation of the Presiding				50 East North Temple	
S	<u>59 3547</u>	.0040	.00	Gillmor, Edward Leslie				N S 2080 E	
				3819 South 2000 East					
S	<u>59 3548</u>	.0040	.00	Gillmor, Edward Leslie				N S 2080 E	
				3819 South 20th East					
S	<u>59 3549</u>	.0040	.00	Gillmor, Charles F.				N S 2080 E	
				136 South 7th East					
T	<u>59 3283</u>	.0150	.00	2	610	1966	Y	S 2610 E	
				DOMESTIC					
				LDS Church, Corporation of the Presiding				50 East North Temple	
U	<u>59 2564</u>	.0220	.00	3	420	1920	N	S 270 W	
				STOCKWATERING					
				Bothwell and Swaner Company				1756 Sunnyside Avenue	
U	<u>59 2565</u>	.0220	.00	3	420	1920	N	S 375 W	
				Bothwell and Swaner Company				1756 Sunnyside Avenue	
V	<u>59 3660</u>	.0110	.00	Jeremy, Thomas E.				N N 1430 E	
				180 South Main					
V	<u>59 3661</u>	.0110	.00	Jeremy, Thomas E.				N N 1430 E	
				180 South Main					

W 59 3123 .0130 .00 3 1927 N S 210 E  
 WATER USE(S):  
 Bothwell and Swaner Company 1756 Sunnyside Avenue

X 59 5466 .0000 14.00 2 100 - 500 N N 500  
 WATER USE(S): STOCKWATERING  
 Hinckley, David O. 3500 North 2200 West

Y 59 1700 .0250 .00 8 564 1967 Y N 205 W  
 WATER USE(S): IRRIGATION DOMESTIC  
 LDS Church, Corporation of the Presiding c/o Law Department 336 South 3rd

Z 59 3558 .0150 .00 N N 200 E  
 WATER USE(S):  
 Gillmor, Florence J. 1235 East 200 South

Z 59 3559 .0150 .00 N N 200 E  
 WATER USE(S):  
 Gillmor, Florence J. 1235 East 200 South

1

UTAH DIVISION OF WATER RIGHTS  
 NWPLAT POINT OF DIVERSION LOCATION PROG

MAP CHAR	WATER RIGHT	QUANTITY CFS	AND/OR AC-FT	SOURCE DIAMETER	DESCRIPTION or DEPTH	WELL INFO YEAR LOG	POINT NORTH	EA
Z	<u>59 3560</u>	.0150	.00				N N 200 E	
	WATER USE(S): Gillmor, Florence J. 1235 East 200 South							
Z	<u>59 3125</u>	.0200	.00			1900	N N 185 E	
	WATER USE(S): Gillmor, Florence J. 1235 East 200 South							
Z	<u>59 3467</u>	.0200	.00	2		1870	N N 185 E	
	WATER USE(S): STOCKWATERING Gillmor, Florence J. 1235 East 200 South							
Z	<u>59 3468</u>	.0200	.00	2		1870	N N 185 E	
	WATER USE(S): STOCKWATERING Gillmor, Florence J. 1235 East 200 South							
Z	<u>59 3555</u>	.0150	.00				N N 170 E	
	WATER USE(S): Gillmor, Florence J. 1235 East 200 South							
Z	<u>59 3556</u>	.0150	.00				N N 170 E	
	WATER USE(S): Gillmor, Florence J. 1235 East 200 South							
Z	<u>59 3557</u>	.0150	.00				N N 170 E	
	WATER USE(S): Gillmor, Florence J. 1235 East 200 South							
a	<u>59 3667</u>	.0670	.00	2	400		N N 1520 W	
	WATER USE(S): Jeremy, Thomas E. 180 South Main							
a	<u>59 1998</u>	.0670	.00	2	400	1920	N N 1520 W	
	WATER USE(S): Jeremy, Thomas E. 180 South Main							

b	<u>59 391</u>	.0150	.00	3	716	1943	Y	N	975	E
	WATER USE(S): DOMESTIC									
	K.S.L. Incorporated				145 Social Hall Avenue					
c	<u>59 3278</u>	.0150	.00	2	610	1967	Y	S	2683	W
	WATER USE(S):									
	LDS Church, Corporation of the Presiding				50 East North Temple					
d	<u>59 389</u>	.0150	.00	2	449	1943	Y	N	1090	E
	WATER USE(S): STOCKWATERING									
	Bothwell and Swaner Company				1756 Sunnyside Avenue					
e	<u>59 4750</u>	.7100	.00	10	1105		N	S	140	W
	WATER USE(S): OTHER									
	Morton Salt Company				AMF Box 22054					
e	<u>59 1311</u>	.1040	.00	4	1150	1957	Y	S	200	W
	WATER USE(S): DOMESTIC OTHER									
	Morton Salt Company				A.M.F. Box 22054					
e	<u>59 707</u>	.3460	.00	4	760	1949	Y	S	220	W
	WATER USE(S): OTHER									
	Morton Salt Company									
e	<u>59 1264</u>	.2980	.00	6	825	1956	Y	S	285	W
	WATER USE(S): DOMESTIC OTHER									
	Morton Salt Company									

1

UTAH DIVISION OF WATER RIGHTS  
NWPLAT POINT OF DIVERSION LOCATION PROGF

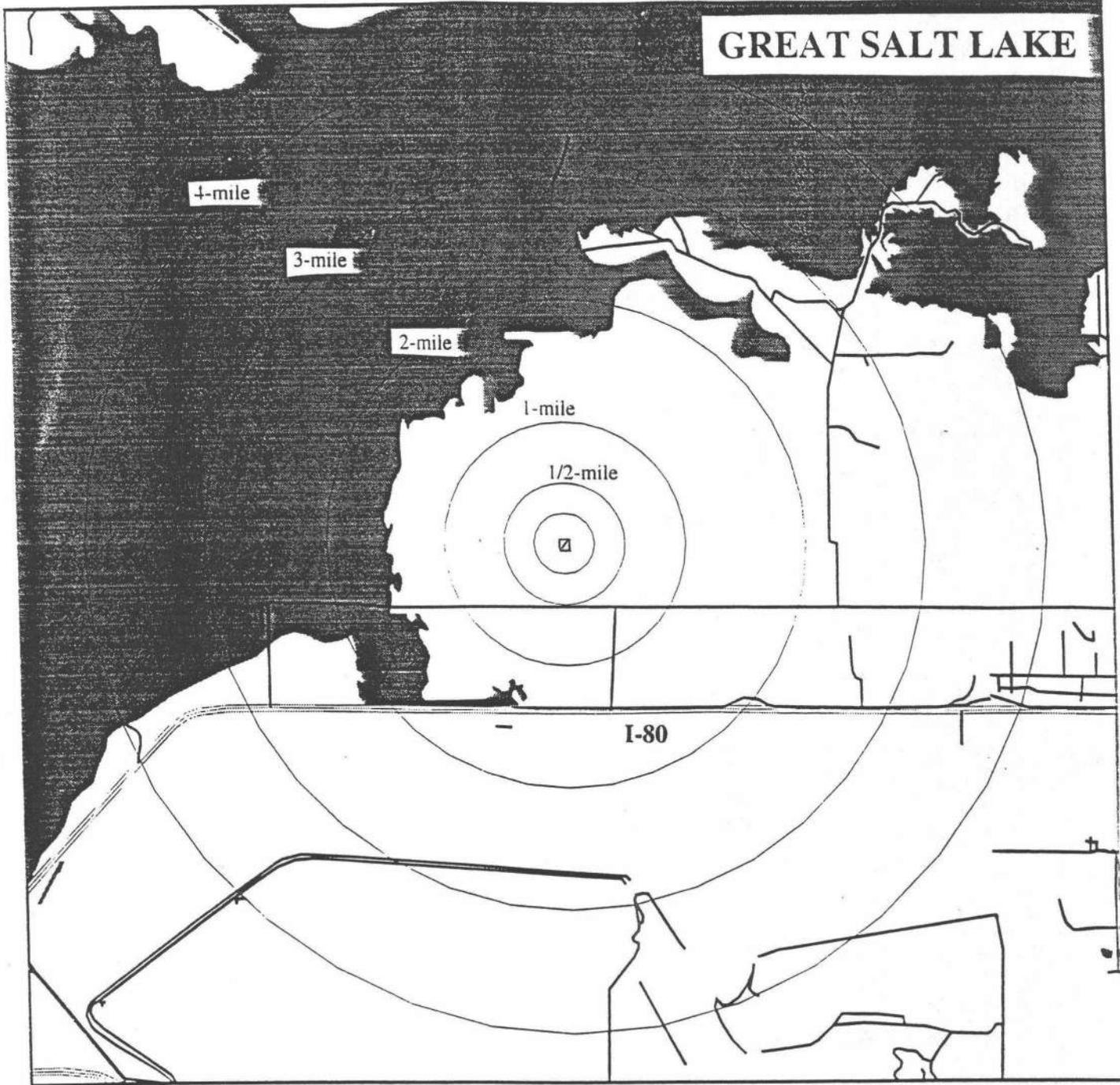
MAP CHAR	WATER RIGHT	QUANTITY CFS	AND/OR AC-FT	SOURCE DESCRIPTION	or WELL INFO	DIAMETER	DEPTH	YEAR LOG	POINT NORTH	EA
e	<u>59 3115</u>	.2160	.00	6		825	1956	Y	S	310 W
	WATER USE(S): OTHER									
	Morton Salt Company				AMF Box 22054					
e	<u>59 2709</u>	.0220	.00	2		345	1915	N	S	395 E
	WATER USE(S):									
	Morton Salt Company				AMF Box 22054					
f	<u>59 3712</u>	.0150	.00						N	S 250 E
	WATER USE(S): STOCKWATERING									
	Bettilyon Joint Venture				333 West 21st South					
g	<u>59 2711</u>	.0380	.00	3		551	1929	N	S	325 E
	WATER USE(S): OTHER									
	Morton Salt Company				AMF Box 22054					
h	<u>59 2688</u>	.0220	.00		Underground Water Well				S	470 W
	WATER USE(S): STOCKWATERING									
	Gossner Investment Company				(C/O Edwin 10th West 10th North					
i	<u>59 3259</u>	.4460	.00	6		290	1961	Y	S	600 W
	WATER USE(S): IRRIGATION DOMESTIC STOCKWATERING									
	Bonneville on the Hill Company				220 Kearns Building					
j	<u>59 1371</u>	.0150	.00	2		420	1958	Y	S	1980 E
	WATER USE(S): STOCKWATERING									
	Gossner Investment Company				71 East Center					

k	<u>59 2928</u>	.1110	.00	2	450	1920	N	S	2850	E
	WATER USE(S): STOCKWATERING									
	Jeremy, Thomas E.				180	South Main				
k	<u>59 3669</u>	.1110	.00	2	450	1920	N	S	2850	E
	WATER USE(S): STOCKWATERING									
	Jeremy, Thomas E.				180	South Main				
l	<u>59 2587</u>	.1110	.00	3	339	1928	N	N	105	W
	WATER USE(S): DOMESTIC									
	KSL Incorporated					Union Pacific Building				
m	<u>t19091</u>	.0000	11583.00			Kennecott C-7 Ditch		S	62	W
	WATER USE(S): OTHER									
	Kennecott Utah Copper Corporation					P.O. Box 6001				
n	<u>59 2202</u>	.1490	.00	3	-	120		N	260	W
	WATER USE(S): OTHER									
	Kennecott Utah Copper Corporation					8315 West 3595 South (P.O. Box 6				
o	<u>59 4715</u>	.1000	.00	8	100	-	500	N	N	100
	WATER USE(S): IRRIGATION DOMESTIC STOCKWATERING OTHER									
	Bland, Terrance R.					524 East 11800 South				
o	<u>a15398</u>	.1000	.00	8	100	-	500		N	100
	WATER USE(S): IRRIGATION STOCKWATERING OTHER									
	Bland, Terrance R.					524 East 11800 South				
p	<u>59 3829</u>	2.0000	.00			Kersey Creek		S	1320	E
	WATER USE(S): IRRIGATION STOCKWATERING OTHER									
	Salt Lake County					P.O. Box 308				

---

**Appendix H**  
**Drinking Water Sources**

# GREAT SALT LAKE



## DRINKING WATER SOURCES SALTAIR GUNNERY RANGE

### Legend

- |  |  |
|--|--|
|  Site         |  City Street      |
|  Water Bodies |  Jeep Road        |
|  Interstate   |  Concentric Radii |
|  US Highway   | Drinking Water Sources   |
|  County Road  |  |

Approximate Scale  
1" = 1.26 Miles



UDEQ  
Division of Environmental  
Response and Remediation

DRINKING WATER WELL REPORT

te: July 25, 1997 2:41 PM



State of Utah

Department of  
Environmental Quality

Dianne R. Nielson, Ph.D.  
*Executive Director*

DIVISION OF ENVIRONMENTAL  
RESPONSE AND REMEDIATION  
Brad T Johnson  
*Director*

Mr. Jerry Vincent  
U.S. Army Engineer District, Sacramento  
Corps of Engineers  
1325 J Street (CESPK-PM-M)  
Sacramento, California 95814-2922

**Subject: Comments on the Salt Lake City Air Base Gunnery Range, J08UT0951, "No Department of Defense Actions Indicated" (NDAI) Report**

Dear Mr. Vincent:

The Utah Department of Environmental Quality, Division of Environmental Response and Remediation has reviewed the above-mentioned document and has provided the attached comments for your review.

If you have any questions please contact me at (801) 536-4164.

Sincerely,

Rik Ombach, Project Scientist  
Division of Environmental Response and Remediation

RO/lc

Enclosure

cc: Jerry Cross, US EPA, Region 8  
Marty Banks, Stoel Rives

 **FILE COPY**

ERRC-010-07

January 11, 2007



## **Comments on the Salt Lake City Air Base Gunnery Range**

1. Section 2, Current Owners: Please change the Epperson Associates LLP to Epperson Associates LLC.
2. Section 2 Current Owners: Please change the Morehouse contact info to “The Richard M. Morehouse and Lynn D. Morehouse Trust.
3. Section 3, Site Description: Please correct the location of the base to 10 miles **West** of Salt Lake City.
4. Section 5, Site Investigations/Current Status: Please include the OEW conclusions in the summary and provide a copy of the report for our office file.
5. Section 6, NDAI Recommendation: Please change the documentation to read: “Given this removal of the lead-contaminated soil and concrete debris, the Site is now recommended for No Further Defense Actions Indicated (NDAI).”



REPLY TO  
ATTENTION OF  
Jerry Vincent  
(CESPK-PM-M)

DEPARTMENT OF THE ARMY  
U.S. ARMY ENGINEER DISTRICT, SACRAMENTO  
CORPS OF ENGINEERS  
1325 J STREET  
SACRAMENTO, CALIFORNIA 95814-2922

RECEIVED

FEB 12 2007

DEQ  
Environmental Response & Remediation

Rik Ombach  
Division of Environmental Response and Remediation  
168 North 1950 West – 1<sup>st</sup> Floor  
Salt Lake City, Utah 84114-4840

19 January 2007

Re: Response to Comments on the Salt Lake City Army Air Base Gunnery Range, J08UT0951, “No Department of Defense Actions Indicated” (NDAI) Report

Dear Mr. Ombach,

The U.S. Army Corp of Engineers (USACE) has reviewed your comments on the Salt Lake City Army Air Base Gunnery Range, J08UT0951, “No Department of Defense Actions Indicated” (NDAI) Report. Attached is the response to comments table. We agree with the comments offered and have made the appropriate textual changes. The revised document is attached along with a CD containing the requested documents.

Should you have any questions please contact me at (916) 557-5379 or email at [gerald.e.vincent@usace.army.mil](mailto:gerald.e.vincent@usace.army.mil).

Sincerely,

Jerry Vincent  
FUDS Program Manager

Enclosures

1. Response to Comments Table
2. Revised Finding of No Department of Defense Actions Indicated – Salt Lake City Army Air Base Gunnery Range, J08UT0951
3. CD containing INPR and ASR reports

**From:** "Banks, Martin K." <MKBANKS@stoel.com>  
**To:** "Rik Ombach" <rombach@utah.gov>  
**Date:** 2/19/2007 4:37 PM  
**Subject:** RE: response to comments

Rik: I and my client have both reviewed it and we don't have any further comments and/or recommendations.

Marty Banks

-----Original Message-----

From: Rik Ombach [mailto:rombach@utah.gov]  
Sent: Tuesday, February 13, 2007 12:01 PM  
To: Banks, Martin K.  
Subject: RE: response to comments

Marty, attached is a pdf of the letter I received. Take a look and let me know what you think.

Thanks, Rik

>>> "Banks, Martin K." <MKBANKS@stoel.com> 2/13/2007 11:08 AM >>>  
I did not get a copy. If you'll send one over I'll get my comments to you. Thanks

-----Original Message-----

From: Rik Ombach [mailto:rombach@utah.gov]  
Sent: Tuesday, February 13, 2007 9:58 AM  
To: Banks, Martin K.  
Subject: response to comments

Marty,

I received a response to our comments from the COE today with all of the requested changes addressed. I did not see that you were cc'd on the letter. Did you get a copy? Should I send one over, or if you did happen to get a copy do you have any concerns?

Thanks, Rik

Rik Ombach, Project Manager  
State of Utah, DEQ, DERR  
168 North 1950 West  
PO Box 144840  
Salt Lake City, Utah 84114  
801-536-4164



State of Utah

Department of  
Environmental Quality

Dianne R. Nielson, Ph.D.  
*Executive Director*

DIVISION OF ENVIRONMENTAL  
RESPONSE AND REMEDIATION  
Brad T Johnson  
*Director*

JON M. HUNTSMAN, JR.  
*Governor*

GARY HERBERT  
*Lieutenant Governor*

ERRC-044-07

February 28, 2007

Mr. Jerry Vincent  
U.S. Army Engineer District, Sacramento  
Corps of Engineers  
1325 J Street (CESPK-PM-M)  
Sacramento, California 95814-2922

**Subject: Salt Lake City Army Air Base Gunnery Range, J08UT0951**

Dear Mr. Vincent:

The Utah Department of Environmental Quality, Division of Environmental Response and Remediation (DERR) has signed the No Defense Action Indicated determination for the above-mentioned site. Based upon our evaluation of current information DERR concurs with the ACOE that an NDAI designation is appropriate for this site. If DERR becomes aware in the future of releases or threatened releases of hazardous substances, hazardous wastes, pollutants, or contaminants at this site, and there is good cause to believe that the contamination is a result of past Department of Defense practices, then we would expect the ACOE to investigate and reevaluate the site as part of its obligation and responsibility under the FUDS program. Additionally, if the ACOE becomes aware of any new or additional information on this site in the future, please provide this information to our office for further review.

If you have any questions please contact me at (801) 536-4164.

Sincerely,

Rik Ombach, Project Scientist  
Division of Environmental Response and Remediation

RO/lfh

Enclosure(s)

cc: Jerry Cross, U.S. Environmental Protection Agency, Region VIII  
Marty Banks, Stoel Rives



REPLY TO  
ATTENTION OF  
Jerry Vincent  
(CESPK-PM-M)

DEPARTMENT OF THE ARMY  
U.S. ARMY ENGINEER DISTRICT, SACRAMENTO  
CORPS OF ENGINEERS  
1325 J STREET  
SACRAMENTO, CALIFORNIA 95814-2922

Rik Ombach  
Division of Environmental Response and Remediation  
168 North 1950 West – 1<sup>st</sup> Floor  
Salt Lake City, Utah 84114-4840

19 January 2007

Re: Response to Comments on the Salt Lake City Army Air Base Gunnery Range, J08UT0951, "No Department of Defense Actions Indicated" (NDAI) Report

Dear Mr. Ombach,

The U.S. Army Corp of Engineers (USACE) has reviewed your comments on the Salt Lake City Army Air Base Gunnery Range, J08UT0951, "No Department of Defense Actions Indicated" (NDAI) Report. Attached is the response to comments table. We agree with the comments offered and have made the appropriate textual changes. The revised document is attached along with a CD containing the requested documents.

Should you have any questions please contact me at (916) 557-5379 or email at [gerald.e.vincent@usace.army.mil](mailto:gerald.e.vincent@usace.army.mil).

