

Environmental Baseline Survey
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Environmental Baseline Survey for Proposed Land Use Permit Modification for Expansion of the Dynamic Explosive Test Site (DETS) 9940 Main Complex Parking Lot

Dennis W. Peek

Prepared by
Sandia National Laboratories
Albuquerque, New Mexico 87185 and Livermore, California 94550

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TABLE OF CONTENTS

| | |
|---|-----------|
| EXECUTIVE SUMMARY | 4 |
| E.1 Property Identification | 4 |
| E.2 Site History and Operations | 4 |
| E.3 Proposed Future Use..... | 4 |
| E.4 Factors Evaluated | 5 |
| E.5 Property Categorization | 5 |
| E.6 Findings and Recommendations..... | 5 |
| 1.0 PURPOSE OF THE ENVIRONMENTAL BASELINE SURVEY | 5 |
| 1.1 Introduction | 5 |
| 1.2 Boundaries of the Property and Survey Area | 6 |
| 2.0 SURVEY METHODOLOGY | 6 |
| 2.1 Approach and Rationale | 6 |
| 2.2 Description of Documents Reviewed..... | 6 |
| 2.3 Property Inspections/Personnel Interviews..... | 7 |
| 2.4 Sampling..... | 8 |
| 3.0 PROPERTY DESCRIPTION | 8 |
| 3.1 History and Current Use..... | 8 |
| 3.1.1 <i>Historic</i> | 8 |
| 3.1.1.1 Historic Operations and Land Use..... | 9 |
| 3.1.1.2 Demolitions..... | 9 |
| 3.1.2 <i>Current Operations and Land Use</i> | 9 |
| 3.2 Environmental Setting..... | 9 |
| 3.2.1 <i>Climate</i> | 9 |
| 3.2.2 <i>Soils</i> | 9 |
| 3.2.3 <i>Geology/Hydrogeology</i> | 11 |
| 3.2.4 <i>Topography</i> | 11 |
| 4.0 PROPERTY CATEGORIZATION | 12 |
| 5.0 FINDINGS FOR SUBJECT PROPERTY | 12 |
| 5.1 Visual Site Inspection (VSI)..... | 12 |
| 5.2 Hazardous Substances Notification..... | 12 |
| 5.2.1 <i>Storage of Hazardous Substances</i> | 12 |
| 5.2.2 <i>Hazardous Substances Released</i> | 12 |
| 5.2.3 <i>Hazardous and Petroleum Waste</i> | 12 |
| 5.3 Petroleum Products and Derivatives | 12 |
| 5.4 Environmental Restoration..... | 13 |
| 5.4.1 <i>Environmental Restoration Program (ERP) Sites</i> | 13 |
| 5.4.2 <i>Military Munitions Response Program (MMRP) Sites</i> | 13 |
| 5.5 Areas of Concern (AOC)..... | 13 |
| 5.6 Storage Tanks(s) | 13 |
| 5.6.1 <i>Aboveground Storage Tanks</i> | 13 |
| 5.6.2 <i>Underground Storage Tanks</i> | 14 |
| 5.6.3 <i>Pipelines, Hydrant Fueling, and Transfer Systems</i> | 14 |
| 5.7 Oil Water Separator(s)..... | 14 |
| 5.8 Grease Trap(s)..... | 14 |
| 5.9 Wash rack(s) | 14 |
| 5.10 Waste Tank(s)..... | 14 |
| 5.11 Pesticides | 14 |
| 5.12 Military Munitions/Ordnance | 14 |

TABLE OF CONTENTS (concluded)

| | | |
|------------|---|-----------|
| 5.13 | Medical or Bio-hazardous Waste | 14 |
| 5.14 | Radioactive Waste | 15 |
| 5.15 | Solid/Municipal Waste | 15 |
| 5.16 | Indoor Air Quality | 15 |
| 5.17 | Groundwater | 15 |
| 5.18 | Wastewater Treatment, Collection and Disposal/Discharge | 15 |
| | 5.18.1 Storm Water | 15 |
| | 5.18.2 Septic Tanks and Leach Fields | 15 |
| 5.19 | Drinking Water Quality | 15 |
| 5.20 | Utilities (Energy) | 16 |
| 5.21 | Asbestos | 16 |
| 5.22 | Polychlorinated Biphenyls (PCBs) | 16 |
| 5.23 | Radon | 16 |
| 5.24 | Lead-Based Paint | 16 |
| 5.25 | Cultural Resources | 16 |
| | 5.25.1 Prehistoric Resources | 16 |
| | 5.25.2 Historic Structures and Resources | 16 |
| | 5.25.3 Paleontological Resources | 16 |
| 5.26 | Floodplains | 16 |
| 5.27 | Natural /Biological Resources | 17 |
| | 5.27.1 Sensitive Habitat | 17 |
| | 5.27.2 Threatened and Endangered Species | 17 |
| | 5.27.3 Wetlands | 17 |
| | 5.27.4 Floodplains | 18 |
| 6.0 | APPLICABLE REGULATORY COMPLIANCE ISSUES | 18 |
| 6.1 | List of Compliance Issues | 18 |
| 7.0 | FINDINGS FOR ADJACENT PROPERTIES | 18 |
| 7.1 | Introduction | 18 |
| 7.2 | Adjacent Environmental Data Resources (EDR) Survey Properties | 18 |
| | 7.2.1 Federal Databases | 20 |
| | 7.2.2 State and Local Databases | 20 |
| | 7.2.3 Tribal Records | 20 |
| 7.3 | Findings/Impact | 20 |
| 8.0 | RECOMMENDATIONS | 21 |
| 9.0 | CERTIFICATIONS | 21 |
| 9.1 | Certification of the Environmental Baseline Survey | 21 |

LIST OF APPENDICES

| | |
|--|----|
| APPENDIX A: TERMS | 22 |
| APPENDIX B: MAPS | 23 |
| APPENDIX C: AERIAL AND SITE PHOTOS | 36 |
| APPENDIX D: REFERENCES | 40 |
| APPENDIX E: INTERVIEWS | 42 |

EXECUTIVE SUMMARY

E.1 Property Identification

The “subject property” is comprised of a parcel of land within the Kirtland Military Reservation, Bernalillo County, New Mexico, as shown on the map in Appendix B of this document. The land requirement for the parking lot addition to the 9940 Main Complex is approximately 2.7 acres.

The scope of this Environmental Baseline Survey (EBS) is for the parking lot addition land transfer only. For details on the original 9940 Main Complex see *Environmental Baseline Survey, Land Use Permit Request for the 9940 Complex PERM/0-KI-00-0001, August 21, 2003*, and for details on the 9940 Complex Expansion see *Environmental Baseline Survey, Proposed Land Use Permit Expansion for 9940 DETS Complex, June 24, 2009*.

E.2 Site History and Operations

The 2.7-acre parcel of land for the new parking lot, which is the subject of this EBS (also referred to as the “subject property”), is adjacent to the southwest boundary of the original 12.3-acre 9940 Main Complex. No testing is known to have taken place on the subject property site. The only activity known to have taken place was the burial of overhead utility lines in 2014.

Adjacent to the subject property, the 9940 Main Complex was originally a 12.3-acre site used by the Department of Energy (DOE) under a land use permit from the United States Air Force (USAF). Historical use of the site, dating from 1964, included arming, fusing, and firing of explosives and testing of explosives systems components. In the late 1970s and early 1980s experiments at the 9940 Main Complex shifted toward reactor safety issues. From 1983 to 1988, fuel coolant interaction (FCI) experiments were conducted, as were experiments with conventional high explosives (HE). Today, the land is used for training of the Nuclear Emergency Response community and for research on energetic materials. In 2009, the original complex was expanded to include four additional 20-acre areas: 9940 Training South, 9940 Training East, T-Range 6, and Training West Landing Zone.

E.3 Proposed Future Use

The proposed use of the subject property is for the purpose of adding a parking lot to serve the increase in customer vehicles that is occurring as the 9940 Main Complex is more heavily utilized, and as the 2009 Expansion areas come online as operational training facilities. The subject property would be used only for parking, not for testing or training activities.

Current and future work at the 9940 Main Complex involves arming, fusing, and firing of explosives and the testing of explosive systems components in both terrestrial and aquatic settings. It also involves specialized training activities for a variety of first responder customers, both DOE and non-DOE agencies.

E.4 Factors Evaluated

The approach was to perform a document search, supplemented by a visual site inspection, to identify potential environmental contamination associated with the property. Factors evaluated included hazardous substances; petroleum products and derivatives; environmental restoration sites; areas of concern; storage tanks; oil/water separators; grease traps; wash racks; waste tanks; pesticides; military munitions/ordnance; medical or bio-hazardous waste; radioactive waste; solid/municipal waste; indoor air quality; groundwater; wastewater treatment, collection, and disposal/discharge; drinking water quality; utilities; asbestos; polychlorinated biphenyls (PCBs); radon; lead-based paint; cultural resources; floodplains; and natural/biological resources.

Each of these factors is evaluated separately in Section 5, Findings for Subject Property.

E.5 Property Categorization

The property categorization for this subject property would be considered Category 1- “Areas where no release or disposal of hazardous or petroleum substances has occurred (including no migration of these substances from adjacent areas).”

There appears to be sufficient information to categorize the subject property and it appears that no further effort needs to be made to obtain additional information.

E.6 Findings and Recommendations

There are no findings of an adverse nature on the subject property itself or from adjacent properties. It is recommended that the proposed transfer of the subject property from the USAF to DOE proceed.

1.0 PURPOSE OF THE ENVIRONMENTAL BASELINE SURVEY

1.1 Introduction

The purpose of this EBS is to:

1. Document the nature, magnitude, and extent of any environmental contamination of the property.
2. Identify potential environmental contamination liabilities associated with the property.
3. Develop sufficient information to assess the health and safety risks.
4. Ensure adequate protection for human health and the environment related to a specific property.
5. Determine possible effects of contamination on property valuation, and serve as the basis for notice of environmental condition for applicable federal or local real property disclosure requirements.

1.2 Boundaries of the Property and Survey Area

The “subject property” is comprised of a parcel of land within the Kirtland Military Reservation, Bernalillo County, New Mexico, as shown on the map in Appendix B of this document. The land requirement for the parking lot addition to the 9940 Main Complex is approximately 2.7 acres.

The scope of this EBS is for the parking lot addition land transfer only. For details on the original 9940 Main Complex see *Environmental Baseline Survey, Land Use Permit Request for the 9940 Complex PERM/0-KI-00-0001, August 21, 2003*, and for details on the 9940 Complex Expansion see *Environmental Baseline Survey, Proposed Land Use Permit Expansion for 9940 DETS Complex, June 24, 2009*.

2.0 SURVEY METHODOLOGY

2.1 Approach and Rationale

The approach of this action is to perform a document search to identify potential environmental contamination associated with the property. The document follows the format required by Air Force Instruction 32-7066, *Environmental Baseline Surveys in Real Estate Transactions*, 26 January 2015.

Sandia National Laboratories (SNL) personnel have performed a thorough review of *reasonably obtainable*¹ state, federal, and local government and USAF records as part of this EBS. This review investigated the existence of information concerning this property on Kirtland Air Force Base (KAFB).

The EBS process was conducted in two steps. The first step was to research past disposal operations, handling/processing, and test activities. The second step evaluated the current operations for compliance with environmental regulations. The information collected is presented in this Phase I survey. The 5-year period start requested in this permit modification is from January 1, 2016, to December 31, 2020.

2.2 Description of Documents Reviewed

The types of documents reviewed include Air Force AF813 forms for the 9940 Main Complex area, and previous EBS's for the 9940 area, as well as Sandia National Laboratories broad-scope environmental documents, maps, and databases covering SNL's operations across KAFB on both DOE property and USAF property. A few examples are listed below: (see Appendix D for complete list).

1. Air Force Form 813, AF13-0008, Proposed Land Use Permit Modification for Expansion of the Dynamic Explosive Test Site (DETS) 9940 Parking Lot.

¹ *Reasonably obtainable* for the purposes of this document shall be considered equivalent in scope and intent to the term *reasonably ascertainable* as defined in the *ASTM Standard E1527-00, Section 3.3.30*

2. Air Force Form 813, AF13-0006, Termination of Temporary Easement to Refurbish the Parking Lot for the 9940 Complex.
3. Air Force Form 813, Proposed Land Use Permit Expansion for DETS Complex; PERM/O-KI-00-0001 (SNA09-0209/AF09-0011), prepared by SNL/NM, Albuquerque, New Mexico.
4. Air Force Form 813, AF08-0012. Request for a 5-Year Land Use Permit Renewal for the 9940 Complex, PERM/O-KI-00-0001
5. Air Force Form 813, AF13-0012. Request to Replace Existing Overhead Electrical Line Between 9956 and 9940 (NM13-0306/AF13-0012).
6. Environmental Baseline Survey, Proposed Land Use Permit Expansion for 9940 DETS Complex, June 24, 2009.
7. Environmental Baseline Survey, Land Use Permit Request for the 9940 Complex PERM/O-KI-00-0001, August 21, 2003.
8. Final Environmental Assessment for the Expansion of Permitted Land and Operations at the 9940 Complex and Thunder Range at Sandia National Laboratories/New Mexico, 2008, DOE/EA-1603, U.S. Department of Energy/National Nuclear Security Administration/Sandia Site Office, Albuquerque, New Mexico.
9. Sandia National Laboratories Environmental Information Document Calendar Year 2003 Update, 2004, SAND2004-5058, SNL/NM, Albuquerque, New Mexico.
10. SNL/NM Environmental Restoration (ER) Site Characterization documents for ER Sites 14, 38, 53, 85, 101, 108, 109, 112, 115, 149, 151, 152, 153 and 154.
11. Data from Geographic Environmental Management System (GEMS), including historic aerial photos and environmental/cultural map layers.
12. Sandia National Laboratories/New Mexico (SNL/NM) SAND Report, Operational Area Environmental Evaluations SAND2011-6097, September 2011, Sandia National Laboratories, Albuquerque, New Mexico.

