

ATTACHMENT 1-5 CHWSF FACILITY DESCRIPTION

1.0 INTRODUCTION

1.1 This attachment to the Dugway Resource Conservation and Recovery Act (RCRA) permit describes the Central Hazardous Waste Storage Facility (CHWSF) as required in 40 Code of Federal Regulations (CFR) 264.10; and Utah Administrative Code R315-8-2. This attachment is organized in the following sections:

- Facility description,
- Topographic map,
- Facility location information,
- Traffic information, and
- References.

2.0 FACILITY DESCRIPTION

2.01 The facility description is divided into the following sections:

- General description,
- Address and owner/operator,
- Facility operations,
- Hazardous waste management operations, and
- Hazardous waste facility siting criteria.

2.1 GENERAL DESCRIPTION: 40 CFR 264.10; R315-8-2

2.1.1 Background and Location

2.1.1.1 U.S. Army Dugway Proving Ground (DPG) is a subordinate command of the U.S. Army (Army) Test and Evaluation Command. DPG's primary mission is to perform testing on chemical warfare and defense systems and flame, incendiary, and smoke obscurant systems. DPG is the only testing facility in the U.S. equipped to perform these tasks on the scale necessary to ensure that items have been thoroughly developed and tested under realistic conditions.

2.1.1.2 DPG is located in a remote area of central Utah approximately 67 miles southwest of Salt Lake City (Figure 1).

2.1.1.3 DPG lies within Tooele County and occupies an area approximately 52 miles long and 35 miles wide. The tract is situated in the southwest corner of the Great Salt Lake Desert and extends into parts of Dugway and Skull Valleys.

2.1.1.4 The installation covers approximately 840,911 acres and includes mountains, valleys, and a large flat sparsely vegetated area that extends westward into the southern reaches of the barren salt flats of the Great Salt Lake Desert. Most of this land is unimproved, with 300 acres of improved land and 536 acres of semi-improved land, mostly in English Village.

2.1.1.5 The terrain is mainly flat or gently sloping with intermittent sand dunes and small hills. The Cedar Mountain Range extends from English Village northwesterly forming the northeast boundary of the reservation. Little Granite Mountain, Camel's Back Ridge, Wig Mountain, and

Granite Mountain divide the installation into several minor areas.

2.2 ADDRESS AND OWNER/OPERATOR

2.2.1 The address of DPG is as follows:

U.S. Army Dugway Proving Ground
Dugway Proving Ground
Dugway, UT 84022

Operator: Commander, U.S. Army Dugway Proving Ground
Facility Contact: Director, Directorate of Environmental Programs

2.3 FACILITY OPERATIONS

- 2.3.1 DPG began operation in 1942 when testing of military weapons commenced. DPG was activated in order to meet the need of the Chemical Warfare Service for expanded testing facilities. The site was selected because of its seclusion, low population density, and scarcity of wildlife.
- 2.3.2 DPG can be divided into three major activity areas: (1) the housing, administrative, and National Guard Maneuver Areas (including English Village and Fries Park); (2) the Avery and Ditto Technical Centers and Carr Facility; and (3) Baker Laboratory, the test grids, and buffer areas south and west of Ditto Technical Center (Figure 2). The Post Headquarters are located at English Village, the Life Sciences Division is at Baker, the Weapons Branch of the Test Support Division is at the Carr Facility, and the Chemical Laboratory Division is at the Ditto Technical Center.
- 2.3.3 In the course of its research and testing operations, as well as routine functions, DPG generates various hazardous wastes, which may be stored on-site or transported to an offsite treatment, storage or disposal facility through the Defense Reutilization and Marketing Office (DRMO) or private contractor.
- 2.3.4 A summary description of waste operations is provided below. Attachment 1-1, the Waste Analysis Plan provides details of the hazardous wastes generated.
- 2.3.5 At the English Village area, paint shop wastes such as paint thinners, lacquer thinners, and enamels are generated. The motor vehicle repair shop generates spent motor oil, oil filters, antifreeze, transmission fluid, and hydraulic fluid. In addition, the housing area contractor manages the household hazardous waste.
- 2.3.6 The Chemical Laboratory at the Ditto Technical Center is one of the primary generators of hazardous waste at DPG. The Chemical Laboratory's main mission is to operate in support of laboratory and field tests for assessment of chemical agents and simulants and for the evaluation of the effects of chemical agents on various materials. The Chemical Laboratory also performs analyses of unusual or complex samples. The Chemical Laboratory generates a large quantity of materials that have been exposed to chemical agents and subsequently decontaminated. This includes decontamination solutions, protective equipment that was contaminated with agent, and other equipment. The Chemical Laboratory also generates small quantities of chemical wastes not associated with chemical warfare agents. The Chemical Laboratory consists of buildings 4153, 4156, and the newly remodeled 4165. Building 4153 is currently used as administrative

office space.