Sincerely,

A handwritten signature in cursive script that reads "Jerry Vincent".

Jerry Vincent  
FUDS Program Manager

Enclosures

1. Response to Comments Table
2. Revised Finding of No Department of Defense Actions Indicated – Salt Lake City Army Air Base Gunnery Range, J08UT0951
3. CD containing INPR and ASR reports

**Response to Comments  
on the No Department of Defense Actions Indicated (NDAI) Report, Salt Lake City Army Air Base Gunnery Range**

**Comments by:  
Utah Department of Environmental Quality: Rik Ombach, dated January 11, 2007**

Comment No.	Reviewer/Comment	A-Concur; D-Do Not Concur; E-Exception	Comment Resolution
1	Section 2, Current Owners: Please change the Epperson Associates LLP to Epperson Associates LLC.	A	Text has been changed.
2	Section 2 Current Owners: Please change the Morehouse contact info to "The Richard M. Morehouse and Lynn D. Morehouse Trust.	A	Text has been changed.
3	Section 3, Site Description: Please correct the location of the base to 10 miles West of Salt Lake City.	A	Text has been changed.
4	Section 5, Site Investigations/Current Status: Please include the OEW conclusions in the summary and provide a copy of the report for our office file.	A	The text has been amended to include OEW conclusions from both the Inventory Project Report and the Archives Search Report. Electronic copies of these documents are included on the attached CD.
5	Section 6, NDAI Recommendation: Please change the documentation to read: "Given this removal of the lead-contaminated soil and concrete debris, the Site is now recommended for No Further Defense Actions Indicated (NDAI)."	A	Text has been changed.



State of Utah

Department of  
Environmental Quality

Dianne R. Nielson, Ph.D.  
*Executive Director*

DIVISION OF ENVIRONMENTAL  
RESPONSE AND REMEDIATION  
Brad T Johnson  
*Director*

JON M. HUNTSMAN, JR.  
*Governor*

GARY HERBERT  
*Lieutenant Governor*

ERRC-010-07

January 11, 2007

Mr. Jerry Vincent  
U.S. Army Engineer District, Sacramento  
Corps of Engineers  
1325 J Street (CESPK-PM-M)  
Sacramento, California 95814-2922

**Subject: Comments on the Salt Lake City Air Base Gunnery Range, J08UT0951, "No Department of Defense Actions Indicated" (NDAI) Report**

Dear Mr. Vincent:

The Utah Department of Environmental Quality, Division of Environmental Response and Remediation has reviewed the above-mentioned document and has provided the attached comments for your review.

If you have any questions please contact me at (801) 536-4164.

Sincerely,

Rik Ombach, Project Scientist  
Division of Environmental Response and Remediation

RO/lc

Enclosure

cc: Jerry Cross, US EPA, Region 8  
Marty Banks, Stoel Rives

### **Comments on the Salt Lake City Air Base Gunnery Range**

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REPLY TO  
ATTENTION OF  
Jerry Vincent  
(CESPK-PM-M)

DEPARTMENT OF THE ARMY  
U.S. ARMY ENGINEER DISTRICT, SACRAMENTO  
CORPS OF ENGINEERS  
1325 J STREET  
SACRAMENTO, CALIFORNIA 95814-2922

Ty Howard  
CERCLA Federal Facilities Section  
168 North 1950 West – 1<sup>st</sup> Floor  
Salt Lake City, Utah 84116

10 October 2006

Re: Salt Lake City Army Air Base Gunnery Range, J08UT0951, “No Department of Defense Actions Indicated” (NDAI) Report

Dear Mr. Howard,

USACE is pleased to provide you with a copy of the Salt Lake City Army Air Base Gunnery Range, J08UT0951, “No Department of Defense Actions Indicated” (NDAI) Report.

A total of 6,276.81 acres were acquired between 1943 and 1944 to establish the Salt Lake City Army Air Base Gunnery Range (Site), located 10 miles west of Salt Lake City, Utah. Improvements to the Site included concrete gun placements, latrines and supporting buildings. Training at the Site was conducted from December 1943 to April 1944 as a sub-post to the Salt Lake City Army Air Base, located six miles to the east. Thirteen small-arms ranges were constructed at the Site, including: one skeet range, two moving target (Jeep-type) ranges, five high-tower shotgun ranges, two sub-machine gun ranges, one pistol range, one 200-yard known distance (KD) rifle range, and one Poorman range. Additionally, a building associated with a malfunction range was constructed but the Site was declared surplus on 22 April 1944, prior to completion of the malfunction range.

The Site has been assessed since 1992 for environmental impacts of military operations. In 1997, the Utah Department of Environmental Quality conducted a Preliminary Assessment which concluded that spent munitions remained at the Site from military activities and that hazardous wastes were possibly left at the Site after military activities ceased. In 2004, an investigation was conducted by the USACE, Sacramento District to assess the potential for lead contamination at the Site. Two moving target (Jeep-type) ranges (Ranges 2 and 3) and the five high-tower shotgun ranges (Ranges 4 through 8) were identified as areas of concern. In 2004 and 2006, soil and sediment were sampled and more than 189 tons of soil was excavated from Range 3 where concentrations exceeded the U.S. EPA Residential Preliminary Remediation Goal (PRG) for lead under a residential exposure scenario. Soil at Range 2 and Ranges 4 through 8 was not

Mr. Ty Howard  
Page 2 of 2  
10 October 2006

excavated as soil concentrations did not exceed the U.S. EPA Residential PRG for lead. Concrete pads and pits were removed from the Site and recycled.

The removal of the lead-contaminated soil and concrete debris addressed Department of Defense liabilities remaining at the Site, which is recommended for No Further Defense Actions Indicated (NDAI).

Should you have any questions please contact me at (916) 557-7452 or email at [gerald.e.vincent@usace.army.mil](mailto:gerald.e.vincent@usace.army.mil).

Sincerely,



Jerry Vincent,  
BRAC/FUDS Section Chief  
U.S. Army Corps of Engineers, Sacramento District  
1325 J Street, Sacramento, CA 95814-2922

Enclosures

No Department of Defense Actions Indicated – Salt Lake City Army Air Base  
Gunnery Range, J08UT0951, 5 October 2006

**FINDING OF  
NO DEPARTMENT OF DEFENSE ACTION INDICATED**

**1. SITE NAME:** Salt Lake City Army Air Base Gunnery Range

**FORMERLY USED DEFENSE SITE NUMBER:** J08UT095100

**LOCATION:**

**City:** Salt Lake City

**County:** Salt Lake

**State:** Utah

**2. POINTS OF CONTACT:**

**CURRENT OWNERS:**

The following current owners were determined through personal communication with the Salt Lake County Assessor's Office, <http://www.assessor.slco.org>, (801) 468-3050:

Zions Securities Corporation

Epperson Associates, LLC

The Richard M. Morehouse and Lynn D. Morehouse Trust

Kennecott Utah Copper Corporation

Edward L. Gillmor

Siv J. Gillmor

National Audubon Society, Inc.

Salt Lake City Corporation

Diversified Habitat 1, LLC

Deanna Williams

**STATE OF UTAH:**

Rik Ombach

Utah Department of Environmental Quality

Division of Environmental Response and Remediation

Phone: (801) 536-4164

[rombach@utah.gov](mailto:rombach@utah.gov)

**U.S. ARMY CORPS OF ENGINEERS:**

Gerald Vincent

FUDS Program Manager

U.S. Army Corps of Engineers, Sacramento District

Phone: (916) 557-7452

[Gerald.E.Vincent@usace.army.mil](mailto:Gerald.E.Vincent@usace.army.mil)

3. **SITE DESCRIPTION:**

The former Salt Lake City Army Air Base Gunnery Range (Site) is located 10 miles west of Salt Lake City, Utah at 40° 47' 22.58"N, 112° 5' 40.61"W. This Site is approximately six miles west of the Salt Lake City International Airport terminal in U.S. Environmental Protection Agency (EPA) Region 8 and in Utah's Congressional District 1.

4. **SITE HISTORY:**

Between 1943 and 1944, the War Department acquired a total of 6,276.81 acres for the Salt Lake City Army Air Base as follows: 40.0 acres of public land were acquired by transfer from the Department of the Interior; 6,212.57 acres were acquired by Declaration of Taking or by lease; and 24.24 acres for two easements were acquired by donation. All 6,276.81 acres comprising the Site were declared surplus on April 22, 1944 and disposed: the 40.0 acres of public lands were relinquished to the Department of Interior on January 30, 1950; the 6,212.57 acres were returned to their original owners in May 1944; and the 24.24 acres easements were quitclaimed to the original owners on July 26, 1950. The Site is currently in private ownership. The western portion of the Site is part of the Kennecott Inland Sea Shorebird Reserve. The eastern part of the Site is used by a duck club. The remainder of the Site is used for seasonal cattle grazing.

The Site was established as a sub-post of the Salt Lake City Army Air Base (AAB), located to the east of what is now the Salt Lake City International Airport. Training at the Site for new personnel of the 18<sup>th</sup> Replacement Wing of the Second Air Force was conducted over a four-month period from December 1943 to April 1944. The Site included the following 13 small-arms training ranges:

- One skeet range;
- Two moving target (Jeep-type) ranges;
- Five high tower shotgun turret ranges;
- Two sub-machine gun ranges;
- One pistol range;
- One 200-yard known distance (KD) rifle range; and
- One Poorman range.

Construction and use of a 14<sup>th</sup> range, a malfunction range, was not likely completed although a building for the malfunction range was completed. Improvements made to the Site included concrete gun placements, supporting buildings, and latrines. No records were found of the frequency of use of the ranges or the amount of ammunition used.

5. **SITE INVESTIGATIONS / CURRENT STATUS:**

In 1992, an Inventory Project Report prepared for the US Army Corps of Engineers (USACE), Sacramento District, recommended an ordnance and explosives waste (OEW) project but referred the site to USACE, Huntsville District, for evaluation and determination of further action. The results of this evaluation were documented in the Archive Search Report, September 2004. The report concluded that expended small arms ammunition was present on the surface and that no chemical warfare materials were used on site. Project closeout for OEW was recommended. A Preliminary Assessment prepared in 1997 by the Utah Department of Environmental Quality, Division of

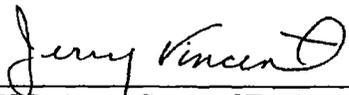
Environmental Response and Remediation (UDEQ/UDERR) concluded that spent munitions were present at the Site. A 2001 UDEQ/UDERR Site Inspection included the collection of seven soil samples. One sample exceeded the U.S. Environmental Protection Agency (EPA) Residential Preliminary Remediation Goal (PRG) for lead.

Two moving target (Jeep-type) ranges (Ranges 2 and 3) and the five high-tower shotgun ranges (Ranges 4 through 8) were identified as areas of concern and in 2004 were sampled by USACE, Sacramento District to assess the potential for lead contamination in soil. In soil from Range 2 and Ranges 4 through 8, lead did not exceed the Residential PRG. Soil at Range 3 which exceeded the Residential PRG for lead was excavated, and confirmation sampling was conducted to ensure that remaining soil had levels of lead below the Residential PRG. Over 189 tons of soil were excavated from Range 3. The excavated soil was disposed off-site as non-hazardous material. Concrete pads and pits were removed from the Site and recycled. Depressions left by the removal were backfilled.

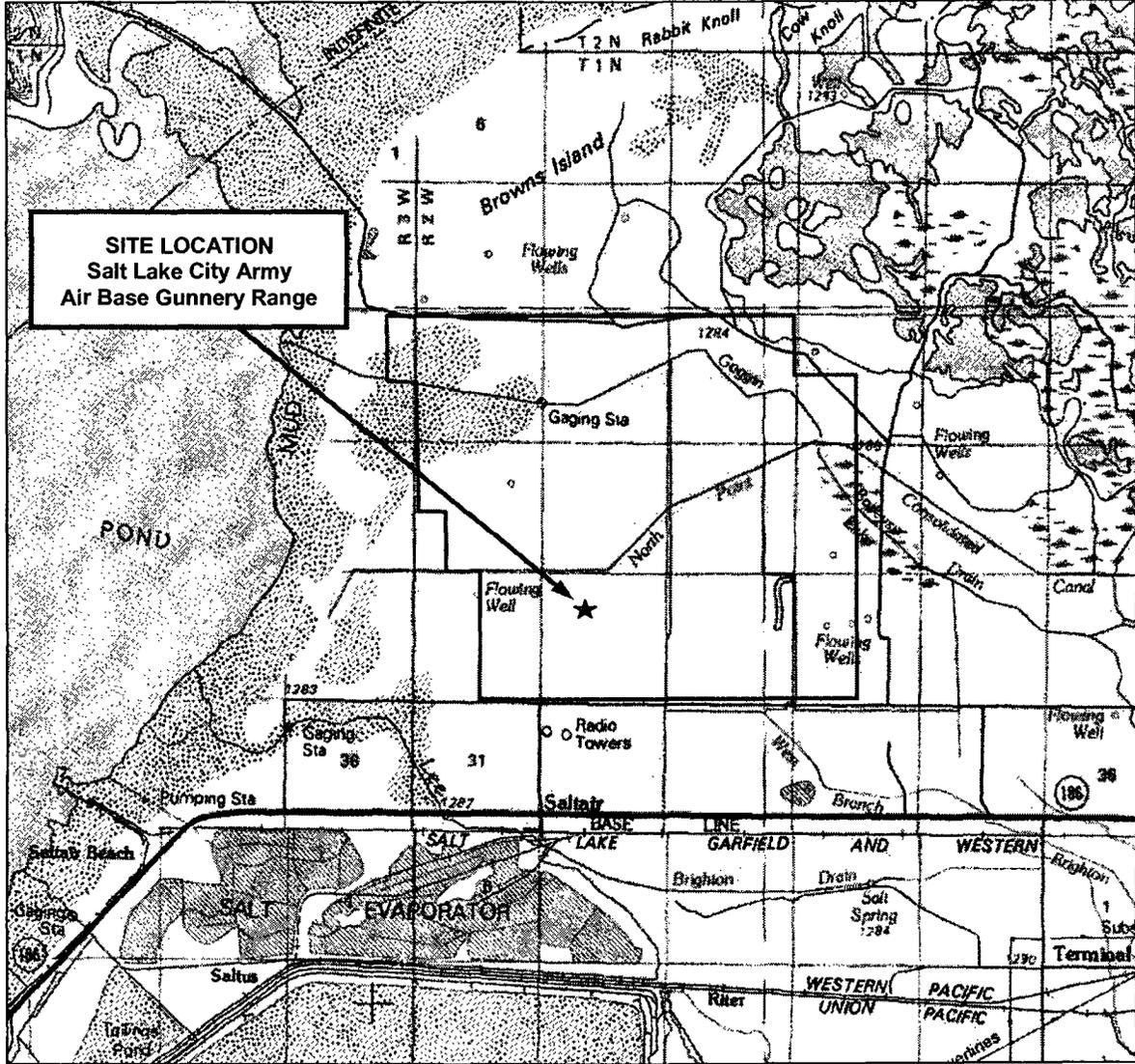
**6. NDAI RECOMMENDATION:**

Given this removal of the lead-contaminated soil and concrete debris, the Site is now recommended for No Further Defense Actions Indicated (NDAI).

**7. NDAI CONCURRENCE:**

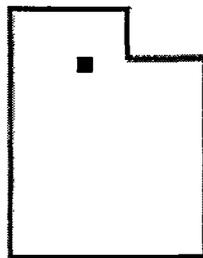
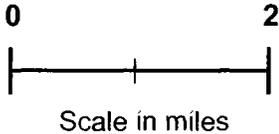
  
\_\_\_\_\_  
U.S. Army Corps of Engineers  
Sacramento District

  
\_\_\_\_\_  
Utah Department of Environmental Quality,  
State of Utah



USGS 30x60 Minute Quadrangle, Tooele, Utah 1979

★ Latitude - N 40° 47' 20"N  
 Longitude - W 112° 05' 40"  
 Elevation - 4,219 ft.



Quadrangle Location

**SITE LOCATION**  
 Salt Lake City Army  
 Air Base Gunnery Range  
 J08UT095100  
 Salt Lake County, UT

PROJECT NO.

01-06-01-010

DRAWN BY  
 RK

CHECKED BY  
 MFH

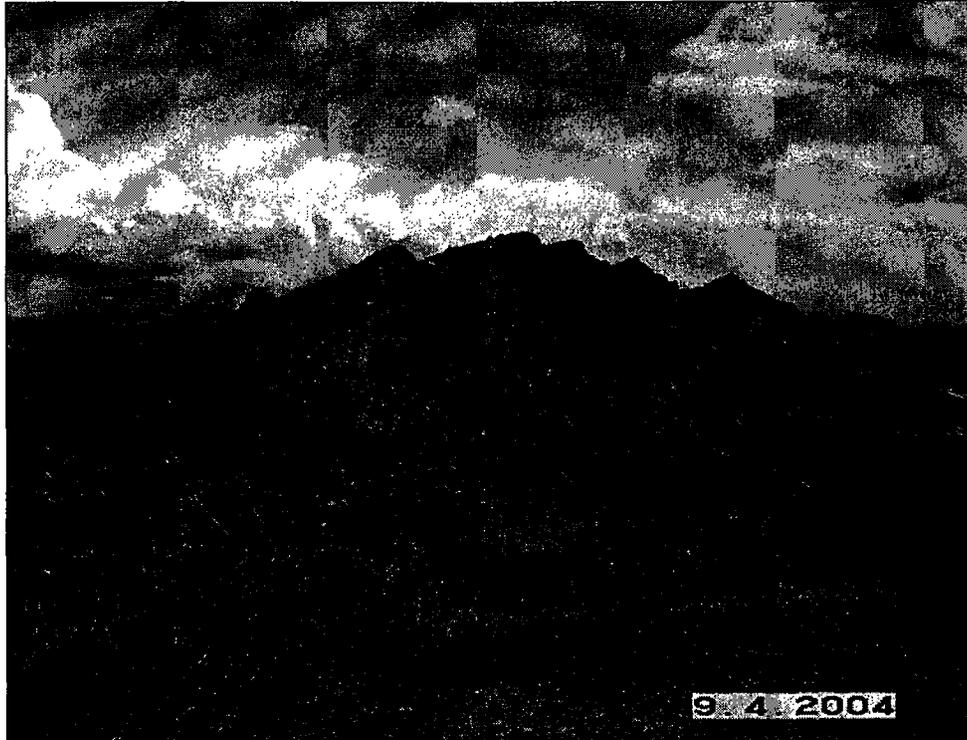
DATE  
 9/15/2006



Photograph No. 1 – Range 3 embankment, pre-excavation, September 2004  
(Note: All photographs are from *Investigation and Closure Report, Salt Lake City Army Air Base Gunnery Range, Final Draft, FUDS Site No. J08UT095100, USACE, April 2005, Amended June 2006*).



Photograph No. 2 – Range 3, following excavation, September 2004.



Photograph No. 3 – Stockpiled soil excavated from Range 3, September 2004.



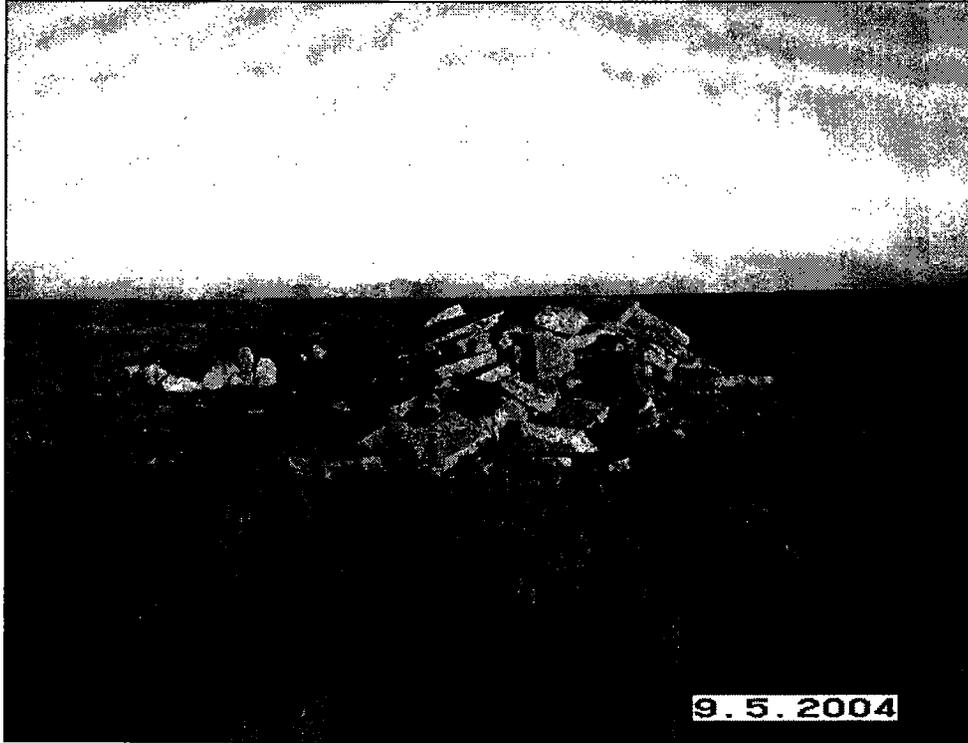
Photograph No. 4 – Ranges 4 through 8, concrete footings to be removed, September 2004.