2.3 Property Inspections/Personnel Interviews

The author and another member of the environmental management team conducted a site visit of the subject property on January 25, 2016. None of the following environmental concerns or issues were observed: no odors; pools of liquid; drums; hazardous substance and petroleum product containers; potential asbestos-containing material (ACM); PCB-containing electrical equipment; drains and sumps; pits, ponds, and lagoons; stained soil or pavement; stressed vegetation; wastewater; or dead or diseased wildlife. No concerns relating to the health and

safety of individuals or local flora or fauna, such as stains or leaks, were observed (See Appendix C for site photographs and Appendix E for the site inspection form).

Personnel Interviews

1. The personnel of the 9940 Main Complex were interviewed on April 22, 2014. The interviews were updated on January 25, 2016 and it was determined that no new activities had occurred on the subject property since the previous interviews and site visit.
2. The author of the previous 2009 EBS for the expansion of the permits for training areas at 9940: *Environmental Baseline Survey, Proposed Land Use Permit Expansion for 9940 DETS Complex, June 24, 2009* was interviewed on numerous occasions, the last being January 25, 2016.
3. SNL Real Estate personnel were interviewed March 19, 2014 and all relevant SNL real estate files were transmitted and reviewed. The SNL Real Estate Personnel interviews were updated January 25, 2016 and it was determined that no additional real estate files had changed since the previous files review and interview.

See Appendix E for more information.

2.4 Sampling

No indications were observed for the performance of sampling and analysis at the subject property, so sampling was not conducted as part of this EBS. Summary information on the sampling of Environmental Restoration (ER) sites on the Sandia National Laboratories/New Mexico (SNL/NM) campus can be found in Section 7.2 and Appendix B.

3.0 PROPERTY DESCRIPTION

3.1 History and Current Use

3.1.1 Historic

The 2.7-acre parcel of land for the new parking lot, which is the subject of this EBS (also referred to as the “subject property”), is adjacent to the southwest boundary of the original 12.3-acre 9940 Main Complex. No testing is known to have taken place on the subject property site. The only activity known to have taken place was the burial of overhead utility lines in 2014.

Adjacent to the subject property, the 9940 Main Complex was originally a 12.3-acre site used by the DOE under a land use permit from the USAF. Historical use of the site, dating from 1964, included arming, fusing, and firing of explosives and testing of explosives systems components. In the late 1970s and early 1980s experiments at the 9940 Main Complex shifted toward reactor safety issues. From 1983 to 1988 FCI experiments were conducted, as were experiments with conventional HE. Today, the land is used for training of the Nuclear Emergency Response community and for research on energetic materials. In 2009, the original complex was expanded

to include four additional 20-acre areas: 9940 Training South, 9940 Training East, T-Range 6, and Training West Landing Zone.

3.1.1.1 Historic Operations and Land Use

No operations are known to have taken place on the subject property.

3.1.1.2 Demolitions

No demolitions are known to have taken place on the subject property.

3.1.2 Current Operations and Land Use

The proposed 2.7-acre expansion of the 9940 Main Complex (the original 12.3 acre parcel) is for the purpose of adding a parking lot to serve the increase in customer vehicles that is occurring as the original site is more heavily utilized, and as the 2009 Expansion areas come online as operational training facilities. The 2.7-acre parcel (“the subject property”) would be used only for parking, not for testing or training activities. No operations currently take place on this subject property.

Current and future work at the adjacent 9940 Main Complex involves arming, fuzing, and firing of explosives and the testing of explosive systems components in both terrestrial and aquatic settings. It also involves specialized training activities for a variety of first responder customers, both DOE and non-DOE agencies.

3.2 Environmental Setting

3.2.1 Climate

The climate is typical of a high desert plateau with low precipitation, wide temperature extremes, and typically clear, sunny days. Average yearly rainfall is 8.5 inches.

3.2.2 Soils

Overview and Geomorphic Relations

Surface soils at KAFB are developed in fluvial, alluvial-fan, colluvial, and eolian surficial deposits. Variations in soil properties reflect differences in sediment characteristics, length of exposure to surficial weathering, and local climate. Soils within the Llano de Manzano geomorphic province are developed primarily in:

- Alluvium derived from schist, greenstone, sandstone, siltstone, and limestone in the Manzanita Mountains
- Granitic alluvium derived from the Manzano Area (Four Hills)
- Eolian deposits in the McCormick Ranch subprovince

In general, soils developed on middle- to late-Pleistocene alluvial fans in the Upper Llano de Manzano and Manzano Area (Four Hills) subprovinces and on thin pediment deposits in the Tijeras Arroyo subprovince contain well-developed argillic (clay-rich) and calcic (calcium carbonate-rich) horizons. These horizons probably influence rates of infiltration and the

geochemistry of percolating water. There is a moderate possibility of surface erosion of these soils, which primarily include:

- Tijeras gravelly, fine sandy loam
- Wink fine sandy loam
- Madurez loamy fine sand and Latene sandy loam

In the Upper Llano de Manzano and Manzano Area subprovinces, soils in Holocene deposits are less developed than those on older surfaces; e.g., soils developed on younger fans derived from the western side of Manzano Area include the Embudo gravelly fine sandy loam and the Tome very fine sandy loam. Moderately developed calcic horizons in these soils influence rates of infiltration and the geochemistry of percolating water. Areas underlain by the Embudo-Tijeras complex in this area contain Embudo soils in drainages and Tijeras soils on ridges, which is a result of erosion of the Tijeras soils. The heterogeneity of this complex shows that the locations and rates of infiltration, potential for surface erosion, and geochemical interactions between soils and percolating water may vary substantially in this part of KAFB.

Soils associated with the Tijeras Arroyo and Arroyo del Coyote valley floors are generally well drained, have moderate permeability, and have high potential for surface erosion. The Gila fine sandy loam is associated with the floors of large, active arroyos, such as the Tijeras Arroyo. This poorly developed soil lacks evidence of substantial clay or salt accumulation and likely allows for rapid percolation of surface water. Escarpments flanking the large arroyos in the western part of KAFB are associated with poorly developed soils, such as the Bluepoint-Kokan association. Areas underlain by this soil series, however, locally contain well-developed calcic horizons, which are remnants of the Tijeras, Wink, and Madurez soils originally developed on older surficial deposits. The Bluepoint-Kokan soils reflect erosion of older soils and therefore are characterized by discontinuous soil horizons. This heterogeneity strongly influences the location and rates of infiltration and geochemical interactions between surface soils and percolating water.

Soils developed in the bedrock uplands and small valleys in the eastern part of KAFB (e.g., the Manzanita Mountains subprovince) are heterogeneous, consisting of the poorly developed soils of the Rock Outcrop-Orthids complex, the moderately developed Salas complex, and the moderately developed Tesajo-Millet series. The Rock Outcrop-Orthid soils are formed in limestone, sandstone, and schist bedrock and are characterized by substantial variation in carbonate content. The Salas complex contains well-drained soils developed in residuum derived from schist bedrock, and characterized by moderate amounts of clay and carbonate accumulation. The Tesajo-Millet soils are formed in alluvium on valley floors and low terraces. These three soil complexes differ substantially in properties that probably influence interactions between surface and vadose water.

Soils are developed in silty, sandy surficial deposits in the McCormick Ranch subprovince, in contrast to the coarse-grained deposits of the Upper Llano de Manzano subprovince. Eolian influx into surficial deposits and soil horizons is probably substantial in this subprovince. It is likely that the eolian dunes and eolian-modified alluvium are a substantially different parent material than that for limestone- and sandstone-rich alluvium in the Upper Llano de Manzano subprovince. At present, these possible differences are poorly characterized.

Soil Series

The Embudo Series consists of deep, well-drained gravelly fine sandy loam that formed from weathered granitic rocks on old fan-shaped deposits. Elevations range from 1,525 to 1,980 meters (5,000 to 6,500 ft.) with slopes of up to 5%. Tijeras and Wink soils are associated with the Embudo Series.

The Tijeras Series is yellowish-brown, gravelly fine sandy loam. Elevations range from 1,524 to 1,980 meters (5,000 to 6,500 ft.), with 1% to 5% slopes. Embudo, Madurez, and Latene soils comprise 20% of this unit (SNL/NM, 2004).

3.2.3 Geology/Hydrogeology

KAFB and SNL/NM are situated in the eastern portion of the Albuquerque Basin (also referred to as the Middle Rio Grande basin). The Middle Rio Grande basin is one of a series of basins formed during the extension of the Rio Grande Rift and is approximately 3,000 square miles. There are a number of regional faults intersecting the area. The basin is primarily filled with poorly consolidated sediments that have eroded from the surrounding mountain areas. The upper part of the basin fill is comprised of a complex sequence of gravel, sand, silt, clay, and caliche deposits of the middle Pleistocene to uppermost Miocene Upper Santa Fe Group and post-Santa Fe Group deposits. These units include alluvial fan, fluvial, eolian, playa, colluvial, and floodplain deposits. Surface soils that have developed in these deposits include the Tijeras Series (gravelly, fine sand) and the Wink Series (fine sandy loam).

The subject property, as well as the adjacent 9940 Main Complex, is situated within the HR-2 hydrological region as described in the 1994 *Site-Wide Hydrogeologic Characterization Project Annual Report*. HR-2 straddles the Sandia/Tijeras/Hubbell Springs fault complex. The saturated zone hydrology is characterized by a flow system complicated by the juxtaposition of different stratigraphic units across one or more faults. The faults themselves also have a significant impact on groundwater flow. The nearest fault is the Sandia Fault located directly below the 9940 Main Complex.

Regional groundwater flow in this area is typically to the northwest according to the 1995 *The Site-Wide Hydrogeologic Characterization Project Annual Report*. The nearest groundwater monitoring well, CTF-MW3, is located approximately 2,500 ft. south of the subject property, and 375 ft. to the west of SNL/NM Building 9930. The depth to groundwater at CTF-MW3 in January 2014 was measured at 307.85 ft. below the top of the well casing or approximately 305 ft. below ground surface. There are no springs, perennial streams, or active wetlands located on, or near the 9940 Main Complex.

The hazard of water erosion is moderate. Stormwater discharges from these sites follow the natural topography toward lower elevations; however, storm water typically infiltrates the soil where it comes into contact with undeveloped areas. There is no hydrologic surface connection to the Tijeras Arroyo or the Rio Grande from these sites.

3.2.4 Topography

The subject property is located on the eastern slopes of the Rio Grande Valley, in the Coyote Test Field, at the foot of the Manzano Mountains. Elevation ranges from 5,520 to 5,560 ft.

4.0 PROPERTY CATEGORIZATION

The property categorization for this subject property would be considered Category 1- “Areas where no release or disposal of hazardous or petroleum substances has occurred (including no migration of these substances from adjacent areas).”

There appears to be sufficient information to categorize the subject property and it appears that no further effort needs to be made to obtain additional information.

5.0 FINDINGS FOR SUBJECT PROPERTY

The following information (Sections 5.1 through 5.27.4) is based upon personnel interviews, records searches, and the preliminary site inspection.

5.1 Visual Site Inspection (VSI)

As detailed in Section 2.3, a preliminary property inspection occurred as part of this EBS and is documented on the VSI form from AFI 32-7066 as part of Appendix E.

5.2 Hazardous Substances Notification

5.2.1 Storage of Hazardous Substances

Records review, interviews, and site inspections revealed no hazardous materials used or stored on the subject property.

5.2.2 Hazardous Substances Released

Records review, interviews, and site inspections revealed no hazardous materials released on the subject property.

5.2.3 Hazardous and Petroleum Waste

Records review, interviews, and site inspections revealed that no hazardous or petroleum wastes were generated on the subject property, nor are any expected to be in the future.

Activities at the adjacent 9940 Main Complex are anticipated to generate some amount of hazardous and/or petroleum wastes. Hazardous and petroleum wastes are managed in accordance with the appropriate sections of the SNL ES&H protocols.

5.3 Petroleum Products and Derivatives

Records review, interviews, and site inspections revealed no hazardous substances stored or used on the subject property, nor are any expected to be in the future.

The adjacent 9940 Main Complex has hazardous substances including but not limited to: janitorial cleaners, detergents, disinfectants, buffing and polishing compounds, lubricants, greases, oils, spray paints, epoxies, adhesives and sealers, solder and flux, photographic

chemicals, analytical laboratory chemicals, and laboratory gases. Additionally, small quantities (<5 gallons) of gasoline, diesel, and motor oil are also kept on site. Storage and use of these substances follow the requirements specified by SNL ES&H protocols.

A variety of chemicals (corrosives, solvents, organic, and inorganic) in gaseous (acetylene for welding), liquid, and solid forms are used in relatively small quantities for surface preparation, cleaning, material processing, fabrication of test parts, pre-explosive testing, and quality control. Current and future operations will continue to utilize some or all of the same types of chemicals and chemical products.