- 2.3.7 Other wastes generated at the Ditto Technical Center include aircraft maintenance shop wastes such as solvent wipers, hydraulic fluid and engine oil. Spent photo fixer and developer; spent oils; and lead-acid, nickel-cadmium, lithium, and mercury batteries are generated at the Ditto Area. Wastes generated at the Grid Operations Branch are primarily used protective clothing.
- 2.3.8 The Life Science Division at Baker Laboratory also generates small quantities of hazardous waste. Baker Laboratory consists of the Biological Technology Branch and the Aerosol and Environmental Technology Branch. The Biological Technology Branch is responsible for the assessment of all field and laboratory tests through the application of new methodology, standard operation procedures, and test operation procedures. The Biological Technology Branch also conducts environmental monitoring of testing activities. The Aerosol and Environmental Technology Branch is responsible for identification of methodology, preparation of standing operating procedures, and test operation procedures.
- 2.3.9 The Chemical Test Division provides support of simulant and chemical-agent related testing utilizing buildings 3445 located at Carr Facility and building 8027, the Bushnell Materiel Test Facility (BMTF), which are subsequently referred to as the test chambers. Chemical agent-related wastes generated during testing include spent decontamination solutions, decontaminated test-related debris, debris combined with decontamination solutions, ventilation system wastes, and small quantities of chemical wastes not associated with chemical warfare agents.
- 2.3.10 Other hazardous wastes are generated at Avery Technical Center by the 388th Range Squadron, operated by the U.S. Air Force. This squadron performs telemetry and range preparation for military operations. Wastes generated at Avery Technical Center include spent lubricating oil, motor oil, antifreeze, batteries, and spent fuels.
- 2.3.11 Waste-generating operations at DPG also include activities of the Facilities Engineering and Services Division which is responsible for designing, maintaining, and upgrading facilities at DPG; Michael Army Airfield, which provides air support for tests conducted at DPG; Explosive Ordnance Disposal entity, which is responsible for demilitarization of test munitions and support for open detonation operations; and the Test Development and Analysis Division.

2.4 POTENTIAL MODIFICATIONS TO HAZARDOUS WASTE MANAGEMENT PRACTICES NOT DEFINED IN THE PERMIT

- 2.4.1 At the present time, there are no hazardous waste practices not defined by the permit.

2.5 HAZARDOUS WASTE MANAGEMENT OPERATIONS

- 2.5.1 DPG will store containerized hazardous wastes from facility operations in the fully enclosed, Container Storage Building at the CHWSF. The CHWSF is located four (4) miles west of English Village.
- 2.5.2 The CHWSF is under the operating control of the Directorate of Environmental Programs, and is managed by a contractor who is responsible for the daily activities at the storage area. DPG assumes all responsibilities as operator of the CHWSF. A summary of major responsibilities is presented below.
- Classify and segregate waste stored in the CHWSF in accordance with U.S.

Environmental Protection Agency (EPA) hazardous waste storage regulations.

- Perform sampling and analysis of wastes, as required, for hazardous waste determination.
- Transport hazardous wastes from the satellite accumulation points and 90-day storage areas to the CHWSF.
- Maintain inventory of all hazardous waste stored at the CHWSF.
- Initiate and process paper work to dispose of hazardous waste through the DRMO or other approved contractors.
- Perform required inspections of the CHWSF as outlined in Attachment 1-3, Inspection Schedule and maintain inspection logs.
- Report any damage or needed repairs at the CHWSF to the Director of Public Works.
- Execute DPG Installation Spill Contingency Plan (ISCP), as necessary, during cleanup of spills and/or leaks at the CHWSF.
- Perform all record keeping required by EPA, Utah Division of Solid and Hazardous Waste, and the Army for operation of the CHWSF and transportation of hazardous wastes.
- Assure that contract personnel are properly trained and maintain training records.
- Manage "orphan" container storage.
- Responsible for the container management program.
- Inspect solid waste management units that must meet applicable interim status requirements.