Photograph No. 5 – Ranges 4 through 8, excavated footings, September 2004.



Photograph No. 6 – Ranges 4 through 8, concrete removal, September 2004.



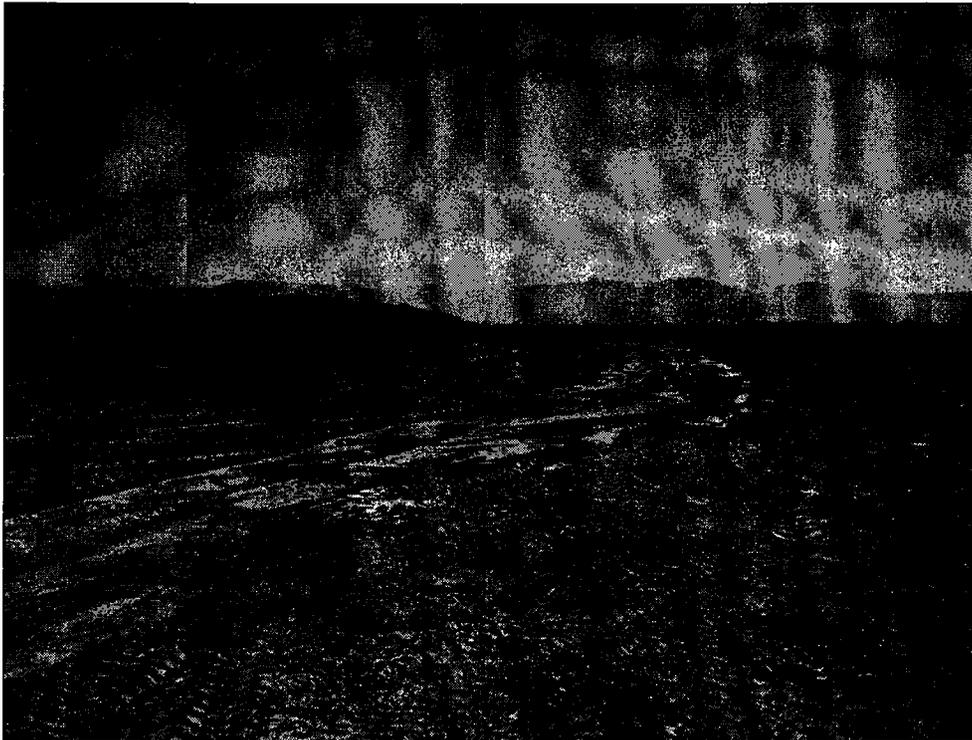
Photograph No. 7 – Stockpiled concrete, September 2004.



Photograph No. 8 – Removal of soil in front of embankment, Range 3, May 2006.



Photograph No. 9 – Range 3, excavation and stockpile, May 2006.



Photograph No. 10 – Completed backfill of excavated area, Range 3, May 2006.

**Worksheet B-3. Inventory Project Report (INPR) Checklist**

<b>Checklist Preparer:</b>		Date: 21 September 2006	
Name: Matt Hagemann		Time: 11:00	
District: First Congressional District		Phone Number: (949) 887-9013	
E-mail address: mhagemann@swape.com			
<b>Property information:</b>			
Property Name: Salt Lake City Army Air Base Gunnery		Property #: J08UT095100	
Previous Names, if any:			
Former Service: United States Army			
Property Location (Section, Township, Range): Site encompasses land in Sections 15-22 and 27-30, Township 1 North, Range 2 West, and a portion of Section 13, Township 1 North, Range 3 West (Salt Lake Baseline and Meridian)			
Street: Approximately 6 miles west of Salt Lake City Airport, Salt Lake City, Utah.			
City: Salt Lake City		County: Salt Lake	State: UT
Latitude (D/M/S/): 40°47'29.54"N		Longitude (D/M/S/): 112° 5'46.19"W	
Current Use: Nature reserve and cattle grazing			
<b>Primary Property Owner Information:</b>			
Name: Various private landowners			
Address:			
Street:			
City:			
Phone Number:		County:	State:

Indicate the status of the following checklist items in determining the completeness of the INPR. Provide a narrative in the comments section below to explain, and keyed to, the shaded boxes checked:

Yes	No	NA
-----	----	----

**I. Property Search**

	Were the following records available and used in the preparation of the INPR?	Yes	No	NA
1	Archive records	✓		
2	Site maps, including facility as-built drawings	✓		
3	Aerial or ground photographs	✓		
4	Prior studies, documents, reports, property contamination records, or public/private sampling data	✓		
5	Compliance orders issued to current or past owners/operators		✓	
6	Real estate records, deeds, or property transfer records	✓		
7	Local historical societies and public libraries	✓		
8	EPA/State environmental records or reports	✓		
9	EOD (Explosive Ordnance Disposal) incident reports	✓		
10	Other documentation	✓		

Indicate the status of the following checklist items in determining the completeness of the INPR. Provide a narrative in the comments section below to explain, and keyed to, the shaded boxes checked:

		Yes	No	NA
	Indicate whether the following have been contacted and interviewed to obtain information			
11	Current landowner(s)	✓		
12	Neighbors	✓		
13	Previous landowner(s)	✓		
14	Prior employee(s)	✓		
15	Federal agencies, including regulatory agencies	✓		
16	State agencies, including regulatory agencies	✓		
17	Local agencies, including regulatory and law enforcement agencies	✓		
18	Other available sources	✓		

## II. Property Visit

19	Was access to the property possible (right of entry provided by landowner)?	✓		
20	Was the property physically visited?	✓		
21	Was access sufficient to allow for a thorough property inspection?	✓		
22	Was access sufficient to identify potential hazards?	✓		
23	Did regulatory agencies accompany USACE on the property visit?	✓		
24	Did the landowner accompany USACE on the property visit?	✓		
25	Was there evidence of a release of hazardous material or use/disposal of military munitions during DoD control?			✓
26	Was there evidence of a release of potential DoD hazardous material into a public or private drinking water supply?			✓
27	Is there evidence of a release into public or private drinking water supply due to deterioration of the system through ordinary use?			✓
28	Is there evidence of a release from products that are part of the structure of, and result in exposure with in, residential buildings or businesses or community structures?			✓
29	Is some other program actively involved with the property (i.e., another Federal, state, tribal program)?			✓
30	Is there evidence that activities by non-DoD parties at the property may be the source of potential contamination?			✓
31	Was information on hazards found at similar types of FUDS properties considered in identifying potential hazards at this property?	✓		
32	Were site maps compared to actual conditions during the site visit?	✓		
33	Were photographs taken?	✓		
34	Were property owners advised to contact USACE if evidence of potential hazards is found later?	✓		
35	Was a trip report of the property visit prepared?	✓		

<sup>2</sup> This can be determined by reviewing public water supply sampling data. Provide discussion of how it was determined to be release due to DoD activities rather than by current or past owners/operators.

<sup>3</sup> This question is from the EPA Pre-CERCLIS Screening Assessment Checklist/Decision Form, EPA-540-F-98-039 "Improving Site Assessment: Pre-CERCLIS Screening Assessments."

Indicate the status of the following checklist items in determining the completeness of the INPR. Provide a narrative in the comments section below to explain, and keyed to, the shaded boxes checked:

Yes	No	NA
-----	----	----

**III. Property Eligibility Determination (refer to Chapter3)**

		Yes	No	NA
36	Is the property Categorically Excluded?		✓	
37	Are there release, hold harmless, “as-is”, or indemnification clauses in deeds or property transfer documents that limit DoD liability?		✓	
38	Is there evidence of this property being a Third Party Site?		✓	
39	Is the property eligible under FUDS?	✓		
40	If necessary, has a “ <b>Categorical Exclusion or Ineligible Property</b> ” worksheet been prepared (Worksheet B-1)?			✓
41	Was a CERCLA Preliminary Assessment completed?		✓	
42	Was a RAC Worksheet prepared for the property?	✓		
43	Have all typical hazards been investigated for possible occurrence at this type of property?	✓		
44	Were hazards identified?	✓		
45	Are identified hazards of DoD origin?	✓		
46	If identified hazards were of DoD origin, has the lead regulatory agency been informed? (Provide name, phone number, date)	✓		
47	Is the current owner under a RCRA or CERCLA clean-up order?		✓	
48	Has the “right of first refusal” been exercised by an adjacent DoD installation?			✓
49	Is there evidence of beneficial use?		✓	
50	Are there other policy considerations against recommending a project?		✓	
51	Are eligible FUDS projects recommended? (If yes, identify projects below)		✓	

**IV. INPR Preparation and Review**

		Yes	No	NA
52	Is the INPR prepared consistent with INPR Content Matrix (Table B-2)?			
53	Is the INPR Property Survey Summary Sheet consistent with Table B-3?			
54	Is the Project Summary Sheet(s) consistent with Table B-4?			
55	If appropriate, has a “ <b>BD/DR Project Summary Sheet Checklist</b> ” been prepared? (See Worksheet B-2)			
56	If the INPR recommends a PRP/HTRW project, has the PRP District reviewed the INPR? (See Figure B-1)			
57	If the INPR recommends a PRP/HTRW project, has the HTRW Center of Expertise reviewed the INPR? (See Figure B-1)			
58	If the INPR recommends a MMRP or PRP/MMRP project, has the MM Center of Expertise reviewed the INPR? (See Figure B-1)			
59	Was the draft INPR coordinated with Office of Counsel and Real Estate?			
60	Was the draft INPR shared with the Lead Regulatory Agency after internal USACE review?			

**Narrative comments to explain above notations** (Comments are keyed to the checklist item number):

- 41. A CERCLA PA was not completed.
- 44. Potential hazards associated with lead in soil at the Site were identified.
- 45. Identified hazards were attributed to use of the Site as a gunnery range.
- 46. The Utah Department of Environmental Quality reviewed and commented on the soil removal Work Plan and was onsite for soil excavation in 2006.
- 51. Eligible projects have been completed at the Site.

## RESEARCH MEMORANDUM

Date: 21 September 2006  
To: File  
From: Matt Hagemann  
Subject: Salt Lake City Army Air Base Gunnery Range, Site No. J08UT095100  
Contract: ENV-00F-01; Work Order 9

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This memorandum provides a review of the operations of the Salt Lake City Army Air Base (AAB) Gunnery Range, Formerly Used Defense Site (Site No. J08UT095100), in Salt Lake County, Utah (Site) and of removal actions undertaken in September 2004 and May 2006 by the U.S. Army Corps of Engineers (USACE) to address remaining Department of Defense (DOD) liabilities: the presence of concrete debris and areas where concentrations of lead in soil exceeded the U.S. Environmental Protection Agency (EPA) screening level. This memorandum is based on a comprehensive review of Site documentation, including a 1992 Inventory Project Report (1), a 2004 Archives Search Report (2), and a 2005 Investigation and Closure Report (3).

From December 1943 to April 1944, training was conducted at the Site in conjunction with operations at the Salt Lake City AAB. Thirteen small-arms ranges were constructed at the Site: one skeet range, two moving target (Jeep-type) ranges, five high-tower shotgun turret ranges, two sub-machine gun ranges, one pistol range, one 200-yard known distance (KD) rifle range, and one Poorman range. Additionally, a building associated with a malfunction range was constructed, but the range itself does not appear to have been put in service before the Site was declared surplus on 22 April 1944. Improvements made to the Site included concrete gun placements, supporting buildings, and latrines. The Site is currently under private ownership.

In 2004 and 2006, the Site was the focus of soil sampling and excavation and concrete debris removal. Soil was excavated where lead concentrations exceeded the U.S. EPA Residential Preliminary Remediation Goal (PRG) and was disposed offsite as non-hazardous material. Concrete pads and pits were removed from the Site and recycled. The removal of the lead-contaminated soil and concrete debris addressed remaining Department of Defense liabilities and the Site is recommended for No Further Defense Actions Indicated (NDAI).

### SITE LOCATION

The Site is located 10 miles west of Salt Lake City and approximately six miles west of the Salt Lake City International Airport terminal at 40° 47' 22.58"N, 112° 5' 40.61"W. The Site encompasses land in Sections 15 through 22 and 27 through 30, Township 1 North, Range 2 West, and a small portion of Section 13, Township 1 North, Range 3 West (Salt Lake Baseline

and Meridian). It is within the boundaries of U.S. EPA Region 8 and Utah's First Congressional District. The area is sparsely populated with light industry and a hotel located two miles east of the Site (2).

## **BACKGROUND INFORMATION**

### **Acquisition**

A total of 6,276.81 acres were acquired by the War Department between 1943 and 1944 (1, 2):

- 40.0 acres of public land by informal permission from the Department of the Interior;
- 6,212.57 acres from private landowners by lease or by Declaration of Taking; and
- 24.24 acres by donation from private owners and the County of Salt Lake for two easements to provide an access road at the south boundary of the Site.<sup>1</sup>

### **Disposal**

A total of 6,276.81 acres comprising the Site were declared surplus on 22 April 1944 and were disposed by the War Assets Administration: 40.0 acres of public lands were relinquished to the Department of Interior on 20 January 1950; the 6,212.57 acres were returned to their original owners in May 1944; and the 24.24-acre easements were quitclaimed and deeded to the original owners on 26 July 1950 (2).

## **OPERATIONS HISTORY**

The Site was established as a component of the Salt Lake City AAB, which was located six miles to the east and adjacent to what is now known as Salt Lake City International Airport. The 18th Replacement Wing was stationed at Salt Lake City AAB from 23 June 1942 to 11 April 1944 and was charged with receiving, classifying, and dispatching personnel entering the Second Air Force. Trainees used the Site for training in the use of small arms for approximately four months, from December 1941 until April 1944 (2). It is not known how many personnel trained at these ranges, nor were records found on how much ammunition was fired on a daily, weekly or monthly basis.

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<sup>1</sup> Documents attached to the 2004 Archives Search Report (2) and reviewed in preparation of this Research Memorandum inconsistently cite the number of acres acquired and the means of acquisition. A letter from the War Department to the Commanding General at the Salt Lake Army Air Base, dated 4 October 1943, states "Condemnation proceedings were filed on 2 October 1943 for the acquisition of 6,240 acres of land in Salt Lake County, State of Utah, for use in connection with the Salt Lake Army Air Base, Utah" (Archives Search Report, Appendix E, p. E-71). Upon disposal, a War Department Report of Excess Property dated 3 April 1944 states that 5,373.095 acres were declared excess and returned to their owners (Archives Search Report, Appendix E, p. E-99). In addition to the 4 October 1943 letter which references condemnation proceedings, a letter dated 20 April 1944 makes reference to a Declaration of Taking to establish the Site (Archives Search Report, Appendix E, p. E-108). However, a Project Ownership Map dated 7 December 1948 states that land for the Site was acquired by lease (Archives Search Report, Appendix G, Map G-2).

The Site included 14 ground-to-ground small-arms ranges as shown in Figure 1. No evidence was found of chemical warfare training activities associated with the Site (2).

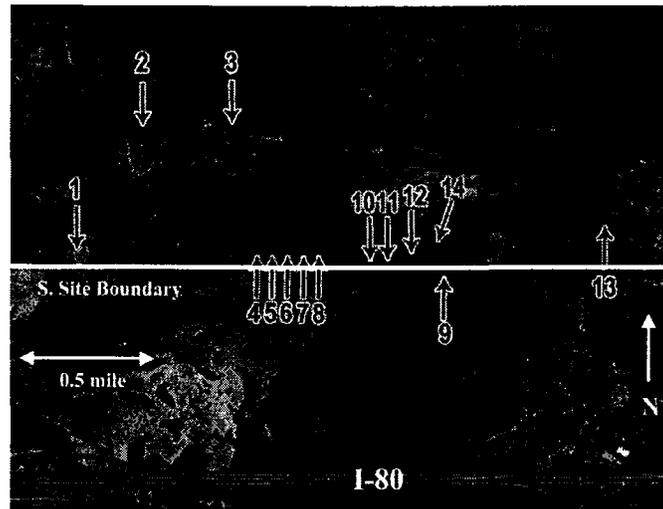


Figure 1. Range locations.  
(Aerial photograph: Google Earth, December 2005)

- Range 1 Skeet Range (Three Position)
- Ranges 2-3 Moving Target (Jeep-Type) Ranges
- Ranges 4-8 High-Tower Shotgun Turret Ranges
- Range 9 Malfunction Range Building
- Ranges 10-11 Sub-Machine Gun Ranges
- Range 12 Pistol Range
- Range 13 200-Yard Known Distance (KD) Rifle Range
- Range 14 Poorman Range

A building associated with a malfunction range has been identified; however, use of the range was not likely before the Site was declared excess in 1944. The Poorman range was also not likely used before training ceased at the Site. Authorization to construct the Poorman range was given on 22 January 1944 and support structures for this range were transferred on 29 March 1944. Since the Site was declared surplus three weeks later, it is unlikely that the range was put into service (2).

The ranges were arranged along firing lines that ran east-west for about two miles about 300 feet north of the southern Site boundary (Figure 2). The firing lines were established with a northerly direction of fire with a maximum firing height of 25 feet. Since the ranges were used only for ground-to-ground training and the trainees fired horizontally, the operations did not require approval of the Interdepartmental Air Traffic Control Board (2). Range fans for Ranges 2 and 3 were mapped to extend 1.5 miles north of the northern Site boundary (3). Range fans for all other ranges were mapped within the Site boundaries.

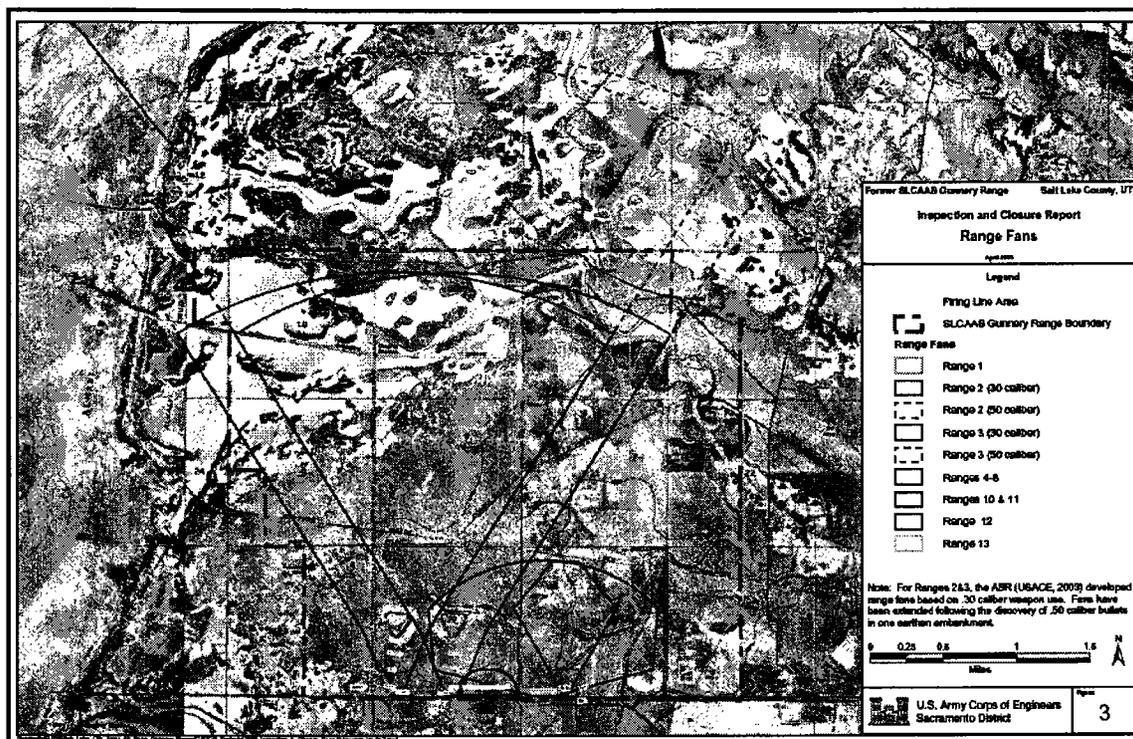


Figure 2. Range locations and fans (3).