5.4 Environmental Restoration

There are no environmental restoration sites of any kind on the subject property, so no corrective actions are pending.

5.4.1 Environmental Restoration Program (ERP) Sites

Review of the KAFB Environmental Compliance Program (ECP) and ERP Sites map indicated no ERP Sites would be located within the boundaries of the Land Use Permit sites; no ERP sites are located within ½ mile of the boundaries of the permit site.

A letter from 377 ABW/EMR for Installation Restoration Program (IRP) Information, dated June 28, 2003 stated that within the “9940 Complex, # 25: There are no IRP sites within 0.5-mile radius of the subject property. There are no KAFB IRP impacts associated with this permit renewal” (USAF, 2003).

Review of the KAFB ECP and ERP sites location map; dated February 27, 2006, revealed no ECP or ERP sites within a 0.5 mile radius of the subject property.

Review of the KAFB Administrative Record web site revealed no environmental restoration sites or activities that impact the subject property (KAFB).

5.4.2 Military Munitions Response Program (MMRP) Sites

Review of the KAFB Administrative Record web site revealed no MMRP sites that impact the subject property (KAFB).

5.5 Areas of Concern (AOC)

Review of the KAFB Administrative Record web site revealed no Areas of Concern that impact the subject property (KAFB).

5.6 Storage Tanks(s)

5.6.1 Aboveground Storage Tanks

Records review, interviews, and site inspections revealed no aboveground storage tanks on the subject property.

5.6.2 *Underground Storage Tanks*

Records review, interviews, and site inspections revealed no underground storage tanks on the subject property.

5.6.3 *Pipelines, Hydrant Fueling, and Transfer Systems*

Records review, interviews, and site inspections revealed no known active or abandoned hydrant fueling, or transfer systems on the subject property.

5.7 *Oil Water Separator(s)*

Records review, interviews, and site inspections revealed no known oil/water separators, or historic use thereof, on the subject property.

5.8 *Grease Trap(s)*

Records review, interviews, and site inspections revealed no known grease traps, or historic use thereof, on the subject property.

5.9 *Wash rack(s)*

Records review, interviews, and site inspections revealed no known wash racks, or historic use thereof, on the subject property.

5.10 *Waste Tank(s)*

Records review, interviews, and site inspections revealed no known waste tanks, or historic use thereof, on the subject property.

5.11 *Pesticides*

SNL uses pesticides to control rodent and insect populations inside buildings. Herbicides are used in developed areas as needed to control weeds. Licensed professionals contracted through SNL apply these chemicals. The best information available suggests that this particular parcel of land has not been, and is not currently, subject to the application of herbicides or pesticides. However, it is likely that once the parking lot is built, herbicides will be applied routinely for weed control. Storage and use of these substances follow the requirements specified by SNL ES&H protocols.

5.12 *Military Munitions/Ordnance*

Records review, interviews, and site inspections revealed no known military munitions/ordnance, or historic use thereof, on the subject property.

5.13 *Medical or Bio-hazardous Waste*

Records review, interviews, and site inspections revealed SNL has not produced or stored any medical or biohazard waste in or around this permit site. Future activities are not associated with medical or biohazard wastes.

5.14 Radioactive Waste

Records review, interviews, and site inspections revealed no known radioactive waste use or generation on the subject property.

Radioactive waste was generated and removed during ER Voluntary Corrective Measure efforts associated with ER Sites 108 and 151.

5.15 Solid/Municipal Waste

Records review, interviews, and site inspections revealed solid waste is not generated on the subject property.

5.16 Indoor Air Quality

Indoor air quality is not applicable to this EBS. There are no structures, past or present, on the property.

5.17 Groundwater

Records review, interviews, and site inspections revealed no known groundwater impacts on the subject property.

5.18 Wastewater Treatment, Collection and Disposal/Discharge

Records review, interviews, and site inspections revealed no wastewater treatment, collection, and discharge requirements or installations associated with the subject property.

5.18.1 Storm Water

Records review, interviews, and site inspections revealed no known stormwater impacts on the subject property.

5.18.2 Septic Tanks and Leach Fields

Records review, interviews, and site inspections revealed no known septic tanks or leach fields on the subject property.

5.19 Drinking Water Quality

Potable water is supplied through the SNL/NM domestic water distribution system. Bottled water is also supplied under contract by a bottled water company and is the preferred source of drinking water for those employees and visitors who would park in the new parking lot. No impact to drinking water quality is associated with the activities on the subject property.

A water supply line runs under the subject property. However, it would not be disturbed by the construction or use of the parking lot.

5.20 Utilities (Energy)

A buried power line runs across the western edge of the subject property. However, it would not be disturbed by the construction or use of the parking lot.

5.21 Asbestos

Records review, interviews, and site inspections revealed no known asbestos associated with the subject property.

5.22 Polychlorinated Biphenyls (PCBs)

Records review, interviews, and site inspections revealed no known or observed PCB impacts associated with the subject property.

5.23 Radon

Records review, interviews, and site inspection revealed no known radon issues are associated with the subject property. Since this project occurs outdoors and no known structures were or will be located on the proposed parcel, sampling for radon was not conducted as part of this Phase I investigation.

5.24 Lead-Based Paint

Based upon past sampling and analysis for lead-based paints at SNL/NM, the Facilities ES&H organization (FESH) considers all painted surfaces to contain lead in such quantities as to be present in detectable levels by common analytical methodology. However, there are no known past or present buildings, and therefore no lead-based paint issues, associated with the subject property.

5.25 Cultural Resources

5.25.1 Prehistoric Resources

Records review, interviews, and site inspection revealed that no known prehistoric resources are associated with the subject property.

5.25.2 Historic Structures and Resources

Records review, interviews, and site inspection revealed that no known historic structures and resources are associated with the subject property.

5.25.3 Paleontological Resources

Records review, interviews, and site inspection revealed that no known paleontological resources are associated with the subject property.

5.26 Floodplains

Records reviews indicate positively that the subject property is in neither a 100 nor 500 year flood zone (SNL/NM, 2011) (FEMA).

5.27 Natural /Biological Resources

Vegetation

KAFB as a whole is located at the juncture of the Chihuahuan Semi-desert Grassland, the Great Basin Scrub Grassland and the Plains Grassland. All three of these biomes influence the grassland vegetation of the permit area. Specifically the permit site is classified under the national vegetation classification standard (NVCS) as Dwarf Shrub Grasslands (IV.A.2.N.a.), which consists of low-growing (generally less than 0.5 m tall) shrubs that comprise 25 percent or greater of the total vegetative cover. Grasses are of moderate height. See Appendix D, (SNL/NM, 2004) of this document for more detailed environmental information relative to the permit site.

Wildlife

Species known to inhabit grassland habitats are expected to occur in this area. However, due to the site improvements and recurring activities that take place at the site, the occurrence of these wildlife species is expected to be somewhat reduced in frequency.

The composition of the wildlife community at any one location depends upon the quality and quantity of available habitat as it meets the needs of individual wildlife species. Just as vegetation varies within the broad habitat types, the composition of the wildlife communities also varies. The limited availability of surface water is probably the most important factor controlling the wildlife communities in the area.

Animals common across most habitats within the KAFB boundary including the permit area are coyote (*Canis latrans*), deer mouse (*Peromyscus leucopus*), rock squirrel (*Spermophilus variegates*), Mourning Dove (*Zenaida macroura*), Say's Phoebe (*Sayornis saya*), Common Raven (*Corvus corax*), American Robin (*Turdus migratorius*), and House Finch (*Carpodacus mexicanus*). Although some bird species are resident throughout the year, many are migratory, being present only seasonally, either during the breeding season, wintering season, or as transients moving between their breeding and wintering grounds.

5.27.1 Sensitive Habitat

Records review, interviews, and site inspection revealed that no known sensitive habitat resources are associated with the subject property.

5.27.2 Threatened and Endangered Species

Records review, interviews, and site inspection revealed that no known threatened and endangered species are uniquely associated with the subject property.

5.27.3 Wetlands

Records review, interviews, and site inspection revealed that no known wetlands are associated with the subject property.

5.27.4 Floodplains

Records review, interviews, and site inspection revealed that no known floodplains are associated with the subject property.

6.0 APPLICABLE REGULATORY COMPLIANCE ISSUES

6.1 List of Compliance Issues

There are no compliance issues related to the subject property.

7.0 FINDINGS FOR ADJACENT PROPERTIES

7.1 Introduction

The scope of this EBS is for the proposed 2.7-acre parcel for the parking lot addition only (“the subject property”).

Adjacent properties include other research, development and environmental testing facilities within the Coyote Test Field. The closest properties are the original 9940 Main Complex, which is directly adjacent to and bordering on the subject property, and the 2009 Expansion sites, which are hundreds or more feet away.

Details on the original 9940 Main Complex may be found in *Environmental Baseline Survey, Land Use Permit Request for the 9940 Complex PERM/0-KI-00-0001, August 21, 2003*, and details on the 9940 Main Complex Expansion may be found in *Environmental Baseline Survey, Proposed Land Use Permit Expansion for 9940 DETS Complex, June 24, 2009*.

7.2 Adjacent Environmental Data Resources (EDR) Survey Properties

Adjacent areas (within ½ mile) have been evaluated for the presence of SNL and USAF ER sites. See Section 5.4, Environmental Restoration, in this document for USAF ER (IRP, ERP, ECP and MMRP) information related to this area. SNL ER sites that are within ½ mile of the subject property are listed below with brief summaries of their current regulatory status. ER Site Maps for these sites can be found in Appendix B.

ER Site #85, Firing Site (Bldg. 9920) - Corrective action is complete at ER Site 85, and no further action is required. This site is acceptable for residential land use, and there are no restrictions on future activities. The New Mexico Environment Department (NMED) approved completion of corrective action in July 2000.

ER Site #101, Bldg. 9926/9926A Septic System and Seepage Pit (Coyote Test Field) - Site 101 has been characterized in accordance with applicable requirements and the available data

indicate that contaminants pose an acceptable level of risk under current and projected future land use. Corrective action is complete at Site 101, and no further action is needed to meet NMED requirements. NMED approved completion of corrective action in December 2014.

ER Site #108, Firing Site (Bldg. 9940) - Corrective action is complete at Site 108, and no further action is required. This site is acceptable for residential land use, and there are no restrictions on future activities. NMED approved completion of corrective action on July 2000.

ER Site # 109, Firing Site (Bldg. 9956) – Corrective action is complete at Site 109, and no further action is required. This site is acceptable for residential land use, and there are no restrictions on future activities. NMED approved completion of corrective action in July 2000.

ER Site # 112, Explosive Contaminated Sump (Bldg. 9956) – Corrective action is complete at ER Site 112 and no further action is required. The site is acceptable for residential land use and there are no restrictions on future activities. NMED approved completion of corrective action in September 2000.

ER Site #115, Firing Site (Bldg. 9930) - Corrective action is complete at Site 115, and no further action is required. It is acceptable for residential land use, and there are no restrictions on future activities as noted under Institutional Controls. NMED approved completion of corrective action in September 2000.

ER Site #149, Bldg. 9930 Septic System - Corrective action is not yet complete at Site 149. NMED requested additional groundwater data, and has not made a final determination regarding this site.

ER Site #151, Bldg. 9940 Septic System - Corrective action is complete at Site 151, and no further action is needed to meet NMED requirements. The site is acceptable for residential land use, and there are no restrictions on future activities. NMED approved completion of corrective action in November 2001.

ER Site #152, Bldg. 9950 Septic System - Corrective action is complete at Site 152, and no further action is needed to meet NMED requirements. The site is acceptable for residential land use, and there are no restrictions on future activities. NMED approved completion of corrective action in February 2008.

ER Site #153, Bldg. 9956 Septic System - Corrective action is complete at Site 153, and no further action is needed to meet NMED requirements. The site is acceptable for residential land use, and there are no restrictions on future activities. NMED approved completion of corrective action in February 2008.

ER Site #154, Bldg. 9960 Septic System and Seepage Pits - Corrective action is not yet complete at Site 154. NMED requested additional groundwater data, and has not made a final determination regarding this site.

7.2.1 Federal Databases

FEMA Flood Map Service Center

<https://msc.fema.gov/portal>

7.2.2 State and Local Databases

Virtually all environmental and real estate data for this EBS was obtained from local sources (KAFB or SNL documents and databases).

State

New Mexico Cultural Resource Information System (NMCRIS)

<https://nmcris.dca.state.nm.us/NMCRISCTA/Security/SignIn.aspx>

Note that while NMCRIS was referred to during the EBS, the data in NMCRIS was developed locally during KAFB and SNL projects over the years, and is available in more usable form via local databases and maps, which were actually relied upon for this EBS.

Local

KAFB Administrative Record web site

<https://kirtlandafb.tlisolutions.com/main.aspx>

Sandia National Laboratories Legacy Site Information

<https://info.sandia.gov/LegacySiteInfo/> (web link available internally at SNL only).

Sandia National Laboratories Integrated Reporting Management System (IRMS)

<https://cfwebprod.sandia.gov/cfdocs/SRS/templates/>

Sandia National Laboratories Geographic Environmental Management System (GEMS)
(Internal database, no web link available.)

Sandia National Laboratories Environmental Geographic Information Portal (EGIP)

<https://chips.srn.sandia.gov/> (web link available internally at SNL only).

7.2.3 Tribal Records

No tribal records were identified that are relevant to the subject property.