2.6 HAZARDOUS WASTE FACILITY SITING CRITERIA: 40 CFR 264.18; R315-3-4-11

2.6.1 Hazardous waste facility siting criteria is described in the following sections:

- Land use compatibility and location, and
- Emergency response and transportation safety.

2.6.2 Land Use Compatibility and Location: R315-4-11(b)

2.6.2.2 The land use compatibility and location section addresses regulations and laws that must be considered when locating a hazardous waste facility. The following topics are discussed in this section:

- Parks, monuments, recreation areas, wilderness, wild and scenic rivers,
- Ecologically and scientifically significant natural areas,
- 100-Year floodplains,
- Holocene faults,
- Underground mines, salt domes, and salt beds,
- Dam failure flood areas,
- Landslide, mudflow, or other earth impact areas,
- Farmlands,
- Areas above aquifers,
- Recharge zones,
- Drinking water source protection areas,
- Dwellings, residential areas, incompatible structures,
- Surface waters,
- Archaeological sites, and
- Other applicable regulations.

2.6.3 Parks, Monuments, Recreation Areas, Wilderness, Wild and Scenic Rivers: R315-4-11(b)(1)(i)

2.6.3.1 DPG and the land within its boundaries, including areas where hazardous waste management units are or will be located, is owned by the Army. As such, it does not contain, and is not located within, any national, state, and county parks, monuments, and recreations areas; designated wilderness and wilderness study areas; or wild and scenic river areas.

2.6.4 Ecologically and Scientifically Significant Natural Areas: R315-4-11(b)(1)(ii)

2.6.4.1 The Endangered Species Act requires that the EPA ensure any action, which it authorizes, is not likely to jeopardize the continued existence of any endangered or threatened species or adversely affect its critical habitat.

2.6.4.2 The sensitive species (including threatened and endangered) likely to occur or documented at DPG are not year-round residents, and therefore, no special management practices have been implemented. The Army, in cooperation with the U.S. Fish and Wildlife Service, has special guidelines for managing threatened and endangered species, should they become residents of DPG.

One plant species at DPG is a species of concern. Sensitive species are those which still occur in numbers adequate for survival, but whose population has been greatly depleted and is declining in numbers, distribution, and/or habitat. Dune Four-Wing Saltbush could be found in association with the vegetated dunes at DPG. The Ute Ladies Tresses, a federally threatened orchid, occurs in wetland habitats just outside DPG's southern boundary. This threatened plant has not been found at DPG, but may occur there.

Several animal species are also designated as sensitive species in the State of Utah. The Peregrine Falcon is a transient to DPG, and has not been found to nest within DPG boundaries. Bald Eagles are often observed at DPG during the winter. Two other hawks, the Ferruginous Hawk (state threatened) and the Swainson's Hawk (state sensitive), were found nesting at DPG from 1993 to 1995. The Burrowing Owl, a state sensitive species due to declining numbers, has also been found nesting at DPG. The Mountain Plover, Black Tern, and Long-Billed Curlew have been observed at DPG in the pickleweed area during wet periods. The two bat species of concern are sensitive species. The Fringed Myotis was documented in Tooele County, but has not been observed at DPG. Ringtails have been observed at DPG, but data on their distribution is unavailable. Hazardous waste management activities at the DTF will not jeopardize the continued existence of any of these endangered or threatened species.

Additionally, several areas at DPG have been identified as being critical habitats or scientifically significant natural areas. These areas include natural springs, jurisdictional wetlands, unique vegetation, and unique habitat. It is not believed that the hazardous waste management activities at DPG will further jeopardize the continued existence of any of these endangered or threatened species or adversely affect their critical habitat.

2.6.5 100-Year Floodplains: R315-4-11(b)(1)(iii)

2.6.5.1 The CHWSF is not located within a 100-year floodplain. Floodplains are discussed in greater detail in Section 4.2, Floodplain Standard.