According to the Salt Lake County Assessor's Office, the entire Site is currently owned by private landowners, including: Zions Securities Corporation, Epperson Associates, Mr. and Mrs. Morehouse, the National Audubon Society, Mr. Gillmor, Mrs. Gillmor, Salt Lake City Corporation, Diversified Habitat 1, Ms. Williams, and Kennecott Utah Copper Company which owns and manages the Inland Sea Shorebird Reserve on the western portion of the Site (4). A portion of the Site was leased by private landowners to the DuPont Company and the Atlas Powder Company in the 1970s and 1980s to store mining explosives (1). Since that time the land has been intermittently used for cattle grazing.

A Risk Assessment Code (RAC) of 5 was calculated for the Site by the USACE, Huntsville Center Technology Advisory Group on 17 August 2004 (2). A RAC 5 indicates that there is no evidence of a hazard associated with Ordnance and Explosives (OE), and that no further action is needed.

## SITE ASSESSMENT HISTORY

### Inventory Project Report

A July 1992 Inventory Project Report (INPR) prepared for the USACE, Sacramento District by Dynamac Corporation determined that the Site was eligible as a Formerly Used Defense Site (FUDS) and recommended an ordnance and explosives waste (OEW) project (1). The Site visit conducted in preparation of the INPR identified improvements remaining at the Site:

- Concrete foundations for approximately fifty to sixty gun mounts in three separate shooting ranges;
- Building foundations near each of three shooting ranges;

- Foundations possibly used for pit latrines; and
- Two triangular earthen embankments, approximately 900 feet in length and up to 10 feet in height associated with the moving target (Jeep-type) ranges.

### **State of Utah Preliminary Assessment and Site Inspection**

In 1997, the Utah Division of Environmental Response and Remediation (UDERR) of the Utah Department of Environmental Quality (UDEQ) conducted a Preliminary Assessment (PA) which concluded that spent munitions remained at the Site from military activities and that hazardous wastes were possibly left at the Site after military activities ceased (3). The report outlined potential exposure scenarios but recognized that there were few persons in the area to serve as receptors and no drinking water sources were located within four miles of the Site.

A Site Inspection (SI) conducted by UDERR in 2001 included the collection of nine surface soil samples and two sediment samples in the vicinity of the earthen embankments associated with Ranges 2 and 3. Samples were analyzed for metals and levels were compared to a background sample and U.S. EPA Region 9 Residential Preliminary Remediation Goals (PRGs). Although seven metals were found in surface soils at levels three or more times background, only one sample in the area of Range 3, the eastern range of the two moving target (Jeep-type) ranges, detected lead at a concentration which exceeded the Residential PRGs. Based on these observations and the observation that concentrations of lead and other metals in two sediment samples did not exceed the background level, it was concluded that the surrounding wetland and drainage had not been impacted by Site activities, and that elevated concentrations of metals were localized in the areas of the embankments. Although this investigation confirmed a potential soil exposure pathway, the pathway is incomplete because no residents live onsite and no workers are onsite on a regular basis.

An area where .50-caliber bullets with a density of 15 bullets per square yard was observed in Range 3. This range was assessed in a May 2004 investigation for lead contamination of soil as described below. No other areas were identified at the Site where bullets were observed at this density.

### **Archives Search Report**

A September 2004 Archives Search Report (2) prepared by the USACE, St. Louis District included the following findings:

- The Site was used for less than six months;
- 14 ranges including a malfunction range building were constructed; and
- No evidence was found of chemical warfare training activities associated with the Site.

A Risk Assessment Code (RAC) of 5 was calculated for the Site by the USACE, Huntsville Center Technology Advisory Group, on 17 August 2004 (2). A RAC 5 indicates that there is no evidence of a hazard associated with Ordnance and Explosives (OE), and that no further action is needed.

## SOIL SAMPLING AND REMOVAL ACTIONS

The *Site Inspection Work Plan Salt Lake City Army Air Base Gunnery Range, May 2004, and Addendum, September 2004*, prepared by USACE, Sacramento District evaluated all 13 ranges and the malfunction range building at the Site for the potential presence of lead contamination in soil and sediment (5). The objective of the investigation was to determine whether soil at the Site had been adversely impacted by historic DOD activities, and to determine whether further evaluation or removal actions were necessary. The Work Plan included a review of training activities at the Site and established procedures for sampling that was conducted in May, June and September 2004 and March 2006 (3). After evaluation of the ranges and associated range fans, the May 2004 Work Plan identified Ranges 2 through 8 as areas of concern and areas where soil was to be sampled for the presence of lead.

Soil sampling was conducted in Ranges 2 through 8 in May and June of 2004. In accordance with the Work Plan, sample collection procedures included the establishment of grids approximately 10 feet x 20 feet in size, with 12 individual samples collected from each grid over a depth of 0 to 0.5 feet. Individual samples were mixed or composited prior to shipment to the analytical laboratory.

The soil collected in May 2004 was found to exceed the U.S. EPA Residential PRG for lead of 400 mg/kg only in seven grids in Range 3, the eastern range of the two moving target (Jeep-type) ranges (Figure 1). Soil sampled at Range 2, and Ranges 4 through 8 did not exceed the Residential PRG for lead and these areas were recommended for NDAI (No Department of Defense Action Indicated).

The September 2004 Addendum to the Work Plan was submitted to describe excavation of soil with lead detected at concentrations above the Residential PRG at Range 3, and to describe confirmation sampling. Soil that exceeded the PRG was excavated in September 2004 to a depth of 1.5 to 3.5 feet below ground surface and stockpiled (5).

Confirmation sampling and additional excavation was conducted in May and September 2004 to ensure that all soil was removed where concentrations exceeded the U.S. EPA Residential PRG. Specific areas of the excavation were backfilled. Based on the results of confirmation sampling, which showed that that lead concentrations did not exceed the Residential PRG of 400 mg/kg in areas where soil had been excavated, Range 3 was recommended for NDAI.

On 1 October 2004, 189 tons of stockpiled soil were transported for disposal as non-hazardous material. A miscommunication during the 2004 operations resulted in some lead-contaminated soil being left at the Site. This soil was removed on 22 May 2006, when an additional two truckloads of soil were transported from the Site for disposal as non-hazardous material (3).

On 4 and 5 September 2004, concrete debris was excavated at the Site:

- One pit from Range 2;
- Two pits from Range 3;
- 30 gun emplacements, approximately 15 feet x 15 feet in size, from Ranges 4 through 8;

- Three concrete pads with metal protrusions at Ranges 4 through 8; and
- Pieces of concrete south of Range 2 which were removed at the request of the property owner.

On 9 and 10 September 2004, 125 cubic yards of concrete debris were removed from the Site and recycled as non-hazardous waste. The depressions left by the concrete removal in Ranges 4 through 8 were filled with road base and with soil from the berm at Range 2, the western range of the two moving target (Jeep-type) ranges.

Removal actions are described, with photographs in the *Investigation and Closure Report April 2005*, prepared by USACE, Sacramento District. This report recommends an NDAI finding for the entire Site including Ranges 2 through 8 as addressed by the soil excavation and concrete removal, and the other ranges originally located at the Site and as evaluated in the May 2004 Work Plan (5).

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## **Appendix D: Topographic Maps**



**Utah State Prison Relocation Site West**

2698 North 8800 West

Magna, UT 84044

Inquiry Number: 4444864.4

October 22, 2015



6 Armstrong Road, 4th Floor  
Shelton, Connecticut 06484  
Toll Free: 800.352.0050  
[www.edrnet.com](http://www.edrnet.com)

# EDR Historical Topographic Map Report

Environmental Data Resources, Inc.s (EDR) Historical Topographic Map Report is designed to assist professionals in evaluating potential liability on a target property resulting from past activities. EDRs Historical Topographic Map Report includes a search of a collection of public and private color historical topographic maps, dating back to the early 1900s.

***Thank you for your business.***  
Please contact EDR at 1-800-352-0050  
with any questions or comments.

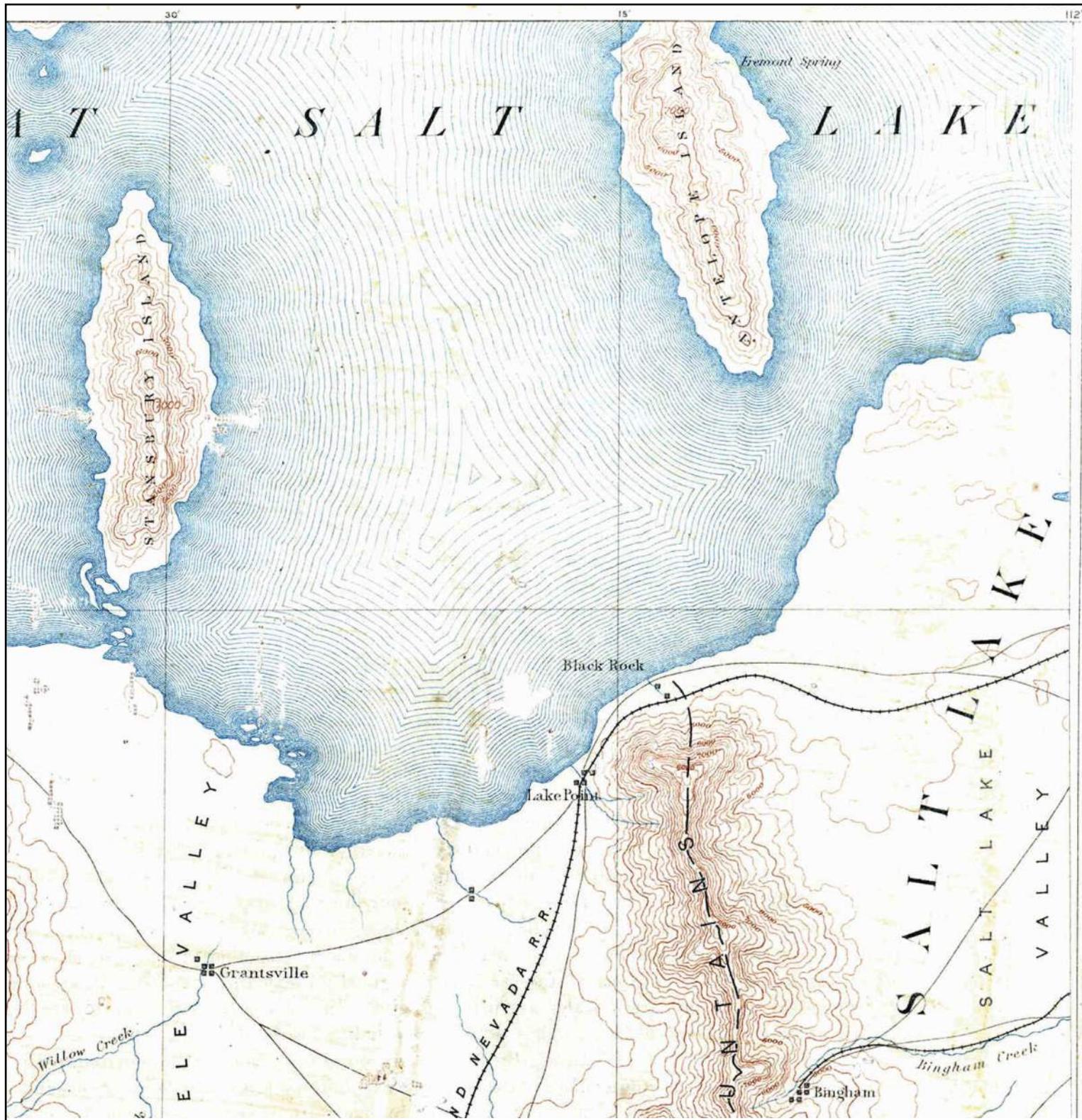
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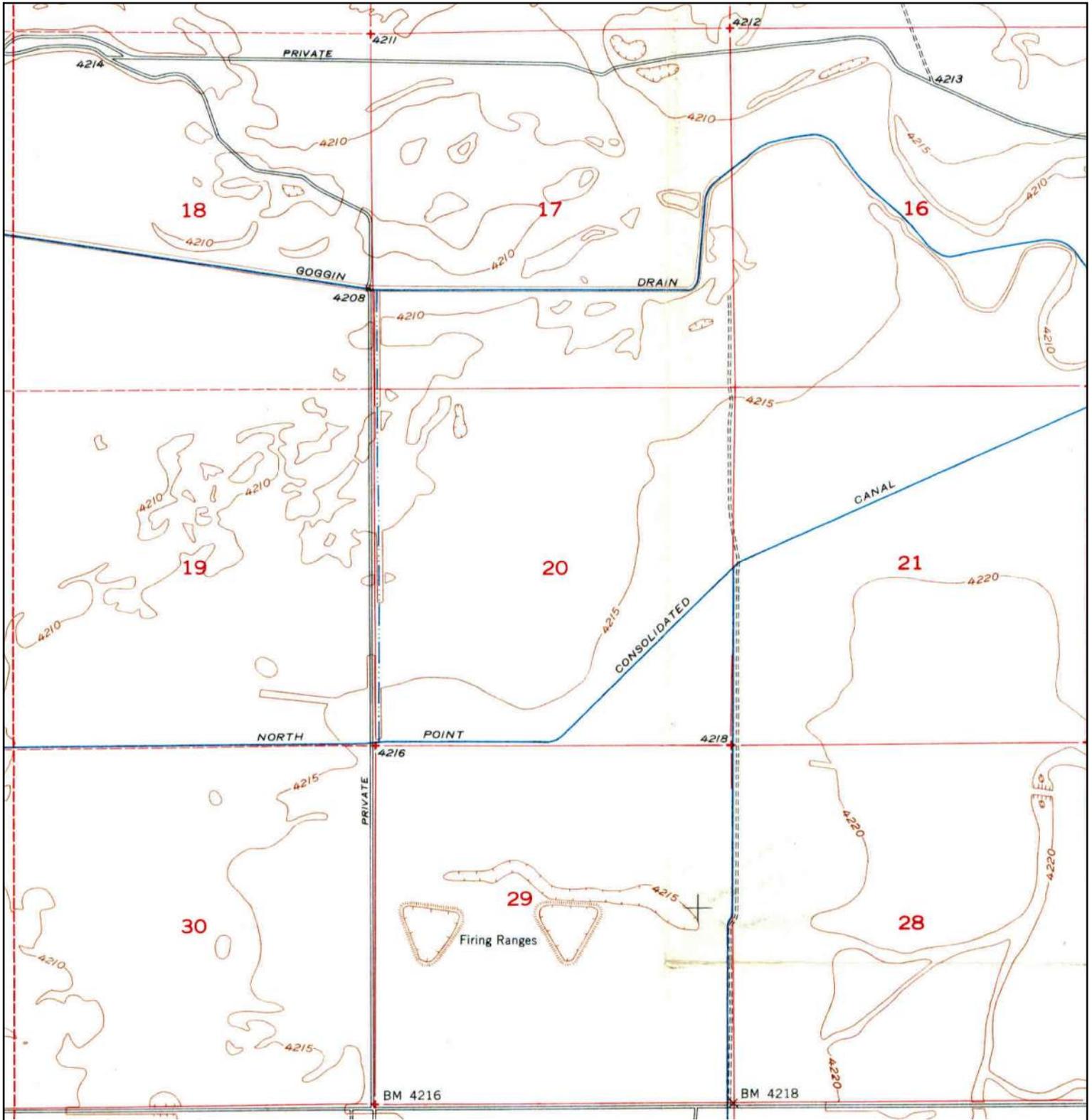
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# Historical Topographic Map



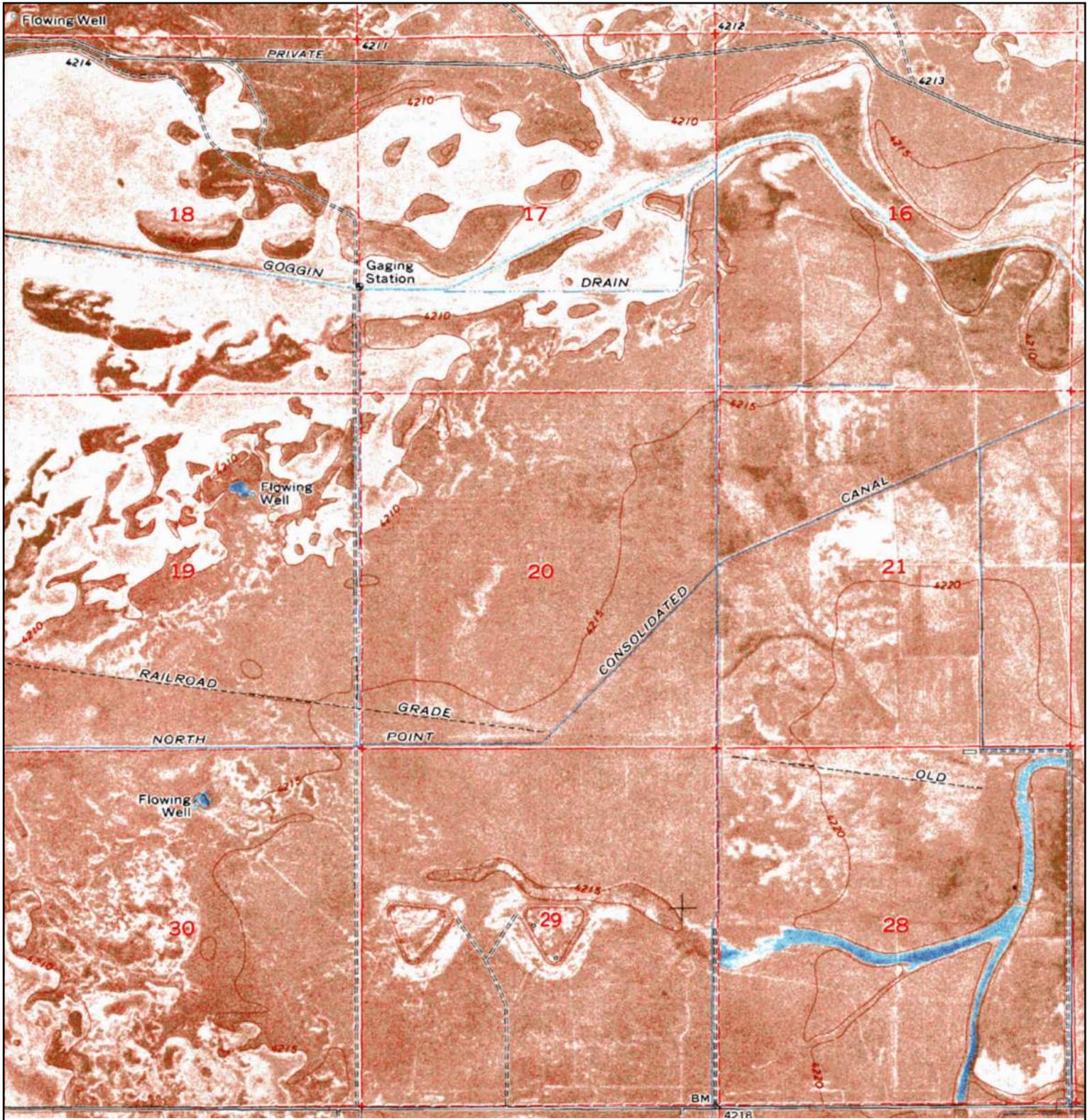
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	<b>MAP YEAR:</b> 1885	<b>LAT/LONG:</b> 40.8056 / -112.0914	<b>INQUIRY#:</b> 4444864.4
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# Historical Topographic Map