7.3 Findings/Impact

Records review, interviews, and site inspection revealed that no known findings of an adverse nature for the subject property from adjacent properties.

8.0 RECOMMENDATIONS

It is recommended that the proposed transfer of the subject property from the USAF to DOE proceed.

9.0 CERTIFICATIONS

9.1 Certification of the Environmental Baseline Survey

I have conducted this Environmental Baseline Survey in association with Sandia National Laboratories and on behalf of the United States Air Force in accordance with the requirements contained in Air Force Instruction 32-7066, Environmental Baseline Surveys in Real Estate Transactions. I have reviewed all appropriate records made available and conducted visual site inspections of the selected facilities following an analysis of information during the record search. The information contained within the survey report is based on records made available and, to the best of my knowledge, is correct and current as of January 25, 2016.

Certified by:

Dennis Peek
Sandia National Laboratories

Date:

Accepted by:

Susan D. Lacy
Department of Energy,
Sandia Field Office (SFO)

Date:

Approved by:

GREGORY S. CAPRA, P.E., LEED AP
Base Civil Engineer

Date:

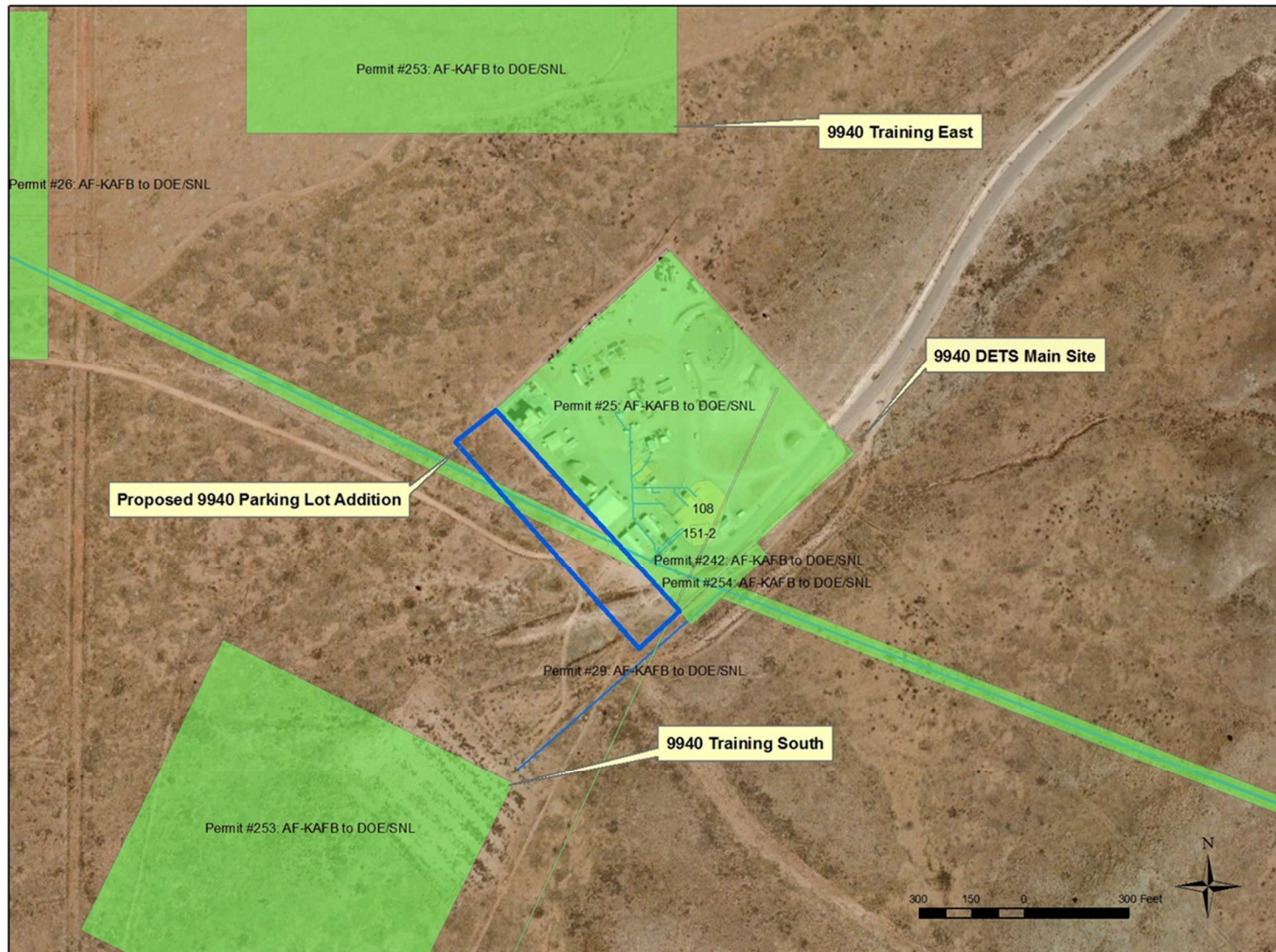
APPENDIX A: TERMS

| | |
|--------|---|
| ACM | Asbestos-containing material |
| AFB | Air Force Base |
| DETS | Dynamic Explosive Test Site |
| DOE | Department of Energy |
| EBS | Environmental Baseline Survey |
| ECP | Environmental Compliance Program |
| ER | Environmental Restoration |
| ERP | Environmental Restoration Program |
| ES&H | Environment Safety and Health |
| FCI | Fuel Coolant Interaction |
| FESH | Facilities Environment, Safety and Health |
| GEMS | Geographic Environment Management System |
| GIS | Geographic Information System |
| HE | High Explosives |
| IRP | Installation Restoration Program |
| KAFB | Kirtland Air Force Base |
| NMCRIS | New Mexico Cultural Resource Information System |
| NMED | New Mexico Environment Department |
| NVCS | National Vegetation Classification Standard |
| PCB | Polychlorinated Biphenyls |
| SNL | Sandia National Laboratories |
| SNL/NM | Sandia National Laboratories/New Mexico |
| USAF | United States Air Force |
| VSI | Visual Site Inspection |

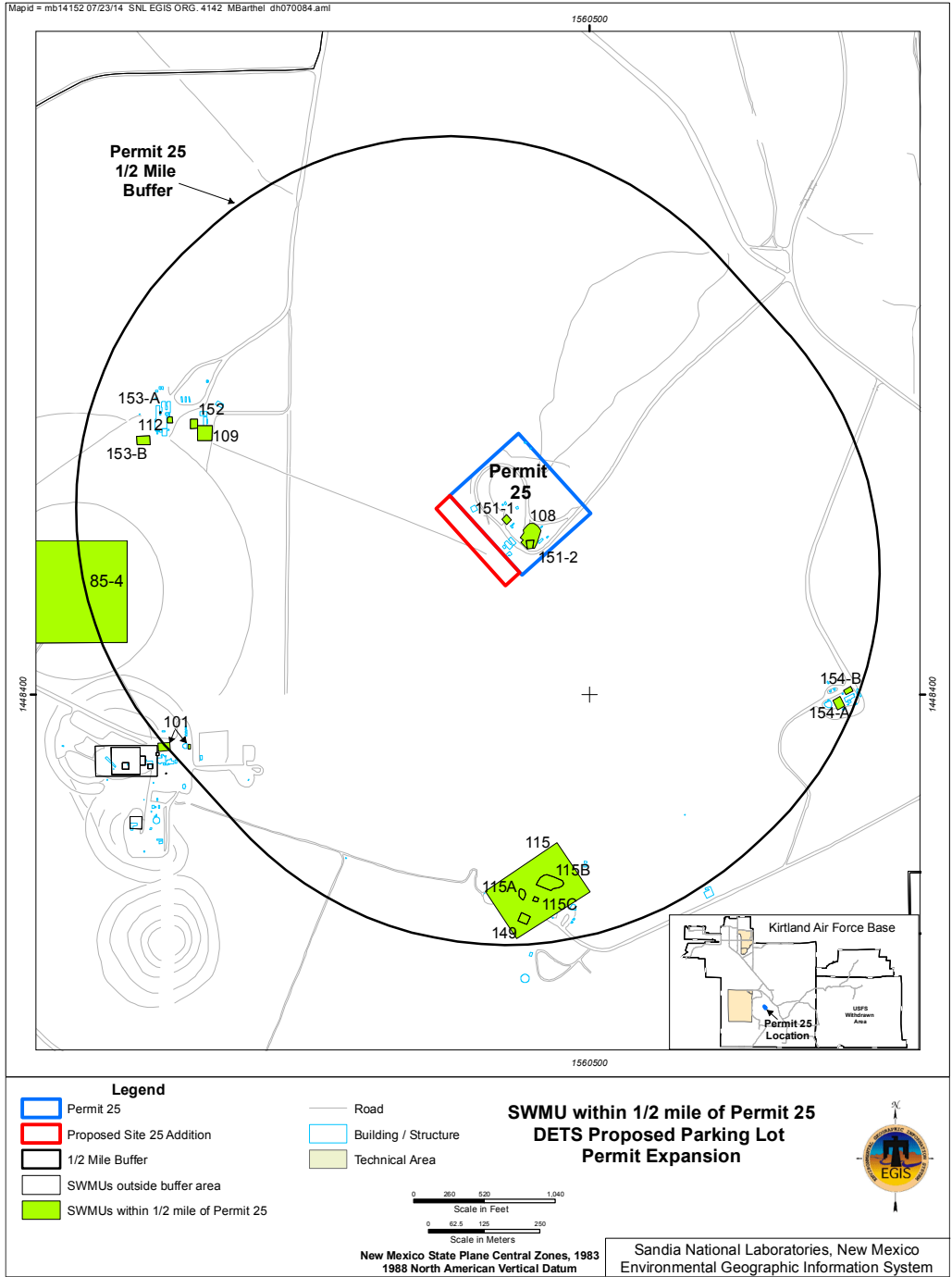
APPENDIX B: MAPS

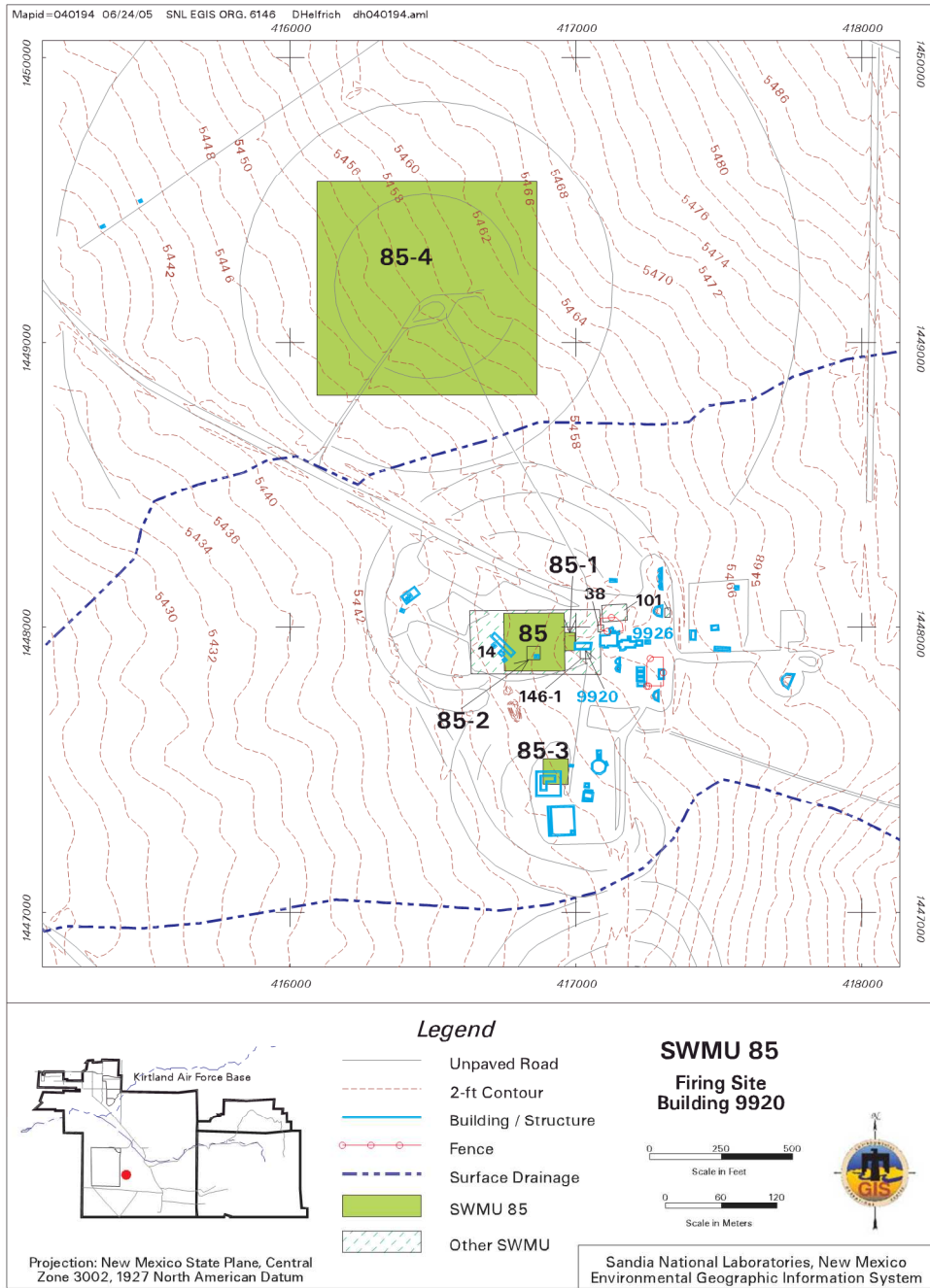
Sandia National Laboratories, Albuquerque, NM, Survey Maps and Legal Descriptions