2.6.6 Holocene Faults: R315-4-11(b)(1)(iv)

- 2.6.6.1 DPG does not have and is not located within 200 feet of faults, which have had displacement in Holocene time. Faults are discussed in greater detail in Section 4.1, Seismic Standard.
- 2.6.7 Underground Mines, Salt Domes, and Salt Beds: R315-4-11(b)(1)(v)
- 2.6.7.1 DPG is not located within an area of underground mines, salt domes, and salt beds. No waste is stored in geologic repositories.
- 2.6.8 Dam Failure Flood Areas: R315-4-11(b)(1)(vi)
- 2.6.8.1 DPG is not located in a dam failure flood area. There are no dams in the vicinity of DPG.
- 2.6.9 Landslide, Mudflow, or Other Earth Impact Areas: R315-4-11(b)(1)(vii)
- 2.6.9.1 The CHWSF is not located within an area likely to be impacted by landslides, mudflow, or other earth impacts. Hazardous waste management units are located in the flat areas of DPG and will not be affected by any earth movement that may occur in the hills or sand dunes on DPG.
- 2.6.10 Farmlands: R315-4-11(b)(1)(viii)
- 2.6.10.1 DPG is not located on, and does not contain, farmlands classified as "prime," "unique," or of "statewide importance" by the U.S. Department of Agriculture Soil Conservation Service under the Prime Farmland Protection Act. Soils on DPG generally have low water content, high salt content, and excess sand, preventing their use for agricultural production (USDA, 1986).
- 2.6.11 Areas Above Aquifers: R315-4-11(b)(1)(ix)
- 2.6.11.1 The CHWSF is not located above aquifers containing groundwater, which has a total dissolved solids (TDS) content of less than 500 milligrams per liter (mg/l). The CHWSF is located near Fries Park. Well 26 is located in the English Village/Fries Park area. TDS content of water from this well was measured at 670 mg/l.
- 2.6.12 Recharge Zones: R315-4-11(b)(1)(x)
- 2.6.12.1 There are no distinct recharge areas at DPG. The sediments throughout the area may recharge locally perched aquifers and a deeper potable water zone. The perched aquifers lie above the deeper potable water zone and are non-potable due to brackishness and high salinity content.
- 2.6.13 Drinking Water Source Protection Areas: R315-4-11(b)(1)(xi)
- 2.6.13.1 There are no designated drinking water source protection areas on DPG. The nearest drinking water wells (Wells 27 and 30) to the CHWSF are located greater than 4 miles away in English Village.
- 2.6.14 Dwellings, Residential Areas, Incompatible Structures: R315-4-11(b)(1)(xii)
- 2.6.14.1 DPG requests an exemption from this criterion under R315-4-11(d). Because DPG is a large installation located in a remote, isolated area, it provides housing and other facilities including schools and recreation areas for many military and civilian workers and their families. As of mid-

2003, the residential population of Dugway was 1,019 persons. The housing, schools, and recreational areas are located in the eastern portion of DPG in English Village. The only permitted hazardous waste management unit within 5 miles of these areas is the CHWSF, which is located approximately 4 miles west of English Village. Preventive measures taken at the CHWSF are described in Attachments 1-2 and 1-6. Because of the safety precautions taken, DPG believes that an exemption from the requirements in R315-4-11(b)(1)(xii) is warranted in this case.

2.6.15 Surface Waters: R315-4-11(b)(1)(xiii)

2.6.15.1 DPG requests an exemption from this criterion under R315-4-11(d). No perennial streams, rivers, lakes, reservoirs, estuaries, or wetlands are located within five (5) miles of existing or proposed hazardous waste management units at DPG. DPG has taken precautions to prevent contamination of surface water and ground water. These are described in Attachments 1-2 and 1-6. Because of the precautions taken, DPG believes that an exemption from the requirements in R315-4-11(b)(1)(xiii) is warranted in this case.

2.6.16 Archaeological Sites: R315-4-11(b)(1)(xiv)

2.6.16.1 Approximately 200 surface archaeological sites have been reported in the sand dunes area of DPG. Other archaeological sites have been identified near Wig Mountain in the northern portion of the installation. None of these sites are located 1000 feet or less from existing hazardous waste management units.

2.6.17 Other Applicable Regulations: 40 CFR 270.14(b)(20), 270.3; R315-3-5(b)(20)

2.6.17.1 Other federal laws, as required by R315-3-5(b)(20), 40 CFR §270.14(b)(20), and 40 CFR §270.3, were reviewed for their applicability to DPG. Several of these laws are not applicable to DPG due to the absence of permanent bodies of surface water within the boundaries of DPG and its location in the Great Salt Lake Desert, the Cedar Mountains, and an upland portion of Skull Valley. The only surface water at DPG may be found in intermittent streams which flow from surrounding mountain ranges, and occasionally in shallow playas from the Great Salt Lake Desert during times of high precipitation. For these reasons, the Wild and Scenic Rivers Act, Coastal Zone Management Act, and Fish and Wildlife Coordination Act are not applicable to DPG.