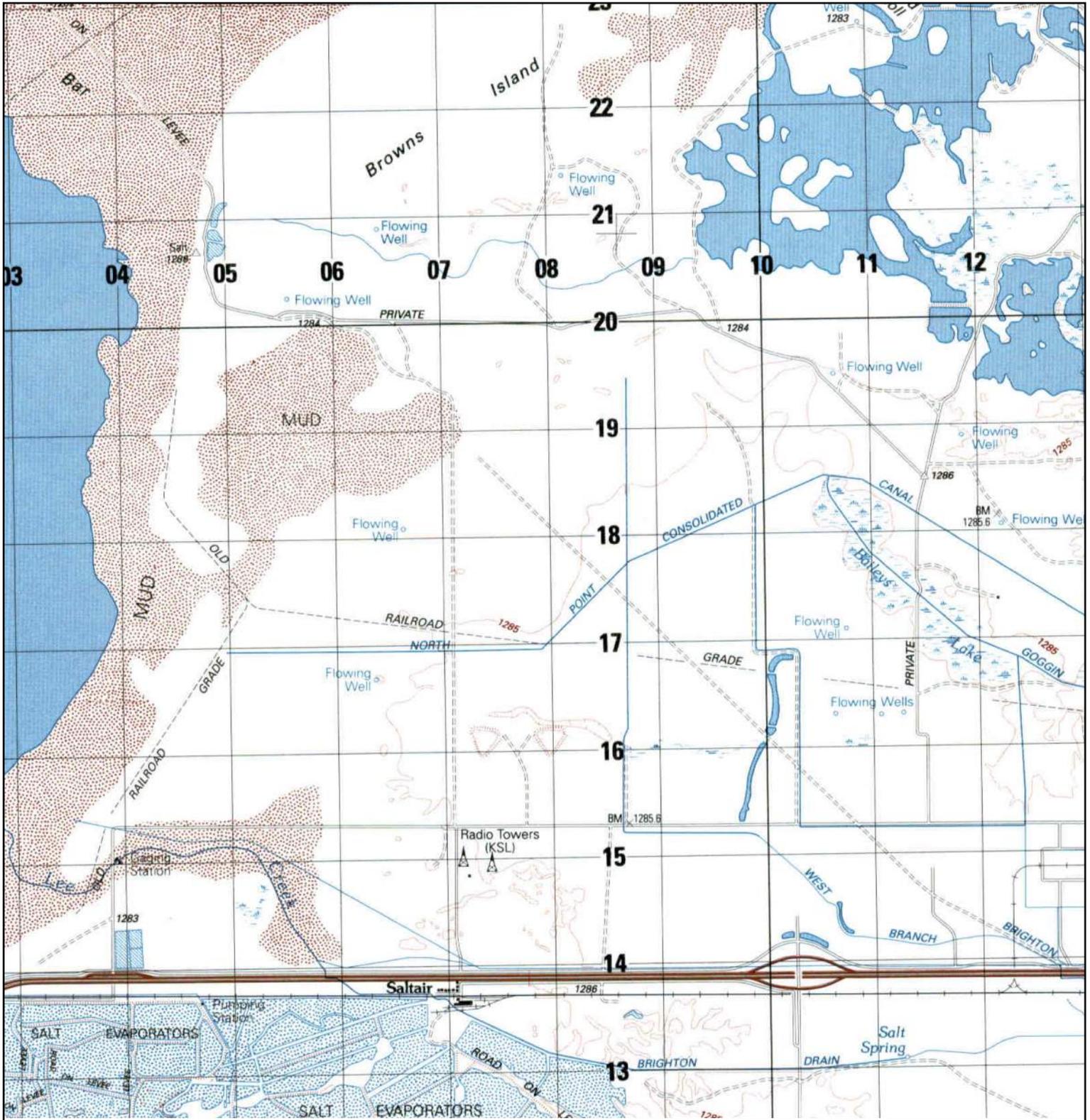
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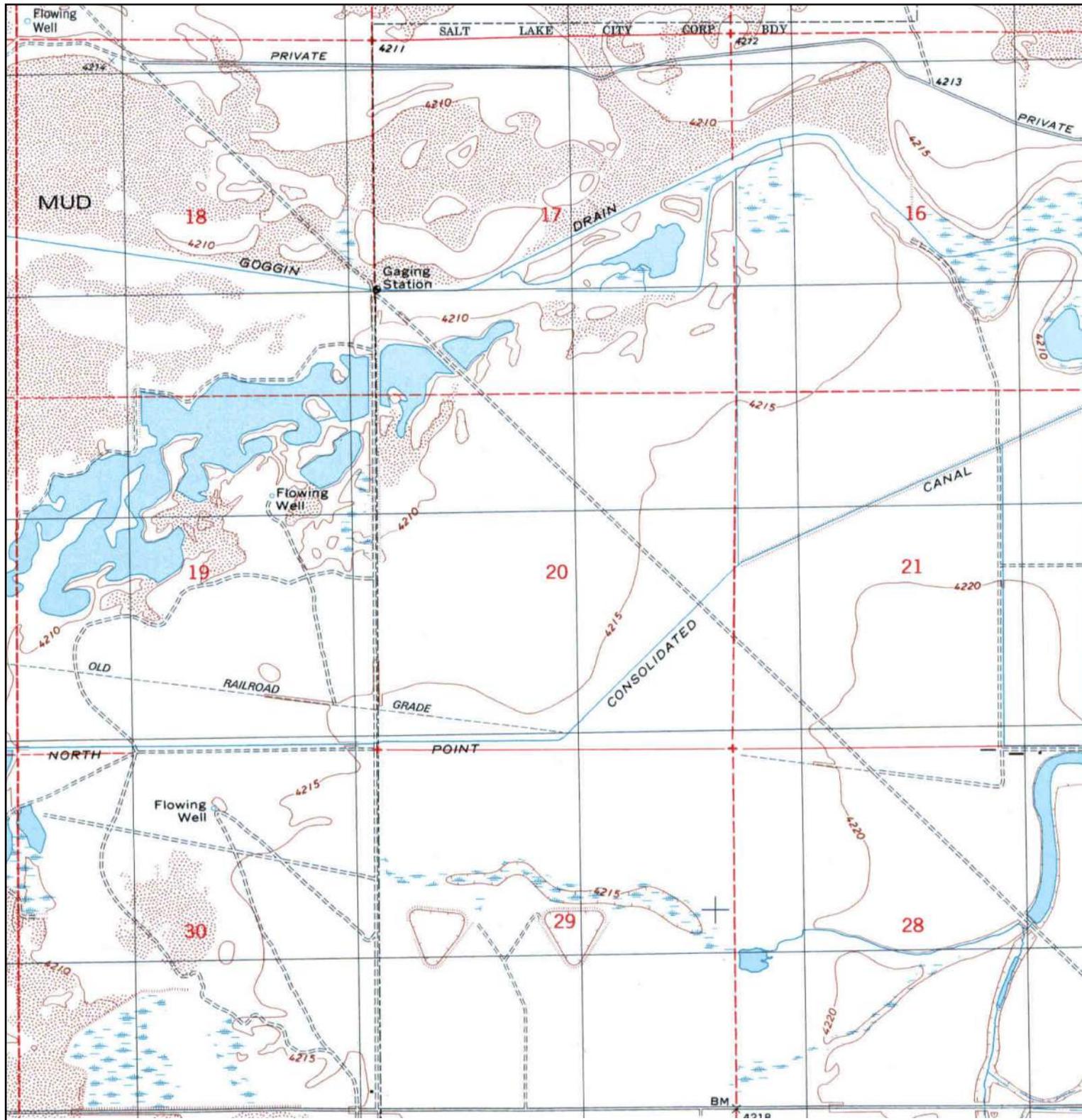
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	<p>SERIES: 7.5</p> <p>SCALE: 1:24000</p>		

# Historical Topographic Map



	<b>TARGET QUAD</b>	<b>SITE NAME:</b> Utah State Prison Relocation Site West	<b>CLIENT:</b> Lochner
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# Historical Topographic Map



<p>N</p> 	<b>TARGET QUAD</b>	<b>SITE NAME:</b> Utah State Prison Relocation Site West	<b>CLIENT:</b> Lochner
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## **Appendix E: Aerial Photography**



**Utah State Prison Relocation Site West**

2698 North 8800 West

Magna, UT 84044

Inquiry Number: 4444864.9

October 22, 2015



6 Armstrong Road, 4th Floor  
Shelton, Connecticut 06484  
Toll Free: 800.352.0050  
[www.edrnet.com](http://www.edrnet.com)

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**Date EDR Searched Historical Sources:**

Aerial Photography October 22, 2015

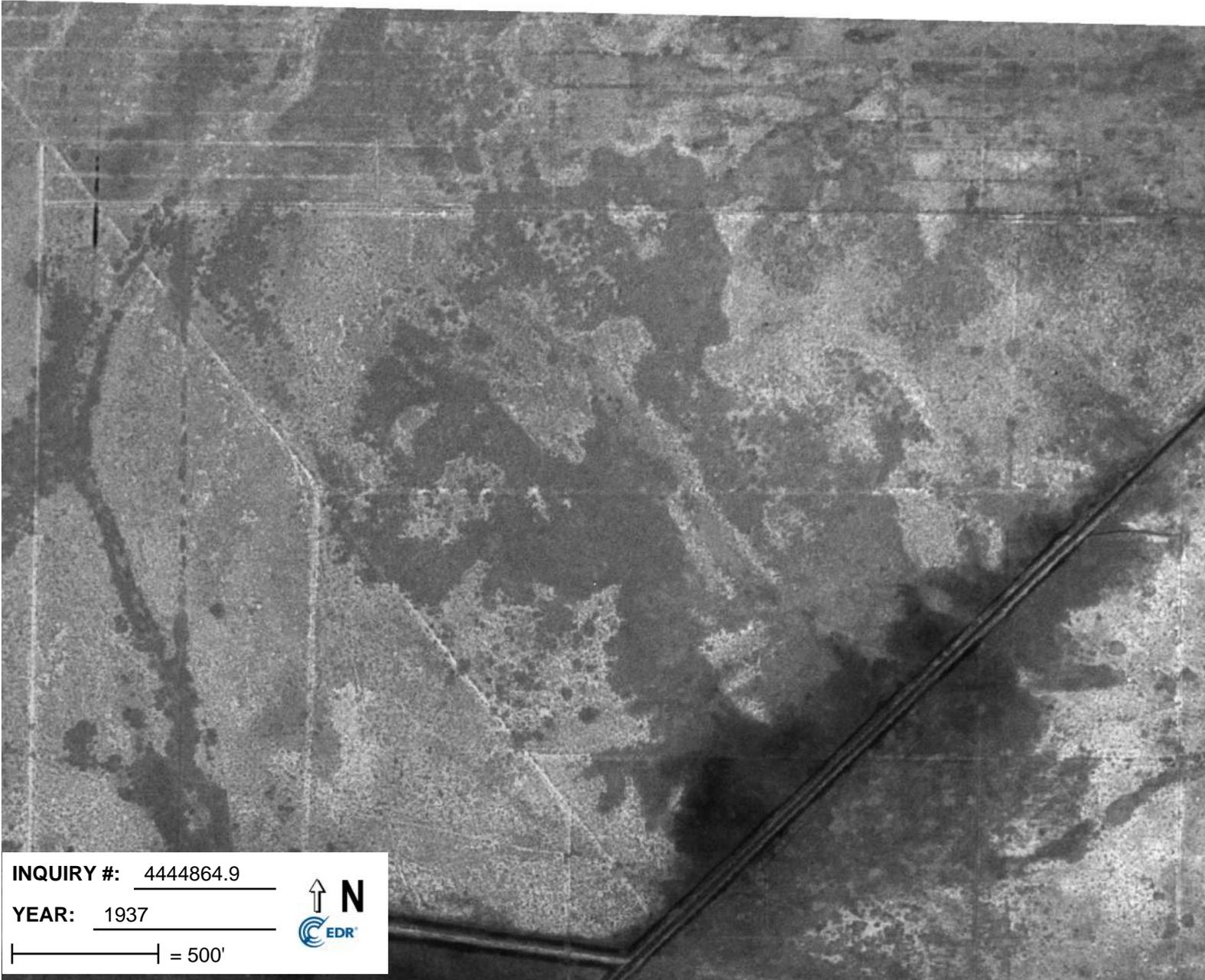
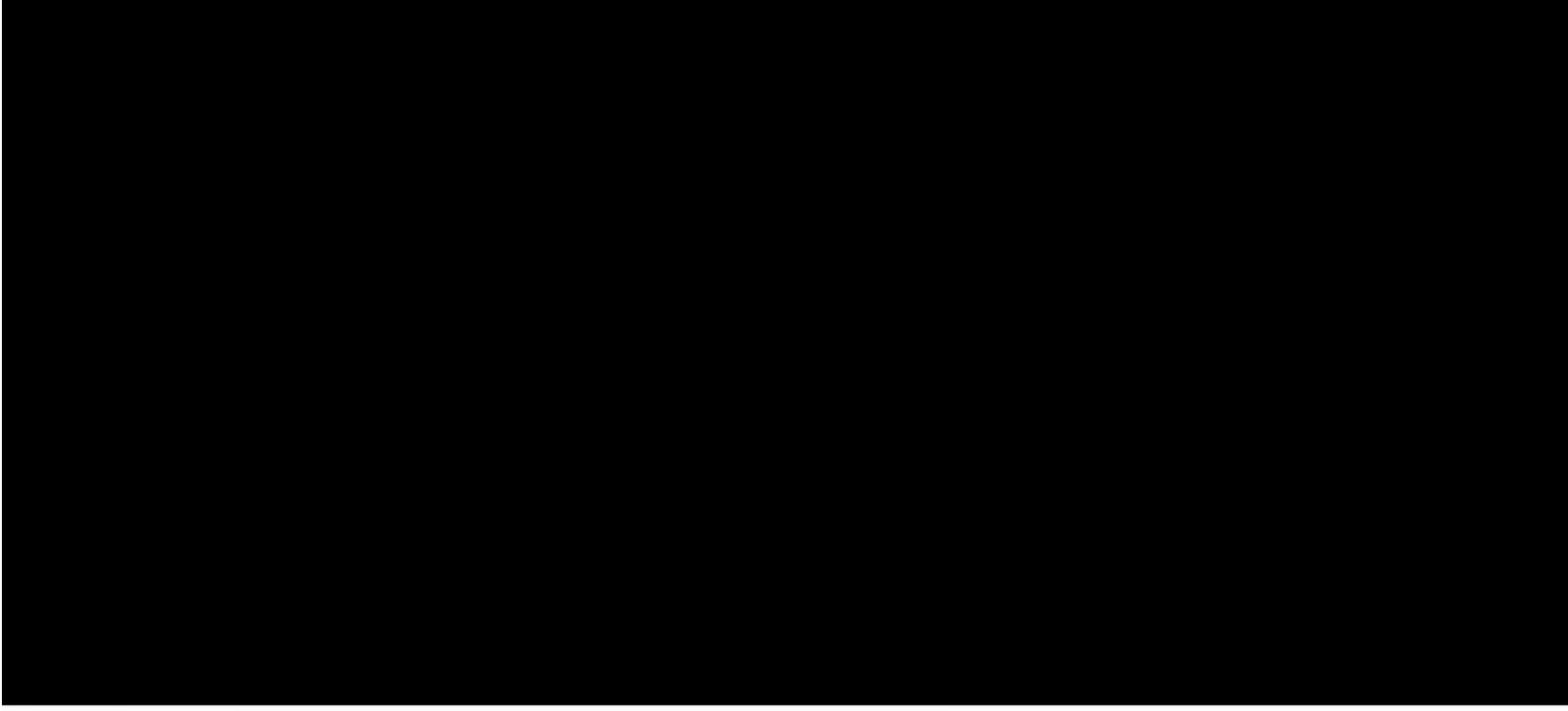
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2698 North 8800 West

Magna, UT 84044

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1946	Aerial Photograph. Scale: 1"=500'	Flight Date: August 18, 1946	USGS
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1993	Aerial Photograph. Scale: 1"=750'	Flight Date: August 08, 1993	EDR
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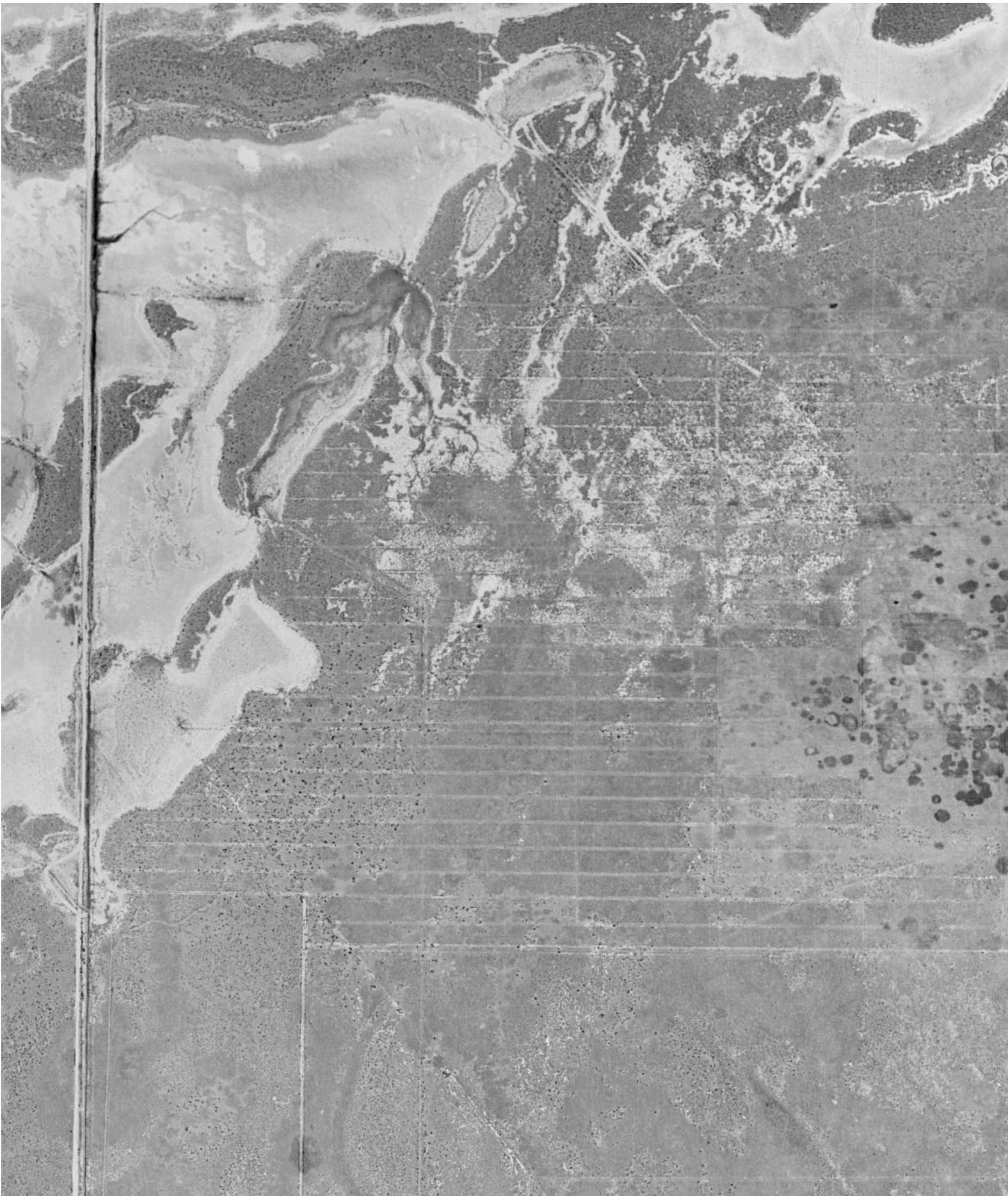