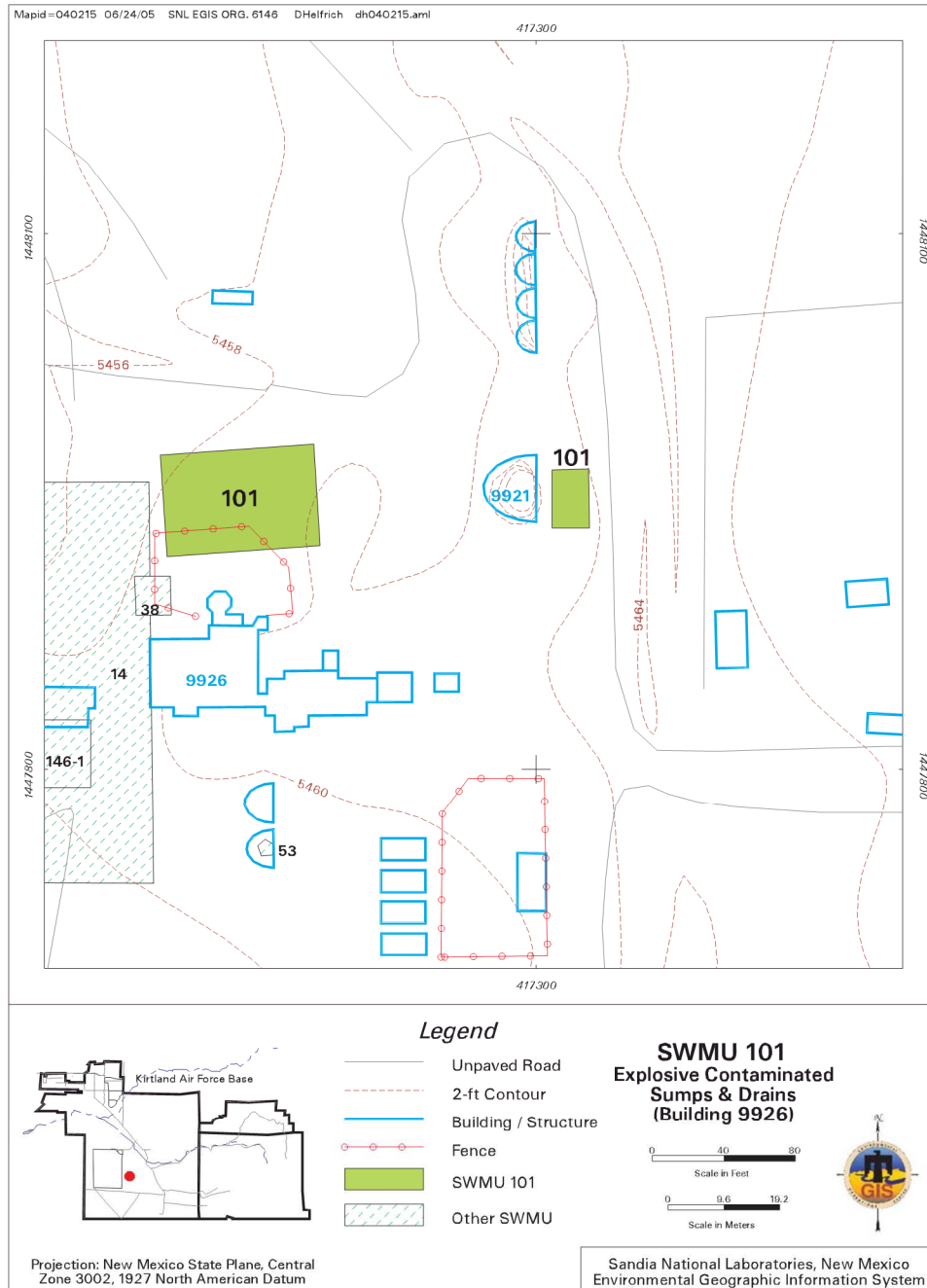
DETS Proposed Parking Lot Permit Expansion

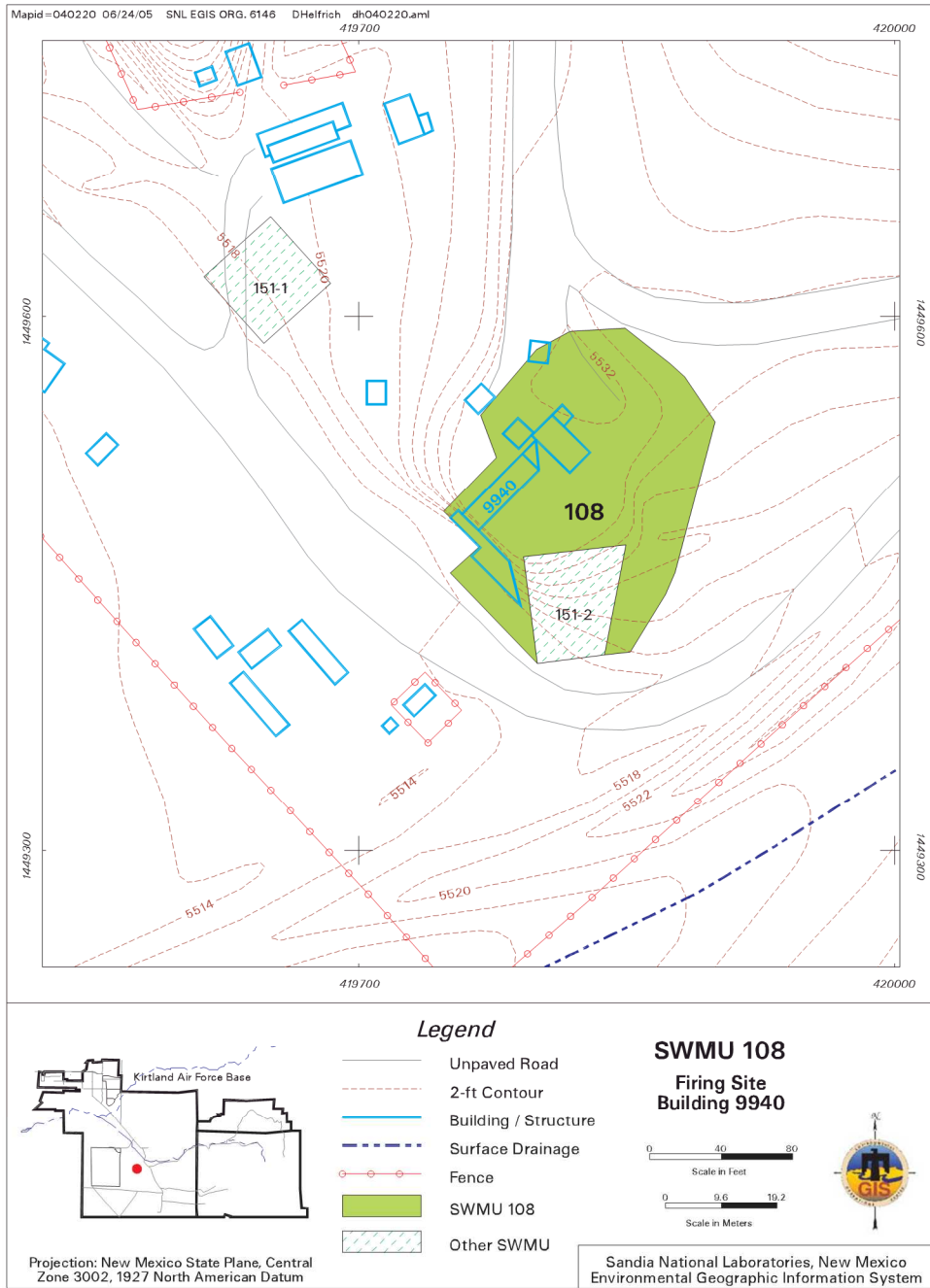


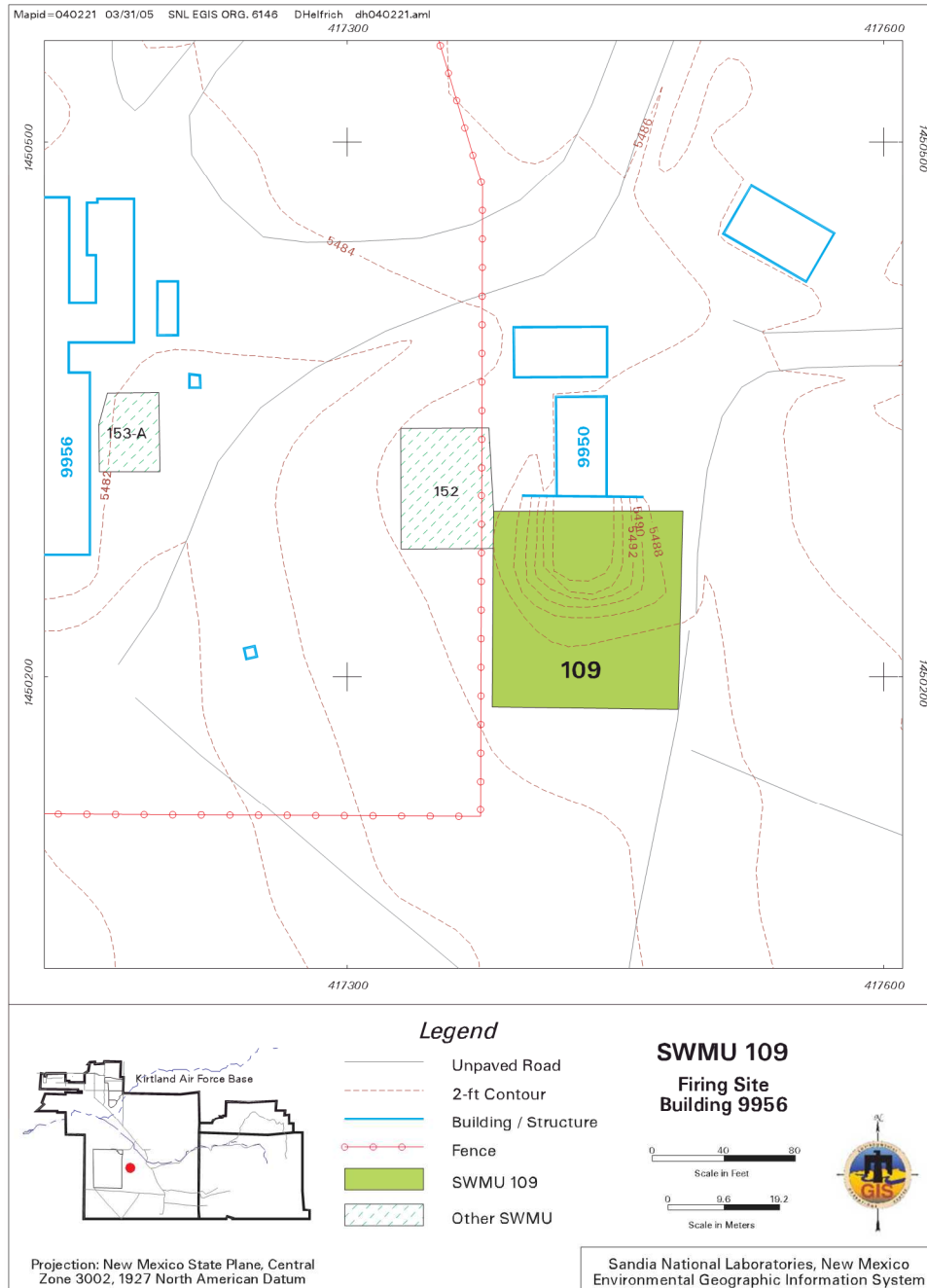
Sandia National Laboratories, Environmental Restoration Site Characterization Maps for ER Sites within 1/2 Mile