The applicability of the Endangered Species Act and the National Historic Preservation Act of 1966 are discussed in Sections 2.6.4.1 and 2.6.4.2, respectively.

2.6.18 Emergency Response and Transportation Safety: R315-4-11(c)

2.6.18.1 Emergency response and transportation safety is described in the following sections:

- Availability and adequacy of emergency services,
- Trained emergency response personnel and equipment, and
- Routes of hazardous waste transport.

2.6.19 Availability and Adequacy of Emergency Services: R315-4-11(c)(1)

2.6.19.1 DPG has its own health clinic, fire department, and spill response team that are capable of immediate response to an emergency situation on the installation.

2.6.20 Trained Emergency Response Personnel and Equipment: R315-4-11(c)(2)

2.6.20.1 Emergency response capability including personnel and equipment is described in Attachments 1-6 and 1-7.

2.6.21 Routes of Hazardous Waste Transport: R315-4-11(c)(3)

2.6.21.1 The CHWSF does not accept waste from offsite sources. Most of the hazardous waste generated at DPG is transported by truck to the Clean Harbors Aragonite facility north of DPG at Knolls, Utah. Trucks take Skull Valley Road north to I-80 at Timpie Junction and then take I-80 west to Knolls. This route is approximately 70 miles long and passes through remote areas with very little roadside development or residential population. Some of the hazardous wastes may be transported to treatment facilities located outside of Utah for incineration.

3.0 TOPOGRAPHIC MAP

3.1 GENERAL REQUIREMENTS: 40 CFR §270.14(b)(19); R315-3-2.4(i)

3.1.1 Exhibits 1-1 thru 1-4 were submitted as part of the Part A Permit Application process and are included as a reference in this permit. A topographic map of the eastern portion of DPG showing the location of the CHWSF is on file as Exhibit 1-1. A topographic map showing the contours in the vicinity of the CHWSF is on file as Exhibit 1-2. The 100-year floodplain has never been defined at DPG by the Federal Emergency Management Agency and, therefore, was not defined on the maps. However, it is not expected that a 100-year flood would affect the CHWSF. Exhibit 1-2 indicates the area within 1000 feet of the CHWSF. The security fence surrounding the CHWSF is indicated on the topographical map. No water wells are located within 1,000 feet of the CHWSF. The regional location of DPG is shown in Figure 1.

3.1.2 The CHWSF is located 2.3 miles west of Fries Park, as shown in Figure 2. The CHWSF provides a central storage area for the accumulation of hazardous waste from outlying temporary storage areas prior to transportation to off-site disposal. The CHWSF consists of two purpose designed and built metal buildings, a Quonset style storage building, three temporary office trailers and a 90 day storage site. The Container Storage Building has an area of 7,200 square feet. A wind rose for DPG is presented in Figure 3. The data for the wind rose is collected at DPG's Ditto Area weather station. The dominant direction of light winds, primarily of local origin, is southeasterly at night and northwesterly during the day. The winds over the DPG vicinity are strongly influenced by local topographical conditions. These local influences are not noticeable when strong winds, the result of large-scale weather storm patterns, are prevalent. The winds near the mountains usually have very different local effects and do not necessarily reflect the general local patterns.

3.1.3 Figure 4 identifies ownership of the major tracts of land in the vicinity of DPG. This figure does not identify the small tracts of state and privately owned land scattered throughout that area which are under the jurisdiction of the Bureau of Land Management. Land use surrounding DPG is predominantly farming/grazing.

3.2 ADDITIONAL REQUIREMENTS FOR LAND DISPOSAL FACILITIES: 40 CFR 264.95, and 264.97; R315-8-13

3.2.1 The CHWSF is not a land disposal facility. The CHWSF is shown on the topographic maps in

Exhibit 1-1 and 1-2.