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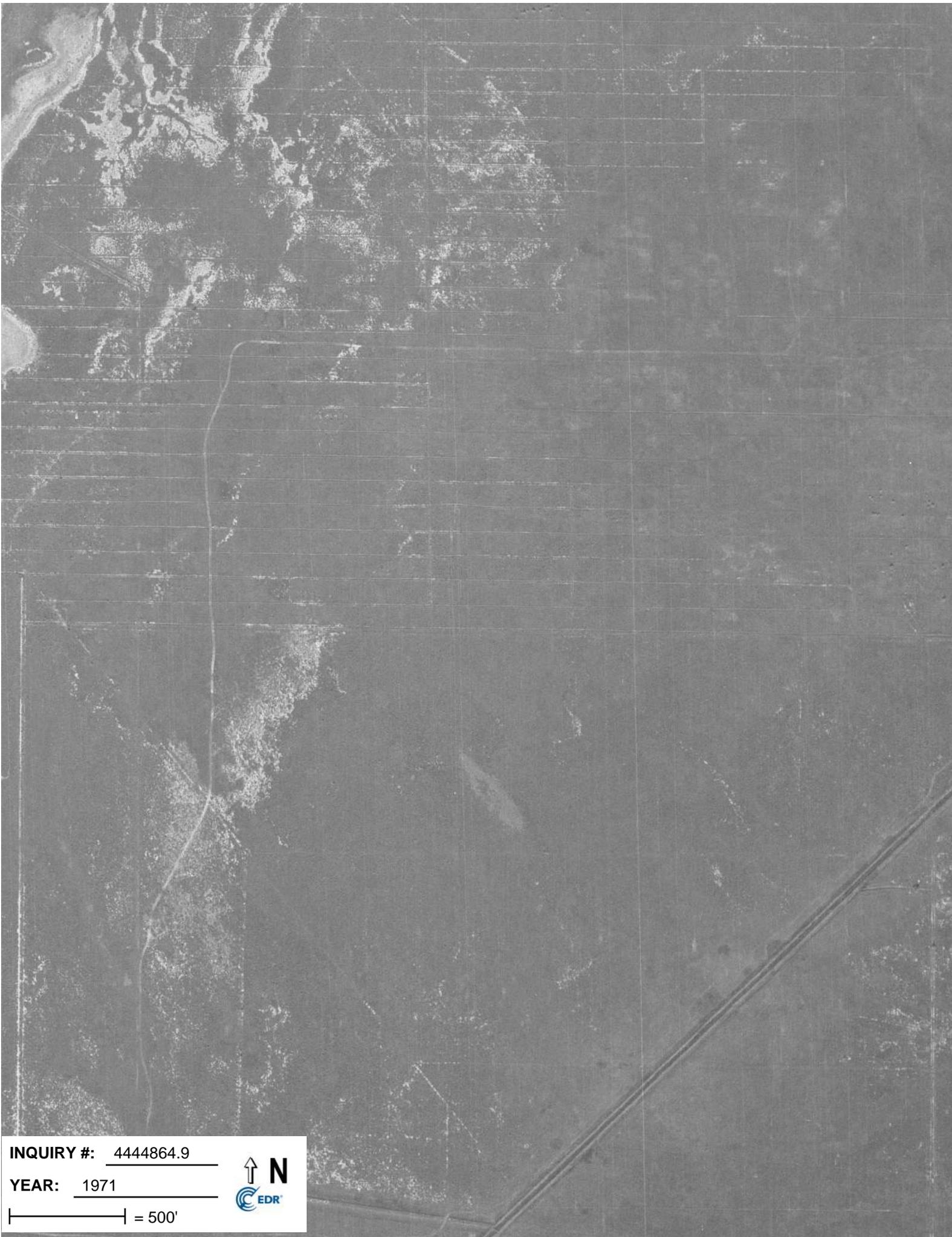


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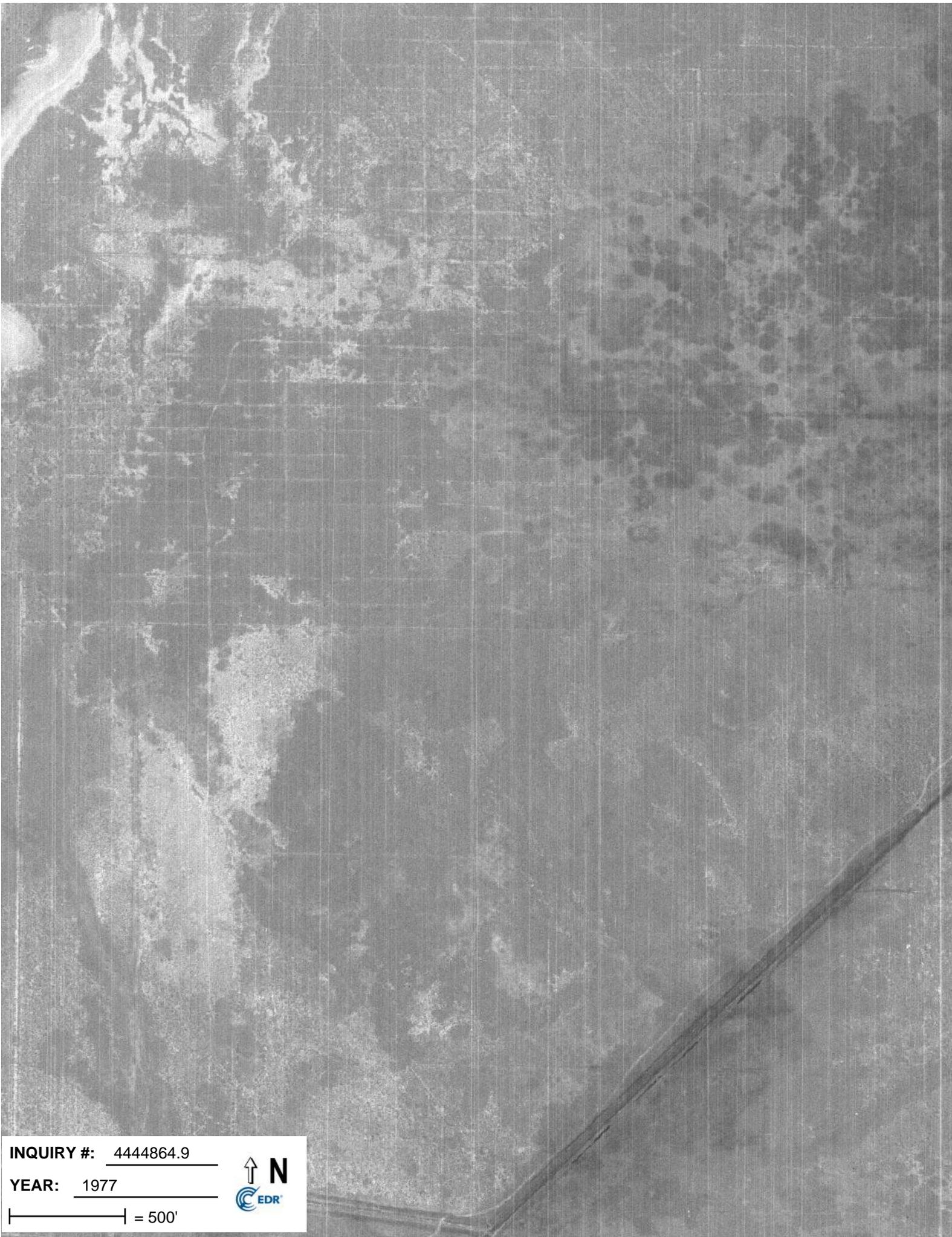


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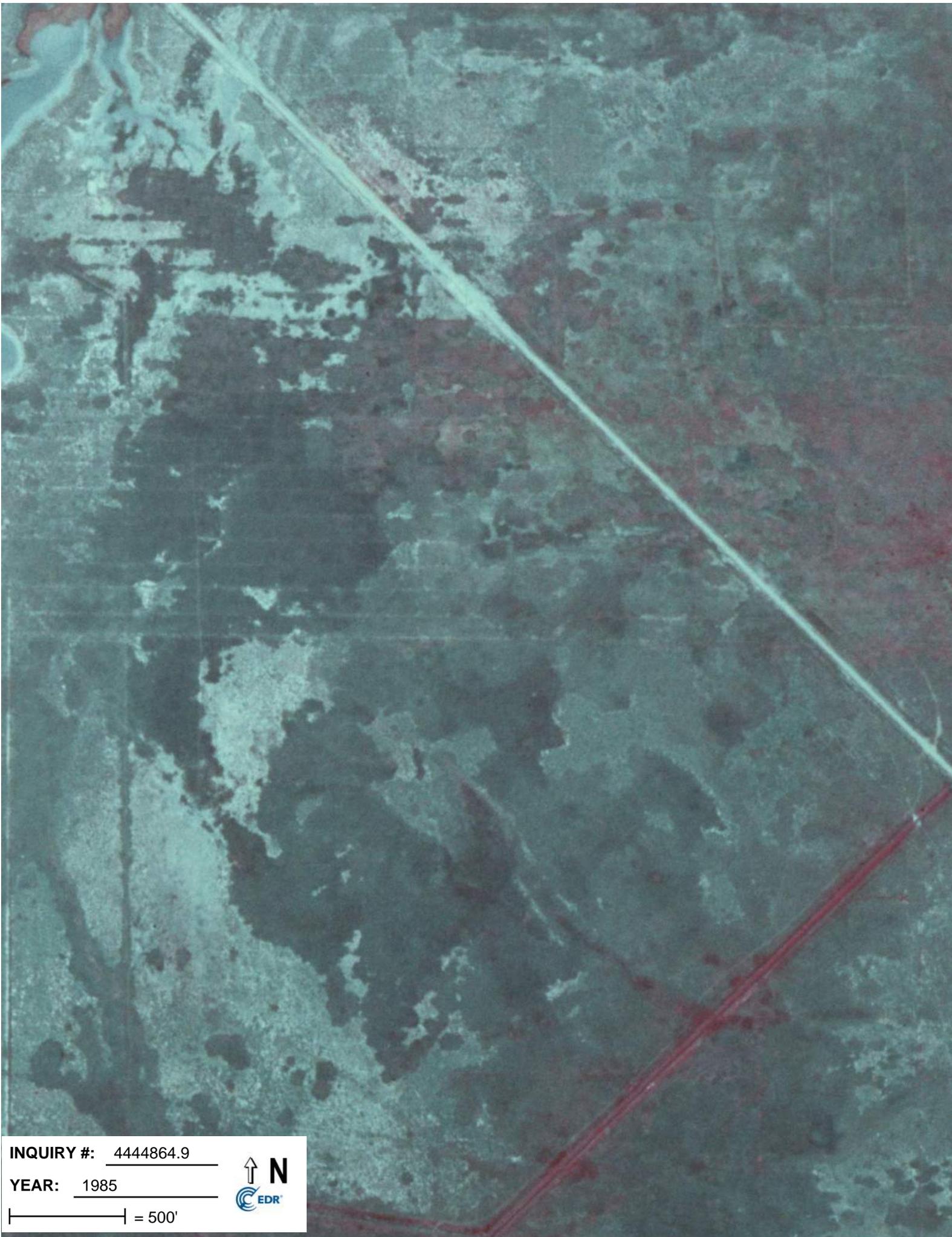


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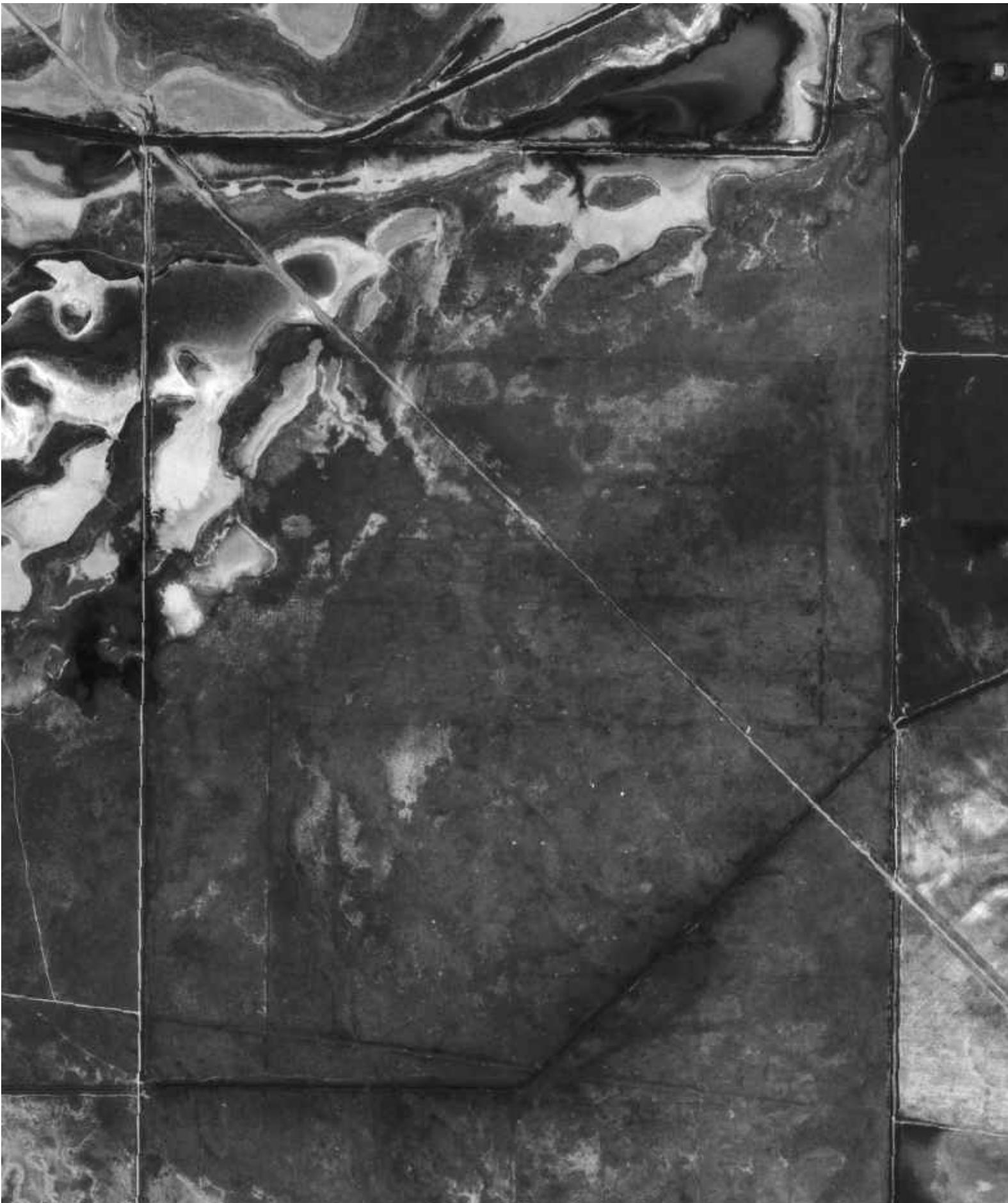


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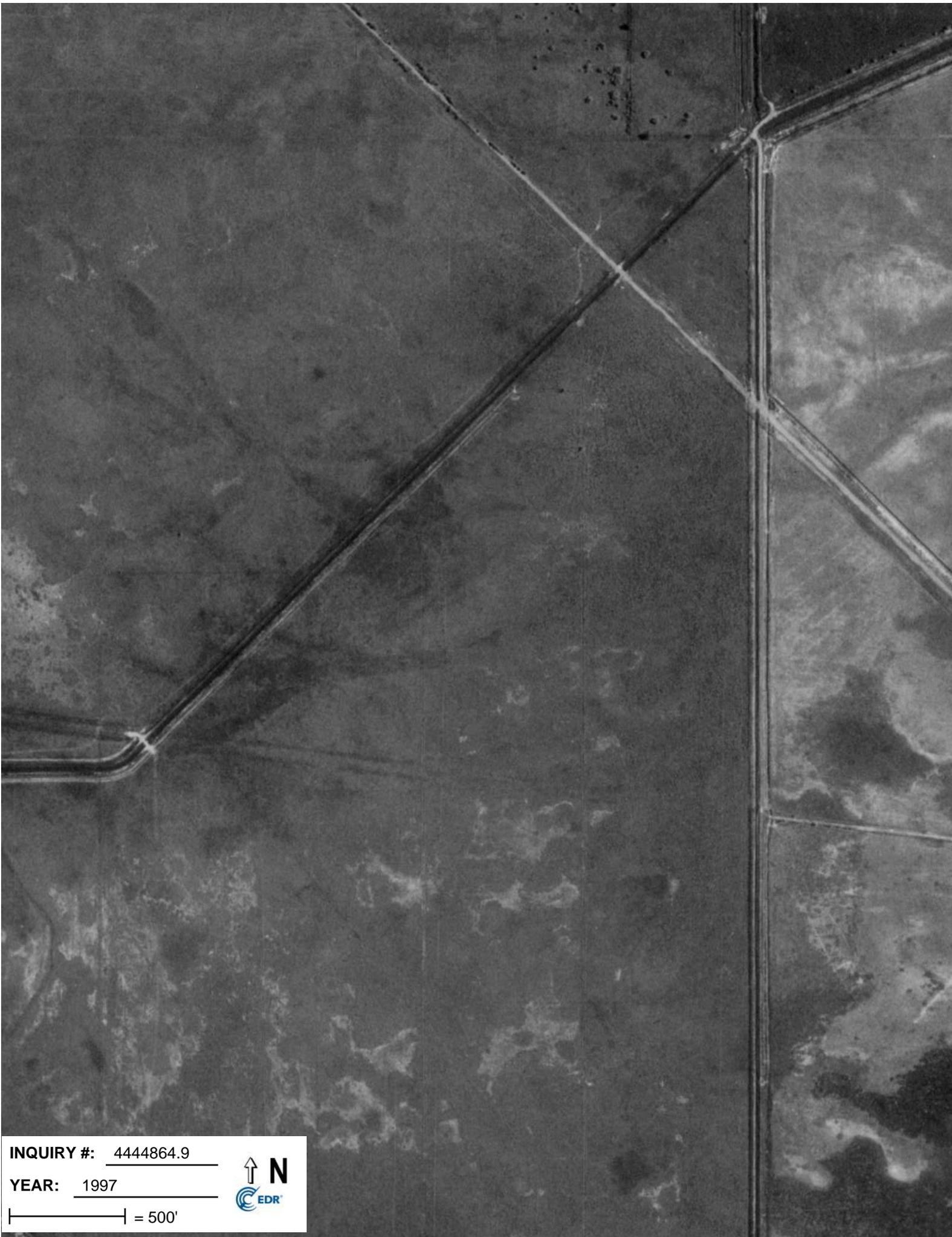