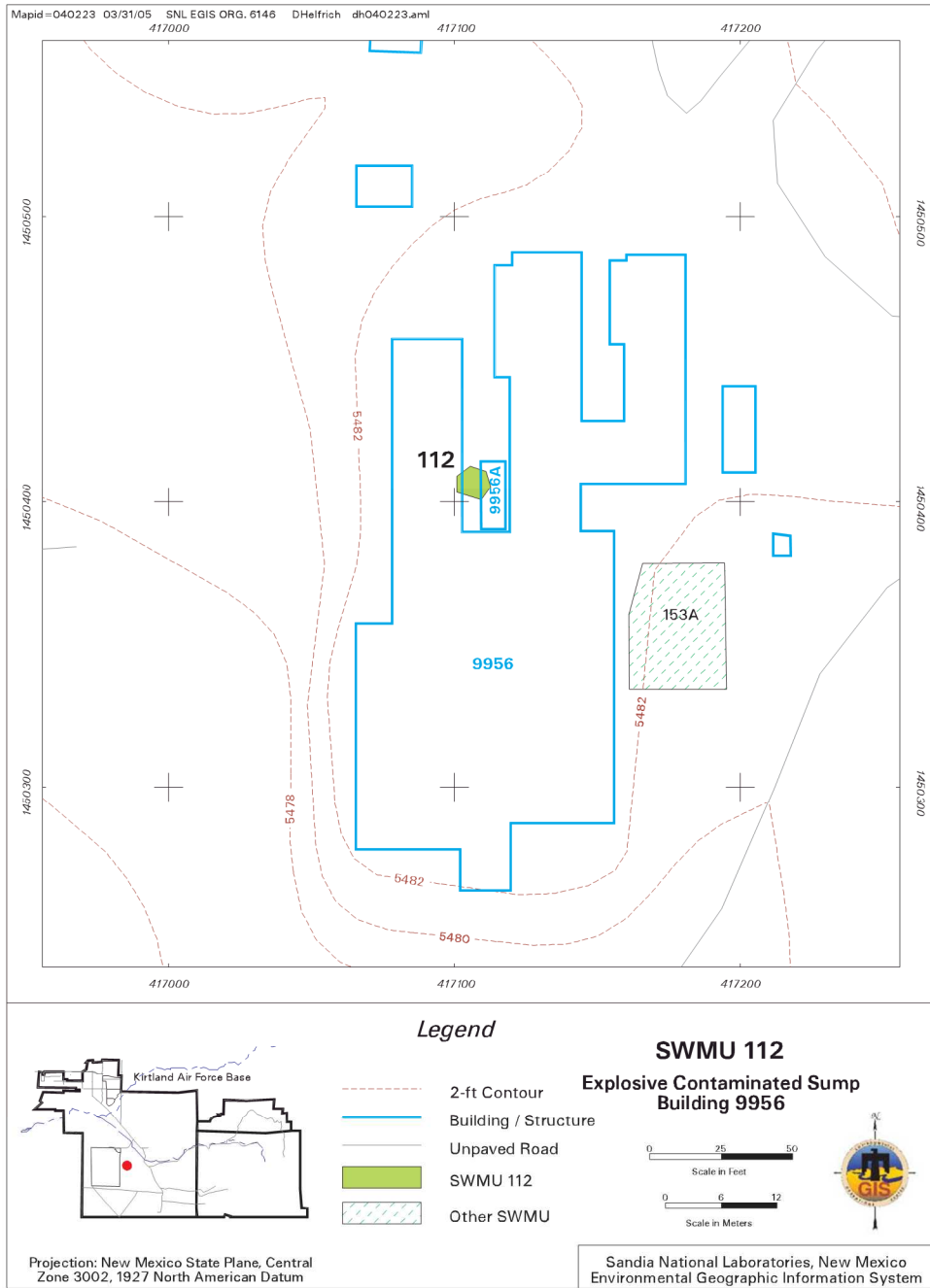


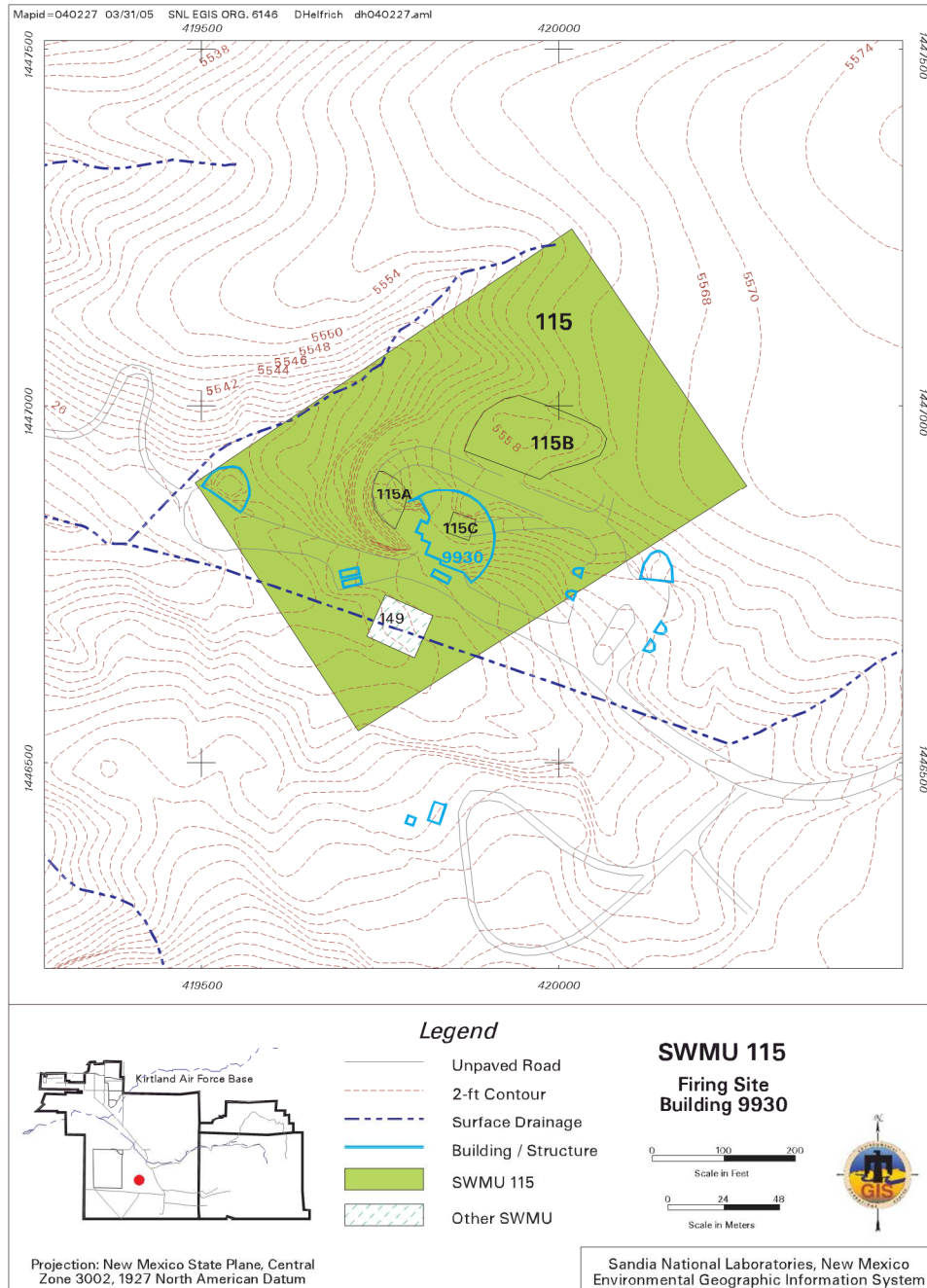


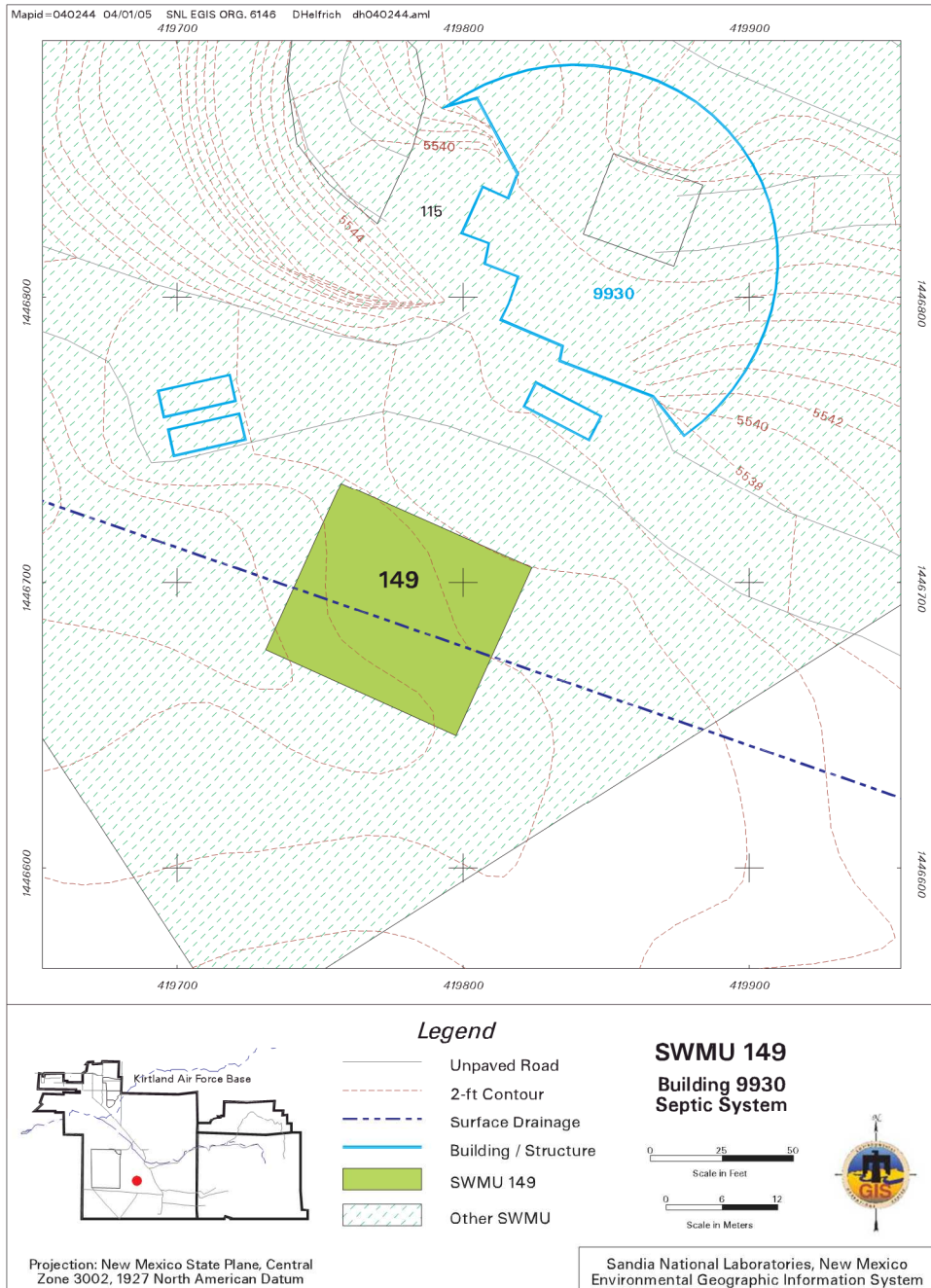


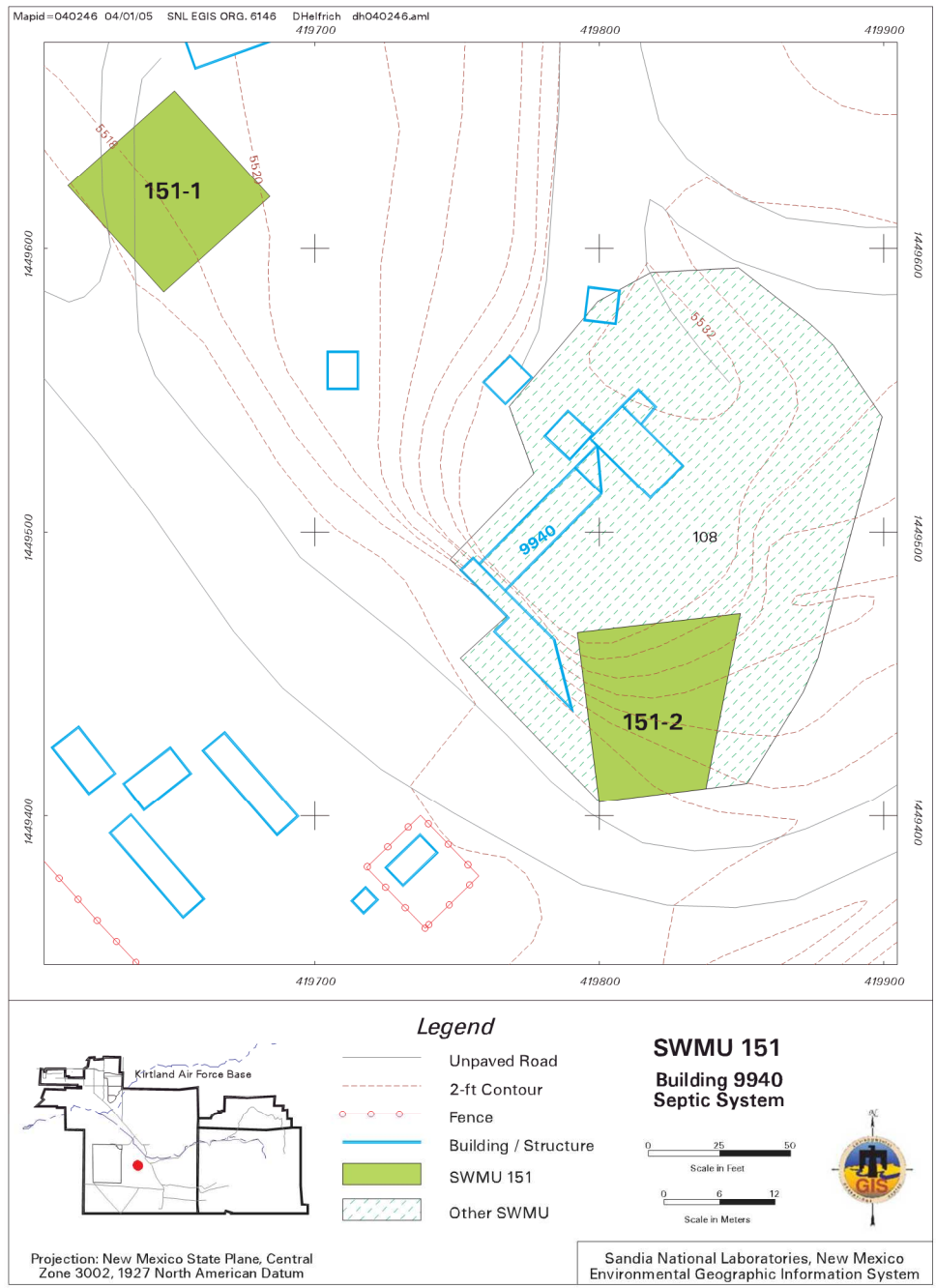


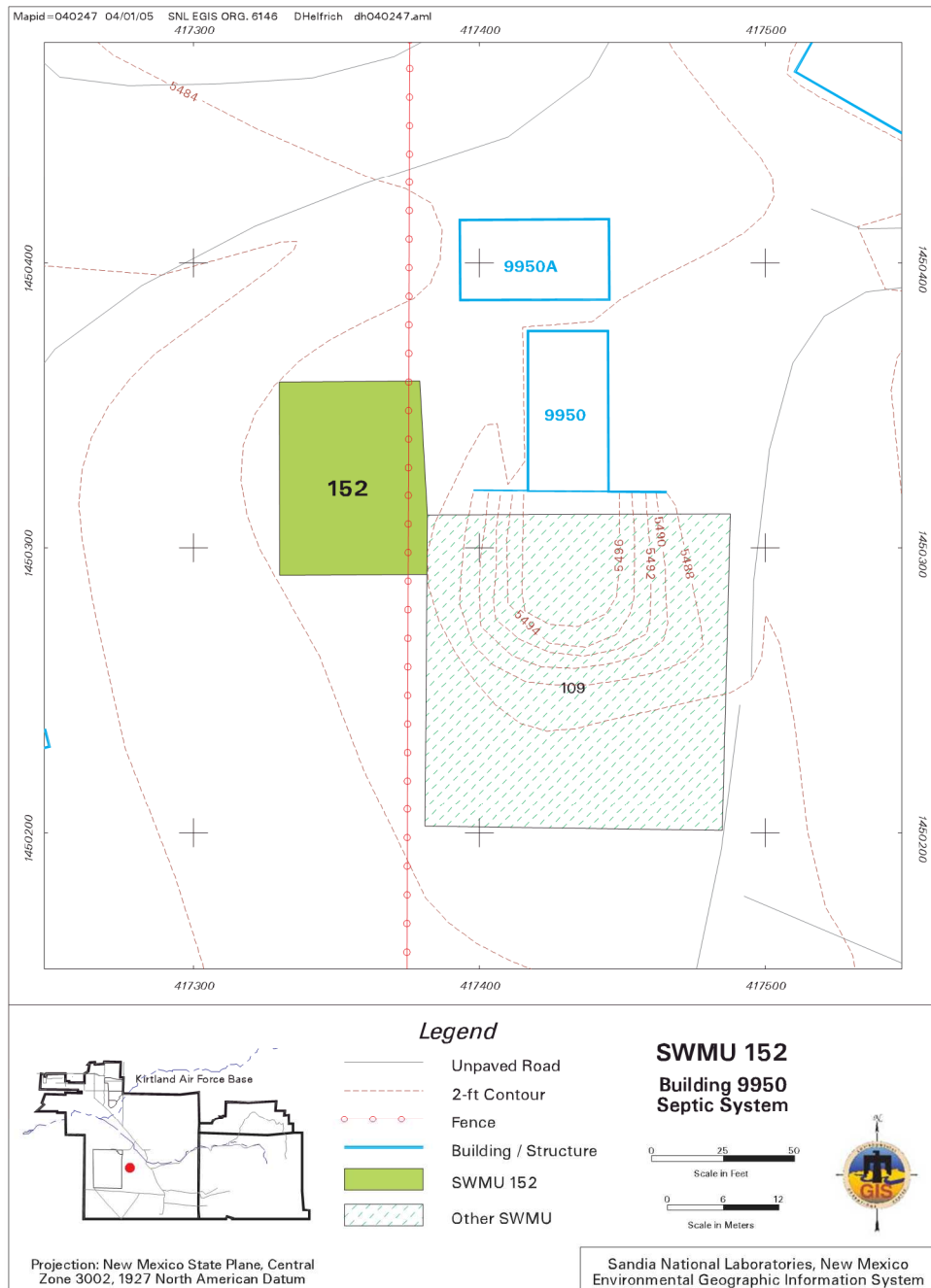


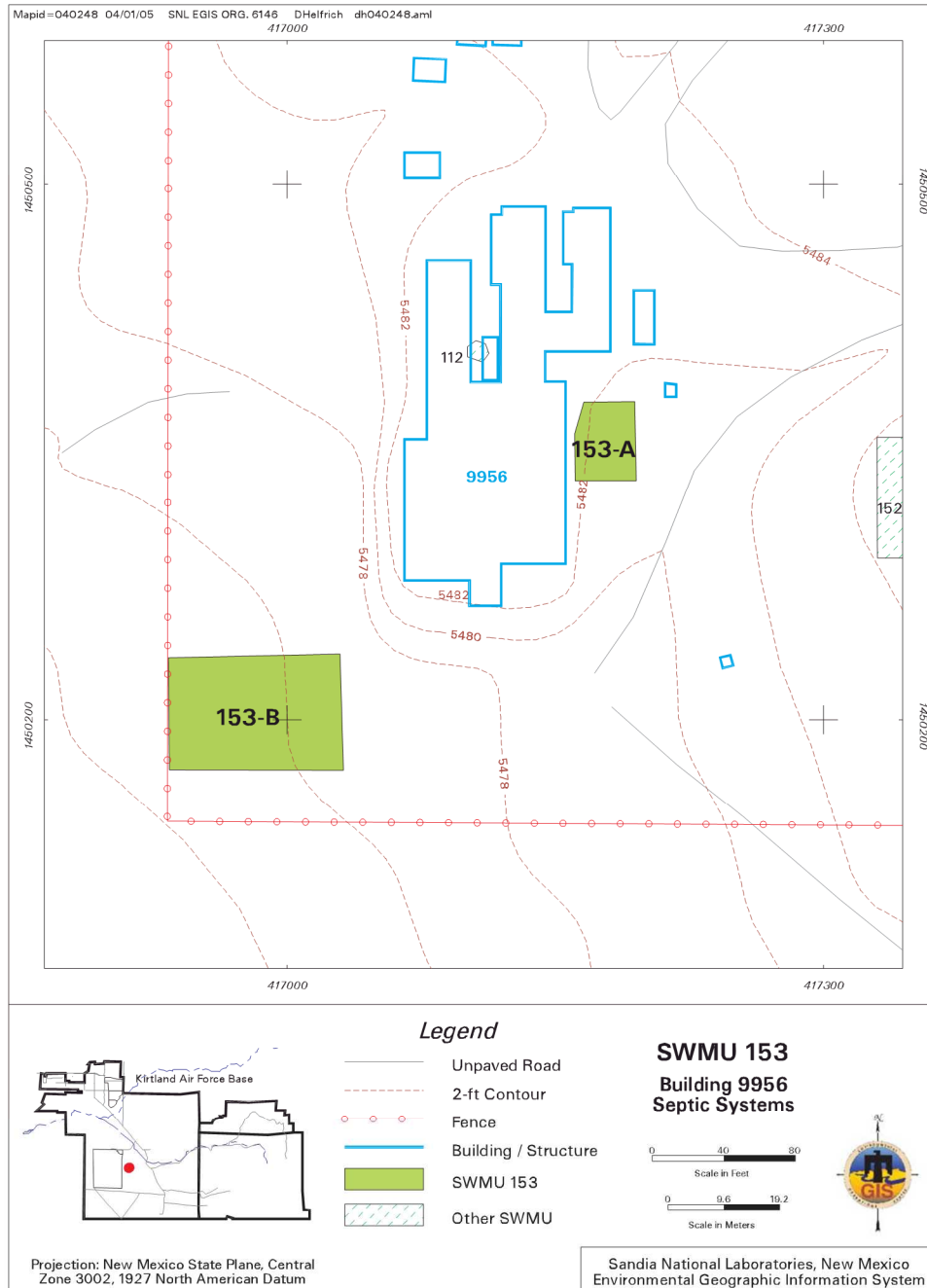


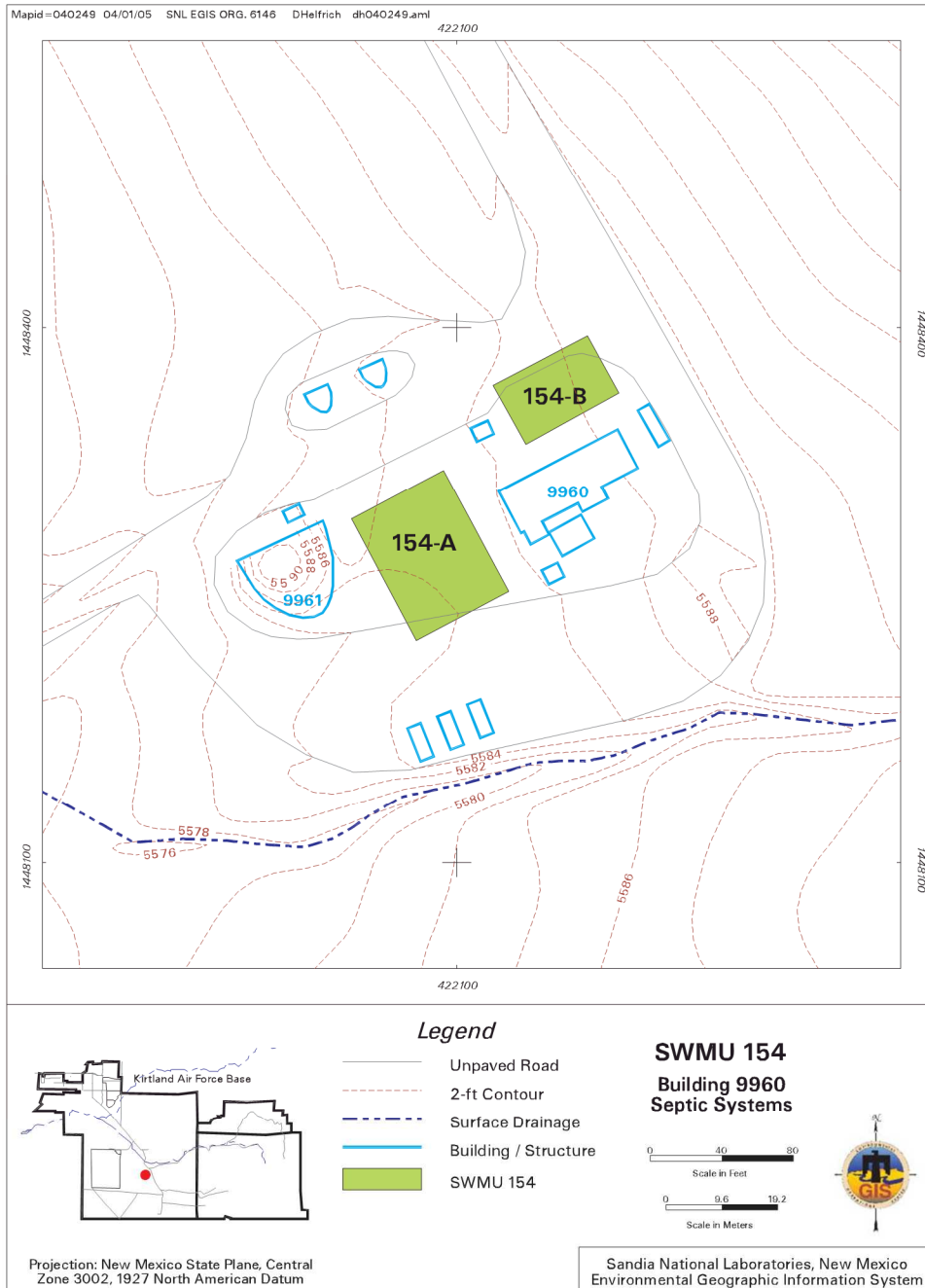












APPENDIX C: AERIAL AND SITE PHOTOS



Photo C-1. View from North looking South



Photo C-2. View from South Looking North



Photo C-3. 1967 Aerial Photo

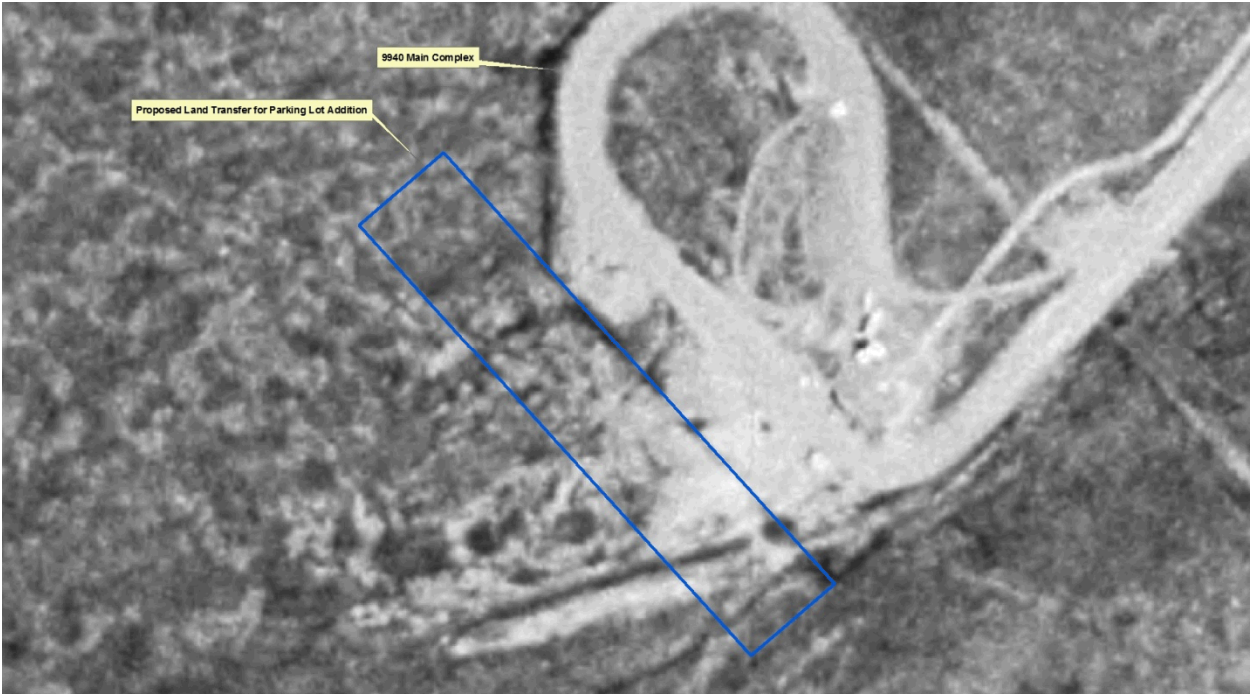


Photo C-4. 1982 Aerial Photo



Photo C-5. 1990 Aerial Photo

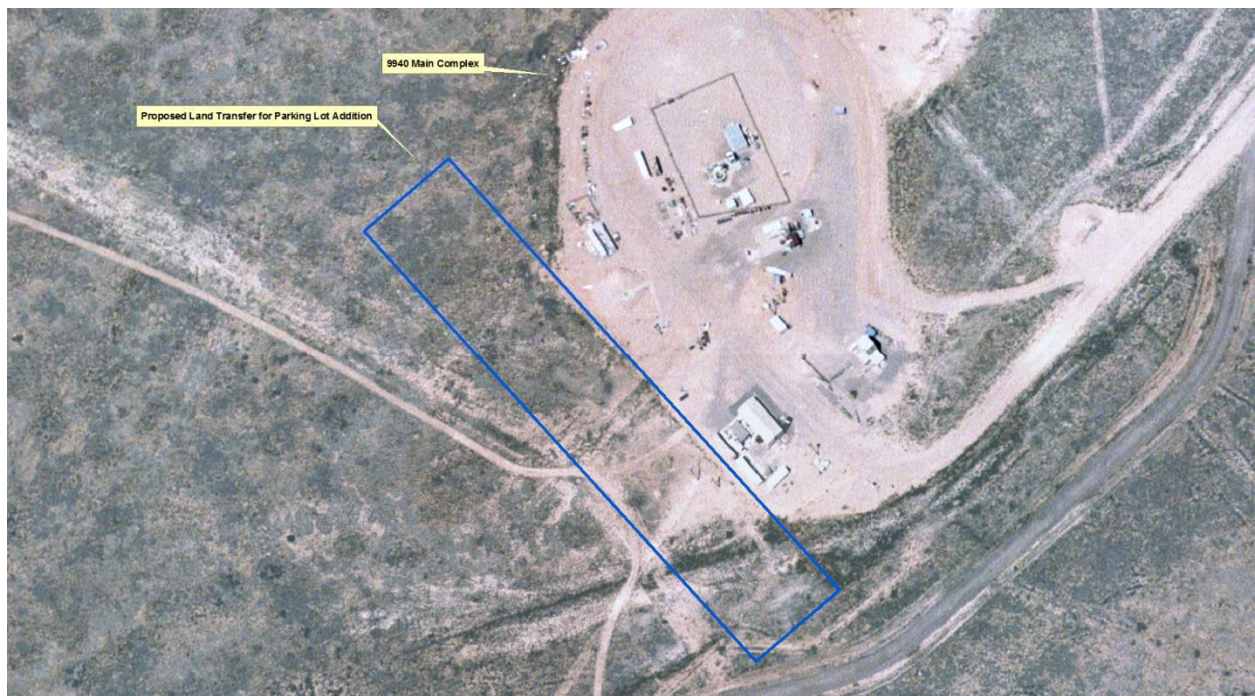


Photo C-6. 2002 Aerial Photo



Photo C-7. 2006 Aerial Photo



Photo C-8. 2010 Aerial Photo

APPENDIX D: REFERENCES

- FEMA *FEMA Flood Map Service Center*
<https://msc.fema.gov/portal>
- KAFB *Kirtland AFB Administrative Record web site*
<https://kirtlandafb.tlisolutions.com/main.aspx>
- SNL/NM, a *SNL/NM Environmental Restoration (ER) Site Characterization documents for ER Sites 14, 38, 53, 85, 101, 108, 109, 112, 115, 149, 151, 152, 153 and 154.*
- SNL/NM, b *Sandia National Laboratories Environmental Geographic Information Portal (EGIP)*
(web link available internally at SNL only)
<https://chips.srn.sandia.gov/>
- SNL/NM, c *Sandia National Laboratories Geographic Environmental Management System (GEMS)*
(Internal database, no web link available.)
- SNL/NM, d *Sandia National Laboratories Integrated Reporting Management System (IRMS)*
<https://cfwebprod.sandia.gov/cfdocs/SRS/templates/>
- SNL/NM, e *Sandia National Laboratories Legacy Site Information*
(web link available internally at SNL only)
<https://info.sandia.gov/LegacySiteInfo/>
- SNL/NM, 1998 *Sandia National Laboratories/New Mexico Geographic Data Atlas, Prepared for the United States Department of Energy; Sandia National Laboratories, Albuquerque, New Mexico. November 1998.*
- SNL/NM, 2003 *Environmental Baseline Survey, Land Use Permit Request for the 9940 Complex PERM/0-KI-00-0001, August 21, 2003.*
- SNL/NM, 2004 *Sandia National Laboratories/New Mexico (SNL/NM) SAND Report, Sandia National Laboratories Environmental Information Document Calendar Year 2003 Update, SAND2004-5058, October 2004, Sandia National Laboratories, Albuquerque, New Mexico.*

- SNL/NM, 2008 *Final Environmental Assessment for the Expansion of Permitted Land and Operations at the 9940 Complex and Thunder Range at Sandia National Laboratories/New Mexico*, 2008, DOE/EA-1603, U.S. Department of Energy/National Nuclear Security Administration/Sandia Site Office, Albuquerque, New Mexico.
- SNL/NM, 2009 *Environmental Baseline Survey, Proposed Land Use Permit Expansion for 9940 DETS Complex*, June 24, 2009.
- SNL/NM, 2011 Sandia National Laboratories/New Mexico (SNL/NM) SAND Report, *Operational Area Environmental Evaluations SAND2011-6097*, September 2011, Sandia National Laboratories, Albuquerque, New Mexico.
- SNL/NM, 2012 Sandia National Laboratories/New Mexico (SNL/NM) SAND Report, *Annual Site Environmental Report for Sandia National Laboratories, New Mexico*, SAND2013-6009P, September 2013, Sandia National Laboratories, Albuquerque, New Mexico.