4.0 FACILITY LOCATION INFORMATION: 40 CFR 264.18; R315-8-2.9

4.0.1 Compliance with facility location standards is discussed in the following sections:

- Seismic standard
- Floodplain standard

4.1 SEISMIC STANDARD: 40 CFR 264.18(a), and Appendix IV of Part 264; R315-8-2.9(a)

4.1.1 Although Utah is tectonically active, most of the earthquake activity occurs about 55 miles to the east along the Wasatch Range foothills. The U.S. Geological Survey has conducted a study (USGS, 1988) to determine the distribution, relative age, and amount and extent of surface rupture on Quaternary fault scarps in the Tooele 1_ x 2_ Quadrangle in northwestern Utah. The conclusions of the study state that morphologic and geologic data collected along the fault scarps in the area indicate that all were formed during the late Pleistocene era with no clear evidence of Holocene surface faulting. Several faults inferred based on geophysical evidence are located on DPG; however, there is no evidence of displacement during Holocene time.

4.1.2 Figure 5 displays the geographical data from a regional gravity survey conducted in the Camel's Back Ridge Area. This data indicates potential subsurface faulting. No evidence of these inferred faults exists at the surface in the area of the DTC and Carr Facility. The CHWSF is more than 200 feet from these inferred faults, which do not exhibit evidence of displacement in Holocene time.

4.2 FLOODPLAIN STANDARD: 40 CFR264.18(b); R315-8-2.9(b)

4.2.1 A National Flood Insurance Rate Map, identifying the boundary of the 100-year flood, has not been prepared for DPG. There are no permanent streams or other surface water bodies on DPG. Surface water from precipitation flows through well-established drainage channels into the flat plain and evaporates. Like other arid regions, DPG is subject to flash flooding following high-precipitation events. Flash floods have occurred only four times in the history of the installation, in 1944, 1952, 1973, and 1983. The major area affected during flash floods has been the Government Creek drainage channel, which has overflowed and caused minor inundation of roads at Ditto Technical Center. The historic flash flood map in Exhibit 1-3 illustrates the area known to have flooded along Government Creek at the Ditto Technical Center. The flow in the Government Creek channel is restricted by the culvert at Stark Road during periods of high flow, thus causing the area south of the road to flood. The flooding is not near any hazardous waste management unit, 90-day storage area, or accumulation area.

4.2.2 In order to evaluate the potential for flooding at the hazardous waste management units, all available Flood Insurance Rate Maps for areas within Tooele County as well as location factors (e.g., topographic and geographic distances from known flood areas discussed in the preceding paragraph and the nearest large drainage way, Government Creek) were analyzed. The Flood Insurance Rate Maps of the five communities in Tooele County for which there are such maps show that the maximum width of the 100-year floodplain for any drainage way, perennial or ephemeral, is less than 1,000 feet. The Flood Insurance Rate Maps evaluated were for the towns of Stockton, Tooele, Vernon, Rush Valley, and Wendover.

4.2.3 Government Creek is expected to behave similarly to other drainage ways in the area. Since the

CHWSF is located in an upland area approximately 300 feet above and more than 5 miles from the creek bed, it is not likely that a 100-year flood would affect the unit.

5.0 TRAFFIC INFORMATION: 40 CFR 270.14(b)(10); R315-3-2.5(b)(10)

5.1 DPG is serviced by two hard-surfaced roads and one improved gravel road; none enters the installation. Utah State Route 199 connects DPG (via Johnson Pass) with Utah State Route 36 east of Clover. County Road B-15 connects DPG (via Skull Valley) with U.S. Interstate 80 at Timpie Junction. An improved gravel road connects DPG (via Lookout Pass) with Utah State Route 36 near Vernon. Only the road over Johnson Pass goes through towns and villages. The remaining major hard-surfaced roads in the vicinity are Utah State Route 73 in Rush Valley and Alternate U.S. Route 50 in Nevada.

5.2 Within DPG there are approximately 693 miles of road; about 371 miles of which are regularly maintained. By type the maintained roadways are classified as follows:

High-grade bituminous pavement	74 miles
Low-grade bituminous pavement	138 miles
Gravel	145 miles
Natural soil	<u>14 miles</u>
Total	371 miles

5.3 Roads within the grids and operation areas are, for the most part, single or double bituminous surface treatments. All roads leading to and within the built-up areas are bituminous surfaced. Roadways within specific areas of DPG are discussed below.