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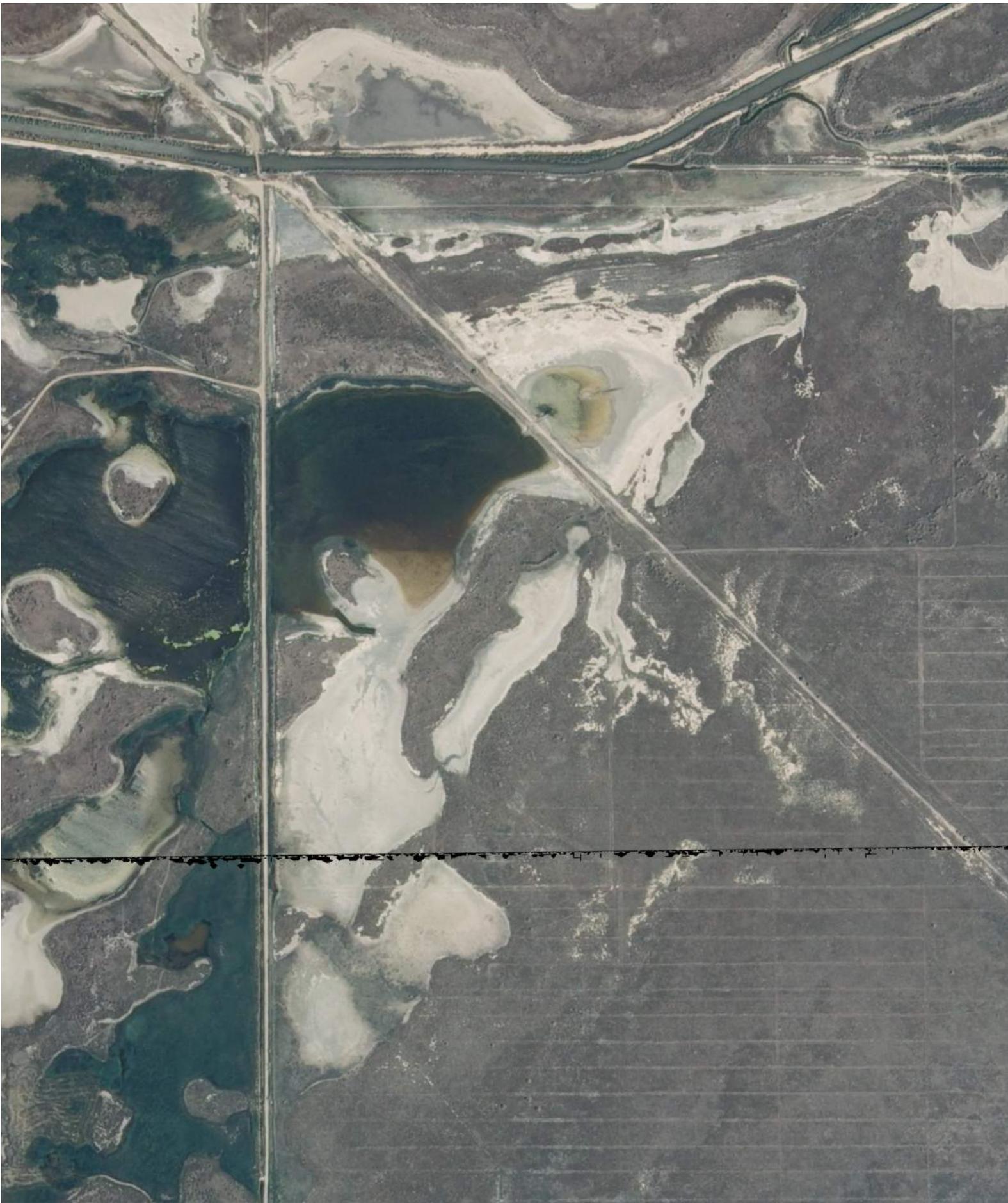


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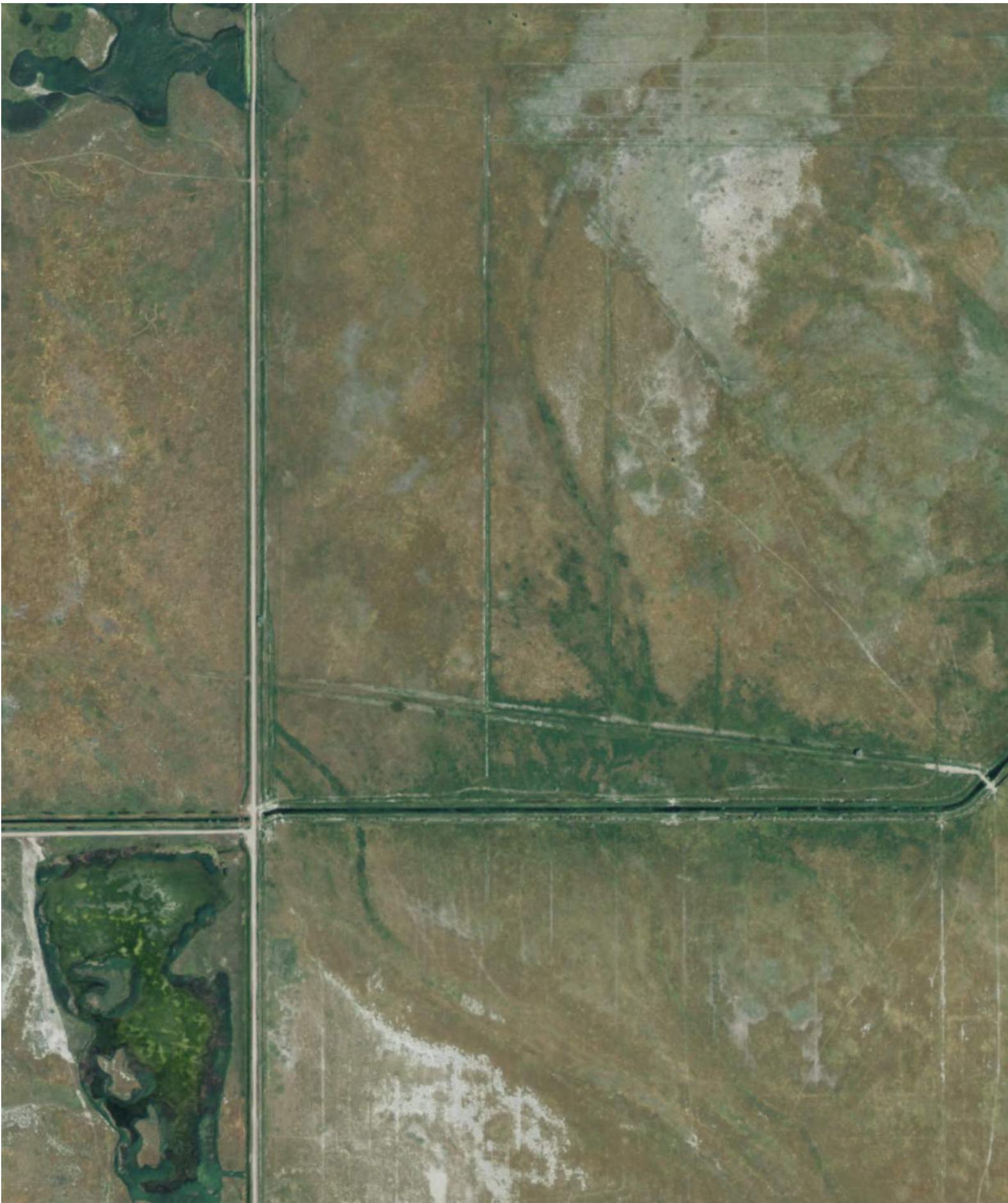


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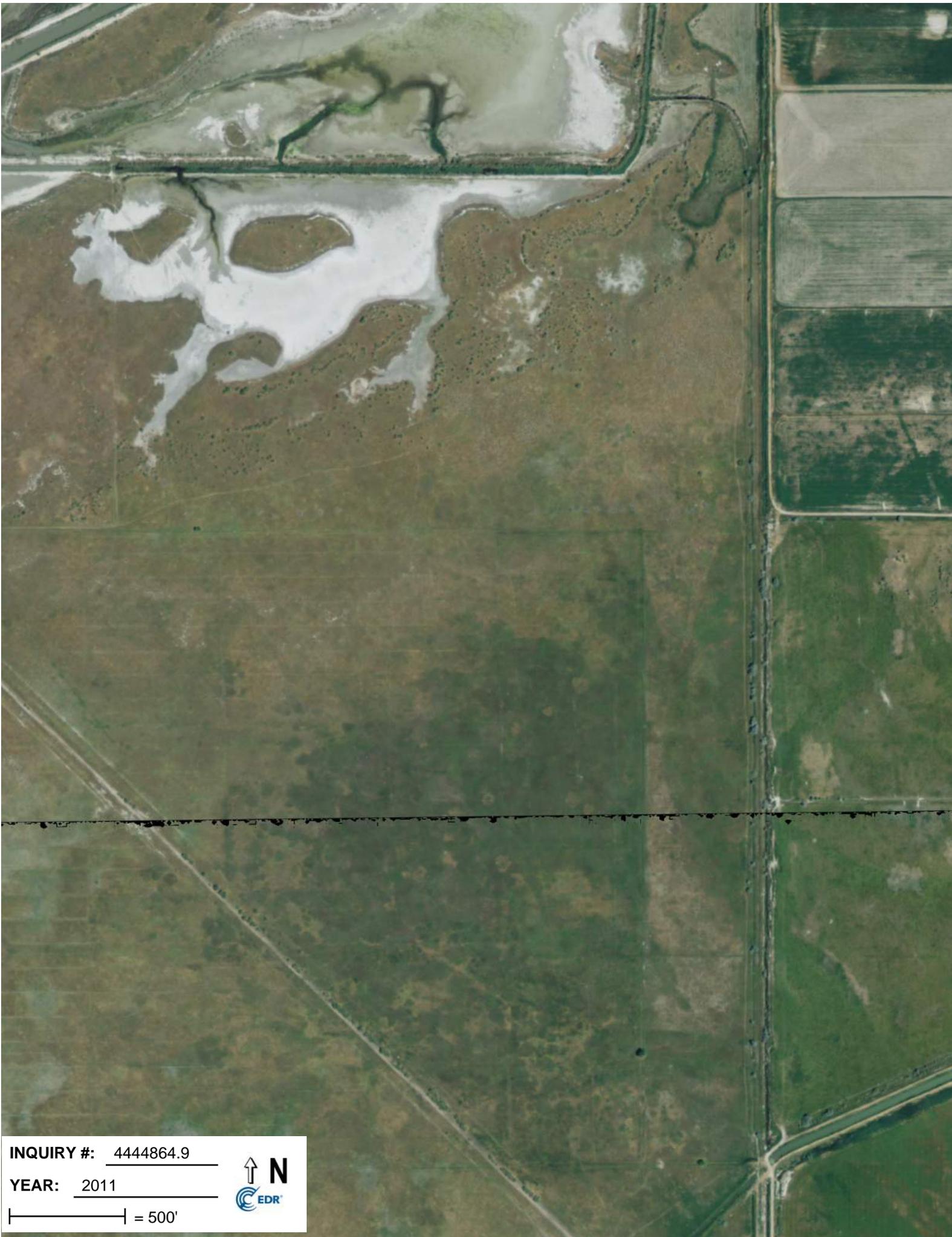


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**INQUIRY #:** 4444864.9

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**Appendix F: FEMA Flood Plain Map**

# NOTES TO USERS

This map is for use in administering the National Flood Insurance Program. It does not necessarily identify all areas subject to flooding, particularly from local drainage sources of small size. The **community map repository** should be consulted for possible updated or additional flood hazard information.

To obtain more detailed information in areas where **Base Flood Elevation (BFEs)** and/or **floodways** have been determined, users are encouraged to consult the Flood Profiles and Floodway Data tables contained within the Flood Insurance Study (FIS) report that accompanies this FIRM. Users should be aware that BFEs shown on the FIRM represent rounded whole-foot elevations. These BFEs are intended for flood insurance rating purposes only and should not be used as the sole source of flood elevation information. Accordingly, flood elevation data presented in the FIS should be utilized in conjunction with the FIRM for purposes of construction and/or floodplain management.

**Coastal Base Flood Elevation (BFEs)** shown on this map apply only landward of 0' North American Vertical Datum (NAVD). Users of this FIRM should be aware that coastal flood elevations may also be provided in the Summary of Stillwater Elevations table in the Flood Insurance Study report for this community. Elevations shown in the Summary of Stillwater Elevations table should be used for construction, and/or floodplain management purposes when they are higher than the elevations shown on this FIRM.

Boundaries of the **floodways** were computed at cross sections and interpolated between cross sections. The floodways were based on hydraulic considerations with regard to requirements of the National Flood Insurance Program. Floodway widths and other pertinent floodway data are provided in the Flood Insurance Study report for this jurisdiction.

Certain areas not in Special Flood Hazard Areas may be protected by **flood control structures**. Refer to Section 2.4 "Flood Protection Measures" of the Flood Insurance Study report for information on flood control structures in this jurisdiction.

The **projection** used in the preparation of this map is Universal Transverse Mercator (UTM) zone 12. The **horizontal datum** is NAD83, GRS1980 spheroid. Differences in datum, spheroid, projection or UTM zones used in the production of FIRMs for adjacent jurisdictions may result in slight positional differences in map features across jurisdiction boundaries. These differences do not affect the accuracy of the FIRM.

Flood elevations on this map are referenced to the North American Vertical Datum of 1988. These flood elevations must be compared to structure and ground elevations referenced to the same **vertical datum**. For information regarding conversion between the National Geodetic Vertical Datum of 1929 and the North American Vertical Datum of 1988, visit the National Geodetic Survey website at [www.ngs.noaa.gov](http://www.ngs.noaa.gov) or contact the National Geodetic Survey at the following address:

Spatial Reference System Division  
National Geodetic Survey, NOAA  
Silver Spring Metro Center  
1315 East-West Highway  
Silver Spring, Maryland 20910  
(301) 713-3242

To obtain current elevation, description, and/or location information for **bench marks** shown on this map, please contact the Information Services Branch of the National Geodetic Survey at (301) 713-3242, or visit their website at [www.ngs.noaa.gov](http://www.ngs.noaa.gov).

**Base map** information shown on this FIRM was provided in digital format by the Salt Lake County Planning Department.

**Corporate limits** shown on this map are based on the best data available at the time of publication. Because changes due to annexations or de-annexations may have occurred after this map was published, map users should contact appropriate community officials to verify current corporate limit locations.

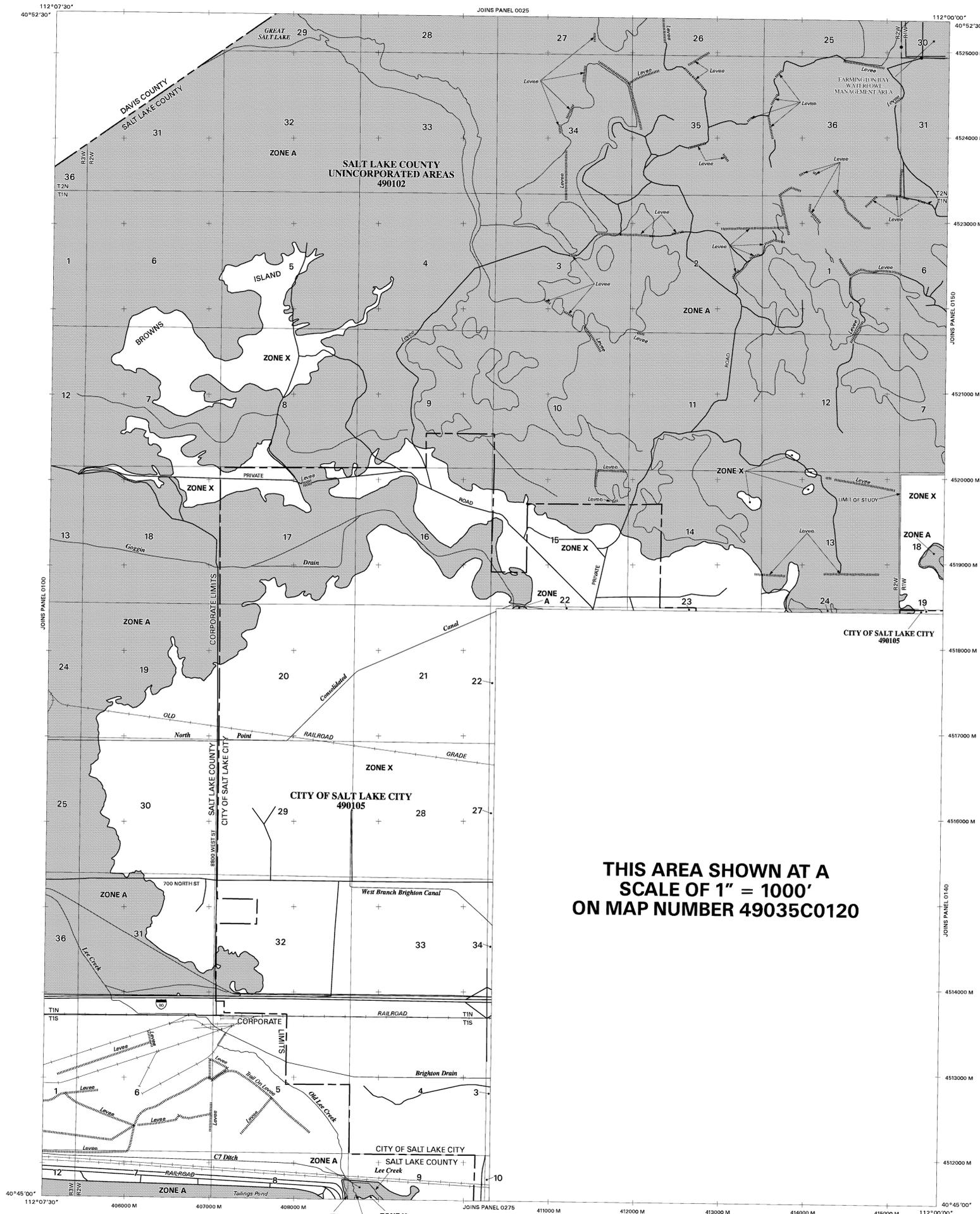
Please refer to the separately printed **Map Index** for an overview map of the county showing the layout of map panels; community map repository addresses; and a Listing of Communities table containing National Flood Insurance Program dates for each community as well as a listing of the panels on which each community is located.

An accompanying Flood Insurance Study report, Letters of Map Revision or Letters of Map Amendment revising portions of this panel, and digital versions of this PANEL may be available. Contact the **FEMA Map Service Center** at the following phone numbers and Internet address for information on all related products available from FEMA:

Phone: 800-358-9616  
FAX: 800-358-9620  
<http://msc.fema.gov/>

If you have **questions about this map** or questions concerning the National Flood Insurance Program in general, please call 1-877-FEMA-MAP (1-877-336-2627) or visit the FEMA website at <http://www.fema.gov/business/nfip/>

This map reflects more detailed and up-to-date stream channel configurations than those shown on the previous FIRM for this jurisdiction. The floodplains and floodways that were transferred from the previous FIRM may have been adjusted to conform to these new stream channel configurations. As a result, the Flood Profiles and Floodway Data tables in the Flood Insurance Study report may reflect stream channel distances that differ from what is shown on this map.



**THIS AREA SHOWN AT A SCALE OF 1" = 1000' ON MAP NUMBER 49035C0120**

# LEGEND

**SPECIAL FLOOD HAZARD AREAS SUBJECT TO INUNDATION BY THE 1% ANNUAL CHANCE FLOOD EVENT**

The 1% annual chance flood (100-year flood), also known as the base flood, is the flood that has a 1% chance of being equaled or exceeded in any given year. The Special Flood Hazard Area is the area subject to flooding by the 1% annual chance flood. Areas of Special Flood Hazard include Zones A, AE, AO, AR, A99, V, and VE. The Base Flood Elevation is the water surface elevation of the 1% annual chance flood.

- ZONE A** No base flood elevations determined.
- ZONE AE** Base flood elevations determined.
- ZONE AO** Flood depths of 1 to 3 feet (usually areas of ponding); base flood elevations determined.
- ZONE AR** Flood depths of 1 to 3 feet (usually sheet flow on sloping terrain); average depths determined. For areas of alluvial fan flooding, velocities also determined.
- ZONE AR** Area of special flood hazard formerly protected from the 1% annual chance flood event by a flood control system that was subsequently decertified. Zone AR indicates that the former flood control system is being restored to provide protection from the 1% annual chance or greater flood event.
- ZONE A99** Area to be protected from 1% annual chance flood event by a Federal flood protection system under construction; no base flood elevations determined.
- ZONE VE** Coastal flood zone with velocity hazard (wave action); no base flood elevations determined.
- ZONE VE** Coastal flood zone with velocity hazard (wave action); base flood elevations determined.

**FLOODWAY AREAS IN ZONE AE**

The floodway is the channel of a stream plus any adjacent floodplain areas that must be kept free of encroachment so that the 1% annual chance flood can be carried without substantial increases in flood heights.

**OTHER FLOOD AREAS**

**ZONE X** Areas of 0.2% annual chance flood; areas of 1% annual chance flood with average depths of less than 1 foot or with drainage areas less than 1 square mile; and areas protected by levees from 1% annual chance flood.

**OTHER AREAS**

**ZONE X** Areas determined to be outside the 0.2% annual chance floodplain.

**ZONE D** Areas in which flood hazards are undetermined, but possible.

**COASTAL BARRIER RESOURCES SYSTEM (CBRS) AREAS**

**OTHERWISE PROTECTED AREAS (OPAs)**

CBRS areas and OPAs are normally located within or adjacent to Special Flood Hazard Areas.