- State of New Mexico *New Mexico Cultural Resource Information System (NMCRIS)*
<https://nmcris.dca.state.nm.us/NMCRISCTA/Security/SignIn.aspx>
- USAF, 2003 USAF Memorandum to Nadine Williams (Sandia National Laboratories). "KAFB IRP Sites." June 28, 2003.
- USAF, 2008 Air Force Form 813, AF08-0012. Request for a 5-Year Land Use Permit Renewal for the 9940 Complex, PERM/O-KI-00-0001.
- USAF, 2009 Air Force Form 813, Proposed Land Use Permit Expansion for DETS Complex; PERM/O-KI-00-0001 (SNA09-0209/AF09-0011), prepared by SNL/NM, Albuquerque, New Mexico.
- USAF, 2013 Air Force Form 813, AF13-0008, Proposed Land Use Permit Modification for Expansion of the Dynamic Explosive Test Site (DETS) 9940 Parking Lot.
- USAF, 2013 Air Force Form 813, AF13-0006, Termination of Temporary Easement to Refurbish the Parking Lot for the 9940 Complex.
- USAF, 2013 Air Force Form 813, AF13-0012. Request to Replace Existing Overhead Electrical Line Between 9956 and 9940 (NM13-0306/AF13-0012).

APPENDIX E: INTERVIEWS

1. The personnel of the 9940 Main Complex were interviewed on April 22, 2014. The interviews were updated on January 25, 2016 and it was determined that no new activities had occurred on the subject property since the previous interviews and site visit. The interviews indicated that no past activities that would have created environmental impacts that affect the transfer of the subject property were known to have occurred. Past activities have included burying power lines that were formerly aboveground.
2. The author of the previous 2009 EBS for the expansion of the permits for training areas at 9940: *Environmental Baseline Survey, Proposed Land Use Permit Expansion for 9940 DETS Complex, June 24, 2009* was interviewed on numerous occasions, the last being January 25, 2016. The interviews indicated that no past activities that would have created environmental impacts that affect the transfer of the subject property were known to have occurred. Past activities have included burying power lines that were formerly aboveground.
3. SNL Real Estate personnel were interviewed March 19, 2014 and all relevant SNL real estate files were transmitted and reviewed. The SNL Real Estate Personnel interviews were updated January 25, 2016 and it was determined that no additional real estate files had changed since the previous files review and interview. The interviews and accompanying files indicated that no past activities that would have created environmental impacts that affect the transfer of the subject property were known to have occurred. Past activities have included burying power lines that were formerly aboveground. Nearby activities had included the issuance of new permits for the 9940 Main Complex surrounding, but not directly adjacent to, the subject property.

VISUAL SITE INSPECTION (VSI)

Kirtland AFB, Albuquerque, NM

GENERAL INFORMATION

Facility Number: N/A

Current Use: None. Open land.

Inspected: 1/25/16