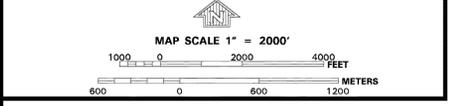
- Floodplain boundary
- Floodway boundary
- Zone D boundary
- CBRS and OPA boundary
- Boundary dividing Special Flood Hazard Areas of different Base Flood Elevations, flood depths or velocities.
- Base Flood Elevation line and value; elevation in feet\*
- (EL 987) Base Flood Elevation value where uniform within zone; elevation in feet\*
- \*Referenced to the North American Vertical Datum of 1988
- Cross Section Line
- Transect Line
- 97°07'30", 32°22'30" Geographic coordinates referenced to the North American Datum of 1983 (NAD 83)
- 4276000M 1000-meter Universal Transverse Mercator grid values, zone 12
- 600000 FT 5000-foot grid ticks
- DX5510 Bench mark (see explanation in Notes to Users section of this FIRM panel).
- M1.5 River Mile

**MAP REPOSITORY**  
Refer to Repository Listing on Index Map  
**EFFECTIVE DATE OF COUNTYWIDE FLOOD INSURANCE RATE MAP**  
SEPTEMBER 21, 2001  
**EFFECTIVE DATE(S) OF REVISION(S) TO THIS PANEL**

MAY 15, 2002  
SEPTEMBER 25, 2009: to update corporate limits, to change base flood elevations, to add base flood elevations, to add special flood hazard areas, to change special flood hazard areas, to update map format, to add roads and road names, to reflect updated topographic information, and to incorporate previously issued letters of map revision.

For community map revision history prior to countywide mapping, refer to the Community Map History table located in the Flood Insurance Study report for this jurisdiction.

To determine if flood insurance is available in this community, contact your insurance agent or call the National Flood Insurance Program at (800) 638-6620.



PANEL 0125G

**FIRM**  
**FLOOD INSURANCE RATE MAP**  
SALT LAKE COUNTY,  
UTAH  
AND INCORPORATED AREAS

**PANEL 125 OF 625**  
(SEE MAP INDEX FOR FIRM PANEL LAYOUT)

CONTAINS:

COMMUNITY	NUMBER	PANEL	SUFFIX
SALT LAKE COUNTY, UNINCORPORATED AREAS	490102	0125	G
SALT LAKE CITY, CITY OF	490105	0125	G

**MAP NUMBER**  
49035C0125G  
**MAP REVISED:**  
SEPTEMBER 25, 2009

Federal Emergency Management Agency

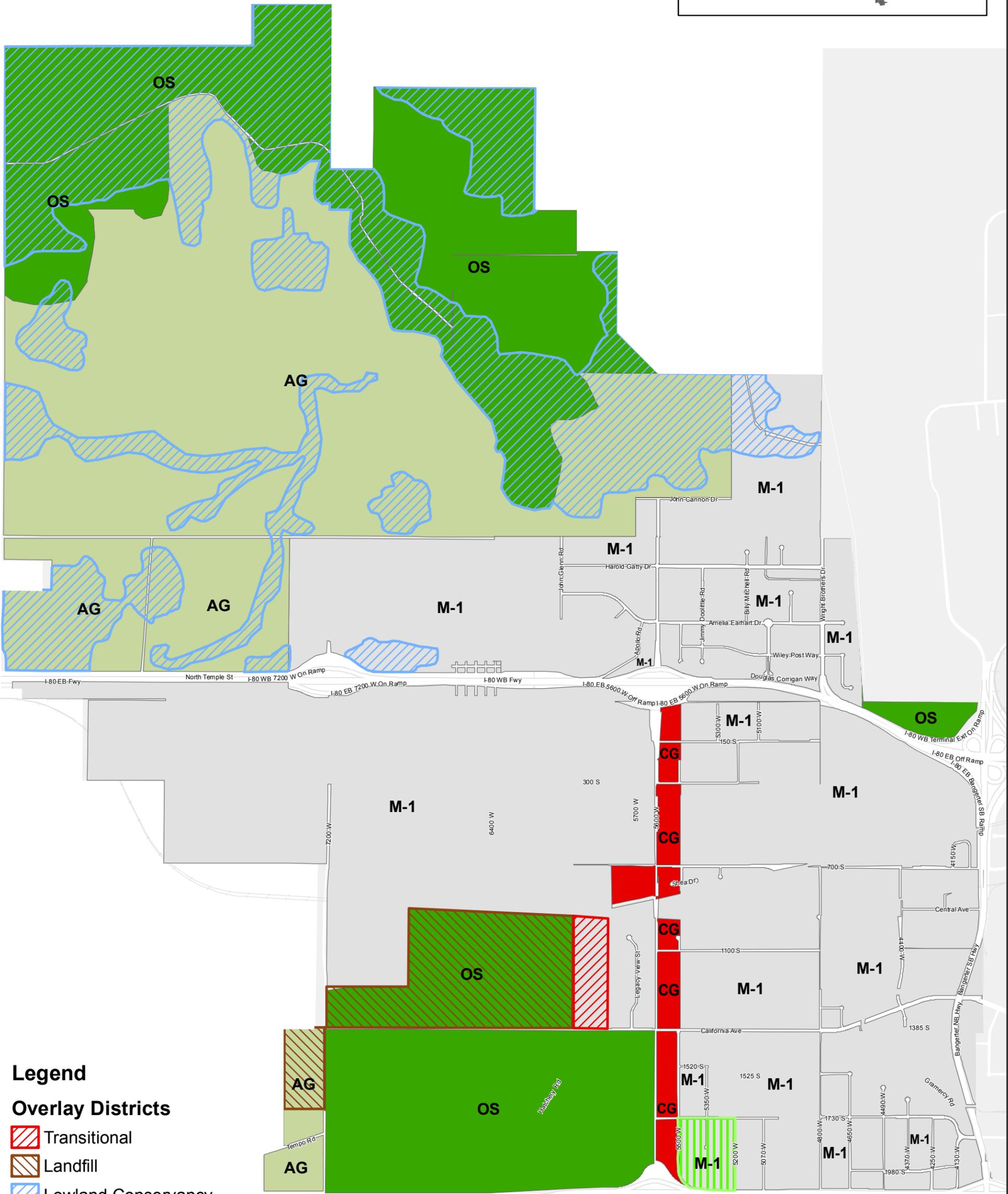
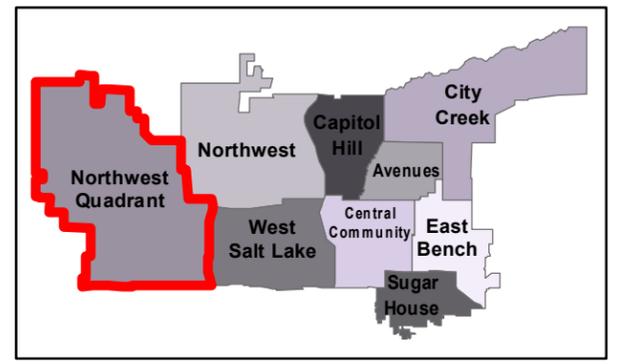
**Appendix G: Zoning Map**

# Salt Lake County Zoning



Thu Oct 22 2015 03:13:20 PM

# Northwest Quadrant Zoning Map



## Legend

### Overlay Districts

-  Transitional
-  Landfill
-  Lowland Conservancy
-  Light Manufacturing Height Overlay

### Zoning Districts

-  AG *Agricultural*
-  CG *General Commercial*
-  M-1 *Light Manufacturing*
-  OS *Open Space*

N



## **Appendix H: Site Photographs**



**Figure 1: Photograph Viewpoints**

- Photograph/Viewpoint
- Prison Relocation Boundary
- Dumping Area





**Figure 2: Photograph Viewpoints of Dumping Area**

- Photograph/Viewpoint
- Prison Relocation Boundary
- Dumping Area



**Utah State Prison Relocation West Site**  
*Phase 1 Environmental Site Assessment*



**Photograph 1:** Southwest corner looking north (Viewpoint 1 on Figure 1).



**Photograph 2:** Southwest corner looking east (Viewpoint 1 on Figure 1).

**Utah State Prison Relocation West Site**  
*Phase 1 Environmental Site Assessment*



**Photograph 3:** Southwest corner looking south (Viewpoint 1 on Figure 1).



**Photograph 4:** Southwest corner looking west (Viewpoint 1 on Figure 1).

**Utah State Prison Relocation West Site**  
*Phase 1 Environmental Site Assessment*



**Photograph 5:** North, northwest corner looking north (Viewpoint 2 on Figure 1).



**Photograph 6:** North, northwest corner looking east (Viewpoint 2 on Figure 1).

**Utah State Prison Relocation West Site**  
*Phase 1 Environmental Site Assessment*



**Photograph 7:** North, northwest corner looking south (Viewpoint 2 on Figure 1).



**Photograph 8:** North, northwest corner looking west (Viewpoint 2 on Figure 1).

**Utah State Prison Relocation West Site**  
*Phase 1 Environmental Site Assessment*



**Photograph 9:** South, northwest corner looking north (Viewpoint 3 on Figure 1).



**Photograph 10:** South, northwest corner looking east (Viewpoint 3 on Figure 1).

**Utah State Prison Relocation West Site**  
*Phase 1 Environmental Site Assessment*



**Photograph 11:** South, northwest corner looking south (Viewpoint 3 on Figure 1).



**Photograph 12:** South, northwest corner looking west (Viewpoint 3 on Figure 1).



**Photograph 13:** East, northwest corner looking north (Viewpoint 4 on Figure 1).



**Photograph 14:** East, northwest corner looking east (Viewpoint 4 on Figure 1).



**Photograph 15:** East, northwest corner looking south (Viewpoint 4 on Figure 1).



**Photograph 16:** East, northwest corner looking west (Viewpoint 4 on Figure 1).



**Photograph 17:** Potential well or pumping station (Viewpoint 5 on Figure 1). According to the current tenant, these reinforced concrete holes connect to a series of underground clay drains or pipes that are located throughout the entire property. The pipes were installed to move groundwater from the south end of the property to the north where the water was pumped to the Goggin Drain. This reinforced concrete hole may have served as a pumping station (Hinckley 2015).



**Photograph 18:** Potential well or pumping station (Viewpoint 5 on Figure 1).



**Photograph 19:** Ponding water near North Point Consolidated Canal looking west. Water source appears to be from the canal or from two ponds on the adjacent property. It does not appear that the source is a hazardous waste producer (Viewpoint 6 on Figure 1).



**Photograph 20:** Ponding water near North Point Consolidated Canal looking east (Viewpoint 6 on Figure 1).

**Utah State Prison Relocation West Site**  
*Phase 1 Environmental Site Assessment*



**Photograph 21:** North Point Consolidated Canal looking southwest (Viewpoint 7 on Figure 1).



**Photograph 22:** Irrigation ditch and head gate south of North Point Consolidated Canal looking south (Viewpoint 8 on Figure 1).



**Photograph 23:** Culvert pipe south of North Point Consolidated Canal (Viewpoint 9 on Figure 1).



**Photograph 24:** Empty shotgun shells south of North Point Consolidated Canal (Viewpoint 10 on Figure 1).

**Utah State Prison Relocation West Site**  
*Phase 1 Environmental Site Assessment*



**Photograph 25:** Southeast corner looking north (Viewpoint 11 on Figure 1).



**Photograph 26:** Southeast corner looking east (Viewpoint 11 on Figure 1).



**Photograph 27:** Southeast corner looking south (Viewpoint 11 on Figure 1).



**Photograph 28:** Southeast corner looking west (Viewpoint 11 on Figure 1).

**Utah State Prison Relocation West Site**  
*Phase 1 Environmental Site Assessment*



**Photograph 29:** Dumping area looking north. Metal agricultural equipment and rubber tires (Viewpoint 12 on Figure 2).



**Photograph 30:** Dumping area looking northwest. Polystyrene, empty 55-gallon drum, and miscellaneous metal agricultural equipment (Viewpoint 13 on Figure 2).



**Photograph 31:** Dumping area looking north. Metal agricultural equipment and polystyrene (Viewpoint 14 on Figure 2).



**Photograph 32:** Oakes R-40 metal containers and metal trough (Viewpoint 15 on Figure 2).



**Photograph 33:** Dumping area looking north. Metal trough, rubber tires, and wood pile (Viewpoint 16 on Figure 2).



**Photograph 34:** Dumping area looking south. Polyvinyl chloride pipes (Viewpoint 17 on Figure 2).



**Photograph 35:** Center of property looking north (Viewpoint 18 on Figure 1).



**Photograph 36:** Center of property looking east (Viewpoint 18 on Figure 1).



**Photograph 37:** Center of property looking south (Viewpoint 18 on Figure 1).



**Photograph 38:** Center of property looking west (Viewpoint 18 on Figure 1).

**Appendix I: Questionnaire**

# LOCHNER

## ENVIRONMENTAL SITE ASSESSMENT QUESTIONNAIRE

**Instructions:** As soon as possible, please complete to the best of your knowledge and return (email preferred) to:

Justin Peterson  
 1245 East Brickyard Road  
 Salt Lake City, Utah 84106  
 Office: 801-415-5856  
 Email: [jpeterson@hwlochner.com](mailto:jpeterson@hwlochner.com)

### GENERAL INFORMATION

Project Number: 000011522  
 Property Name: Utah State Prison Relocation Site West  
 Address: 2698 North 8800 West  
 City, State, Zip: Salt Lake City, Utah 84116

### QUESTIONNAIRE RESPONDANT INFORMATION

Name: Maureen Davison Title: manager  
 Signature:  
 Date: 10/26/15

### ENVIRONMENTAL INFORMATION

#### PREVIOUS REPORTS, DOCUMENTS, AND OWNERS

1. Are you aware if a previous Environmental Assessment has ever been performed on the property? If yes, are you aware of the recommendations made in the report or please provide a copy of the report.

Yes  No  Do not know

The report is on our drop box site The prison has had access to this doc. It was done by Fosgren, Assoc. in 2000.

# LOCHNER

2. Do you have any other environmentally associated documents, such as compliance audits, environmental permits, registrations, or material safety data sheets? If yes, please provide a copy of the document(s).

Yes  No  Do not know

3. Can you provide contact information (name and phone number) of the previous owner of the property? If yes, please provide below.

Yes  No  Do not know

We/family have owned the land since 1927. Previous owner is dead.

## HISTORICAL AND PRESENT USAGE AND SITE CONDITIONS

1. Are you aware of the prior use of the property? If so, please describe.

Yes  No  Do not know

Please contact Louis Berger; he has all this info.  
Use has been grazing as far as I know.

2. Has fill dirt ever been brought onto the property that originated from a contaminated site or from an unknown source?

Yes  No  Do not know

not since we have owned it. can not say what prior owner did.

3. Are there currently or have there ever been any pits, ponds, or lagoons on the property utilized in connection with waste treatment or waste disposal?

Yes  No  Do not know

not since we have owned it. can not say what prior owner did.

# LOCHNER

4. Are you currently aware of or have there ever been any hazardous substances, petroleum products, tires, car or industrial batteries, pesticides, or other chemicals or waste materials that have been dumped, buried, or burned on the property?

Yes  No  Do not know

not since we have owned it. can not say what prior owner did.

5. Have any of the adjoining properties ever been used for industrial purposes including, but not limited to, a gas station, dry cleaner, auto repair facility, landfill, waste treatment, printing facility, etc.?

Yes  No  Do not know

6. Are any of the adjoining properties used for industrial purposes?

Yes  No  Do not know

7. If the property is served by a private well or non-public water system, is there evidence or do you have prior knowledge that contaminants have been identified in the well or system that exceed guidelines applicable to the water system or that the well has been designated as contaminated by any government environmental/health agency? If an on-site well is present, please attach a copy of the most recent water quality testing report.

Yes  No  Do not know

Would have to speak to tenants. Heather Limon & Damon Hinckley 1-801-815-6771.  
Water is used for cows. I have no knowledge of contaminants

# LOCHNER

## HISTORICAL AND PRESENT USAGE AND SITE CONDITIONS

1. Are you aware of any past or current existence of hazardous substances, specific chemicals, or petroleum products on the property, or any facility located on the property?

Yes  No  Do not know

2. Are you aware of any past or current spills or other chemical releases that have taken place at the property?

Yes  No  Do not know

3. Do you know of any clean ups (with respect to hazardous substances, specific chemicals, or petroleum products) that have occurred at the property?

Yes  No  Do not know

4. Are you aware, based on your knowledge of the property, if there are any obvious indicators that point to the presence or likely presence of contamination at the property?

Yes  No  Do not know

# LOCHNER

5. Do you have any knowledge of filed or recorded environmental cleanup liens under federal, state, or local law or governmental notification relating to past or recurrent violations of environmental laws with respect to the property or any facility located on the property?

Yes  No  Do not know

6. Are there any potential or pending lawsuits or administrative actions concerning a release or threatened release of hazardous substances or petroleum product involving the property or any facility located on the property?

Yes  No  Do not know

7. Are you aware of any areas of activity or use limitations (AULs) such as engineering controls, land use restrictions or institutional controls that are in place at the property and/or have been recorded or filed in a registry under federal, state, or tribal law?

Yes  No  Not applicable

Yes, the land is currently SLC zoned for AG-w/ residential allowed every 10,000 sq. ft. lot

# LOCHNER

8. (Answer this question only if this is an acquisition). Does the purchase price being paid for this property reasonably reflect the fair market value of the property? If there is a difference, have you considered or determined whether the lower price is because contamination is known or believed to be present at the property?

Yes  No  Not applicable

## STORAGE TANKS AND DRAINS

1. Are there currently or are you aware if there have ever been any registered or unregistered storage tanks, aboveground or underground, located on the property? If so, please attach copies of documentation such as tank closure/removal reports, tank tightness tests, or registration/regulatory information.

Yes  No  Do not know

not since we have owned it. can not say what prior owner did.

2. Are there currently or are you aware if there have ever previously been any vent pipes, fill pipes, or access ways indicating a fill pipe protruding from the ground on the property or adjacent to any structure located on the property?

Yes  No  Do not know

not since we have owned it. can not say what prior owner did.

# LOCHNER

## ASBESTOS CONTAINING MATERIALS

1. Has the property ever been tested for the presence of asbestos containing materials (ACM)?

Yes  No  Do not know

2. If yes, are you aware if asbestos containing materials were identified? If so, please note what asbestos containing materials were identified and their locations or please attach a copy of the test results?

Yes  No  Do not know

3. Is there an Asbestos Operations and Maintenance Program in place at the property?

Yes  No  Do not know

## RADON

1. Has the property ever been tested for the presence of radon?

Yes  No  Do not know

not since we have owned it.

2. If yes, do you have the results of the testing? Please attach.

Yes  No  Not applicable

# LOCHNER

3. Are there currently or are you aware if there have ever been any evidence of leaks, spills, or staining by substances other than water, or foul odors, associated with any flooring, drains, walls, ceilings, or exposed grounds on the property?

Yes  No  Do not know

## TRANSFORMERS AND HYDRAULIC EQUIPMENT

1. Are there any transformers, capacitors, and/or hydraulic equipment on the property?

Yes  No  Do not know

should not be. don't believe there are any telephone lines/poles out there

2. If yes, are there any records indicating the presence or absence of PCBs in this equipment. If so, please attach copies of this documentation.

Yes  No  Do not know

3. If yes, are the transformers owned by the property or by the local utility? If owned by the utility, please note the name of the utility.

Yes  No  Do not know

# LOCHNER

## LEAD BASED PAINT

1. Has the property ever been tested for the presence of lead based paint (LBP)?

Yes  No  Do not know

not since we have owned it. no structures on property

2. If yes, are you aware if lead based paint was identified? If so, please note where it was identified or please attach a copy of the test results?

Yes  No  Not applicable

3. Is there a Lead Based Paint Operations and Maintenance Program in place at the property?

Yes  No  Do not know

4. If the property was constructed prior to 1979, do you provide Lead Based Paint Notification to the tenants? If yes, please attach a copy of the notification.

Yes  No  Not applicable

no facilities on land. There is nothing on land other than vegetation and cows; and perhaps birds and small wild animals

# LOCHNER

## MOLD

1. Is there any evidence of mold and/or mildew on the property? If yes, please provide information as to the location, extent and the cause of the mold/mildew. Please note what actions are currently or have formerly been taken to address this concern.

Yes  No  Do not know

vacant land. i suppose there could be mold in the soil?

2. Is there a Mold and Moisture Minimization Program in place at the property?

Yes  No  Do not know

**COMMENTS/ADDITIONAL INFORMATION** (If necessary, please provide any additional relevant environmental information that has not been discussed above.)