Type of Building: n/a

Area (Sq. Ft.): 2.7 acre

Type of Construction: n/a

Year of Construction: n/a

Description of Facility: 2.7 acre parcel of open land west of, and adjacent to, the 9940 Main Complex.



PHYSICAL SETTING

Current Uses of the Facility

Are any current uses likely to involve treatment, storage, disposal, or generation of hazardous substances or petroleum products? Yes No

Report current uses based on observation, interviews, and records review.

Open land. The only current use, per se, is that utilities were buried within the last several years, and there is a utility box in the middle of the property (see photo above).

Past Uses of the Facility

Were any past uses likely to have involved treatment, storage, disposal, or generation of hazardous substances or petroleum? Yes No

Report all past uses based on observations, interviews, and records review.

Open land. No known past uses. See Environmental Baseline Survey Document for details.

PHYSICAL CONDITIONS and FINDINGS

N = No Y=Yes X=Excellent G=Good F=Fair P=Poor NA=Not Applicable

| ITEM | CONDITION | COMMENT |
|--------------------------|-----------|---------|
| Condition of Paint | NA | |
| Condition of Building | NA | |
| Air Emissions Sources | N | |
| PCB Containing Equipment | N | |
| Historical Property | N | |
| Observed Wetlands | N | |
| Drinking Water Wells | N | |
| Remedial System | N | |
| Monitoring Wells | N | |

Hazardous Material and Waste, Petroleum, Oil, and Lubricant Units

Describe the condition of and materials handled by the following units (use the abbreviations listed below for Waste Stream column).

N=No Y=Yes HM=Hazardous Material HW=Hazardous Waste POL=Petroleum Oil & Lubricant Product
POLW=POL Waste OTH=Other

| INDUSTRIAL | WASTE STREAM | COMMENT |
|---------------------------|--------------|---------|
| Floor Drains | N | |
| Waste Water System | N | |
| Oil/Water Separators | N | |
| Wash racks | N | |
| Above Ground Storage Tank | N | |
| Underground Storage Tank | N | |
| Other Tanks | N | |
| Sumps | N | |
| Silver Recovery Units | N | |
| Hydrant System | N | |
| Radioactive Units | N | |
| Container Storage Area | N | |
| Munitions | N | |
| Other | N | |
| | | |
| SURFACE WATER | WASTE STREAM | COMMENT |
| Storm Water System | N | |
| Pits, Ponds, Lagoons | N | |
| Other | N | |
| | | |

| MUNICIPAL | WASTE STREAM | COMMENT |
|---|---------------------|----------------|
| Sanitary Sewer (<i>utility ownership</i>) | N | |
| Septic Tanks | N | |
| Grease Traps | N | |
| Drains | N | |
| Other | N | |

Site Conditions

N = No Y=Yes

| ITEM | CONDITION | COMMENT |
|--------------------------------------|------------------|----------------|
| Odors | N | |
| Pools of Liquid | N | |
| Stained Soil | N | |
| Stains (<i>walls, floor, etc.</i>) | N | |
| Stressed Vegetation | N | |
| Other Areas of Concern | N | |

REPRESENTATIVE OF: Sandia National Laboratories

NAME: Dennis Peek

DATE: 1/25/16

AIR FORCE REPRESENTATIVE: N/A

NAME: N/A

DATE: N/A

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