- English Village: Stark Road, which runs through the southern part of the area, provides Access to and through English Village. Stark Road, to this point, is a primary road, 24 feet wide with 3-foot shoulders, and is in good condition. All primary streets in English Village are 24 feet wide, and are in good condition.
- Ditto Technical Center: Access is provided by Stark Road which, to this point is a 24 foot wide road with 3-foot shoulders and is in good condition. Primary roads within this area are asphaltic concrete 30 feet wide, in good condition. Secondary roads are gravel and are 18 feet, 15 feet, and 30 feet wide and are in good condition. Stark Road, servicing the western portions of the installation, is asphaltic concrete, 20 feet wide with 2-foot shoulders. The road to Michael Army Airfield is asphaltic concrete, 18 feet wide, in fair condition. Parking lots and the motor pool area are asphaltic concrete, in good condition. One parking lot and the area south of the motor pool are gravel, in good condition.
- Avery Technical Center: The access road to Avery Technical Center is a primary road, 20 feet wide with 2-foot shoulders, in good condition. Secondary roads within this area are 24 feet wide low bituminous type, in good condition. Parking areas are low bituminous type and are in good condition.
- R.W. Grid: The access road to R.W. Grid from Ditto Technical Area is 16 feet wide, gravel, and in good condition.
- Fries Park: Stark Road provides Access to Fries Park. The two main roads in the now abandoned trailer court are asphaltic concrete; the west road is 16 feet and 14 feet and the east road 20 feet wide. None of the roads in the trailer area are maintained. The roads in the supply complex are gravel (12 feet to 20 feet wide), with the main road thru the warehouse area 60 feet wide. All of the gravel roads are in good condition. All open

storage areas are gravel and in good condition.

- Baker Area: Access is provided by Burns Road, which is 18 feet wide with 2-foot shoulders. It is in good condition. Roads and parking within the area are low-type bituminous and are in fair to poor condition. Roads average 20 feet in width.
- Carr Facility: Durand Road provides Access, which is 18 feet wide with no shoulders. This road is in good condition. Primary roads within this area are medium bituminous type, 24 feet wide, in fair condition. Secondary roads are 10-foot-wide gravel-surfaced roads.
- Outer Areas: Burns Road and Highway 101 provide by Stark Road, which is the primary access road, and Access to the active grid areas and ranges. The latter is a highway in name only. Numerous secondary roads provide for grid operations.

- 5.4** Exhibit 1-4 presents traffic control maps, which illustrate the location of traffic signs in those areas where hazardous waste is managed.
- 5.5** The DPG Motor Pool maintains sedans, trucks, carryalls, buses, construction vehicles such as cranes, graders, and bulldozers, special-purpose test vehicles and various pieces of material handling equipment such as forklifts. Privately owned vehicles are registered on DPG at the Provost Marshal Operations Division Security Office.
- 5.6** The most concentrated vehicle traffic on DPG is in English Village. Traffic volumes at DPG include receiving and shipping trucks, which travel primarily to and from the central receiving area, the warehouse area, the ammunition storage area, the fuel area, and the technical area.
- 5.7** Receiving trucks enter DPG through the main gate and are directed to the truck inspection lot, located about 4.5 miles from the main gate and 0.5 from the main road. From the inspection lot, ammunition trucks are directed to the ammunition area, where the cargo is unloaded. Ammunition used for testing is loaded onto a government truck and transported to the test site.
- 5.8** General cargo trucks proceed to Building 5464, the central receiving and shipping warehouse. Cargo may be stored here or may be loaded onto a government truck for delivery to the post customer.
- 5.9** Shipping trucks are loaded at Building 5464, the packing and crating shop. They exit the installation through the main gate.
- 5.10** Transport records for 1988 show an average of 1.92 receiving trucks and 1.73 shipping trucks per day, carrying an average load of 13.46 and 3.02 tons per day, respectively (MTCTEA, 1989). Information demonstrating the load-bearing capacity of the on-site roads used to transport hazardous waste is not available. These roads were constructed using U.S. Army Corps of Engineers standards. No structural failure of these roads has occurred, even under heavy truck traffic including semi-trucks, as well as an occasional Army tank. DPG has ongoing programs to maintain these roads.

6.0 REFERENCES

MTCTEA (Military Traffic Command Transportation Engineering Agency) 1989. Draft Transportation System Capability Study for Dugway Proving Ground, February.

USDA (U.S. Department of Agriculture) 1986. Dugway Proving Ground Soil and Range Survey. Soil Conservation Service, May.

USGS (U.S. Geological Survey), MF-1990 Map of fault scarps formed on unconsolidated sediments, Tooele 1 X 2 quadrangle, Utah, 1988 United States Geological Survey

Figure 1. Regional Location of Dugway Proving Ground

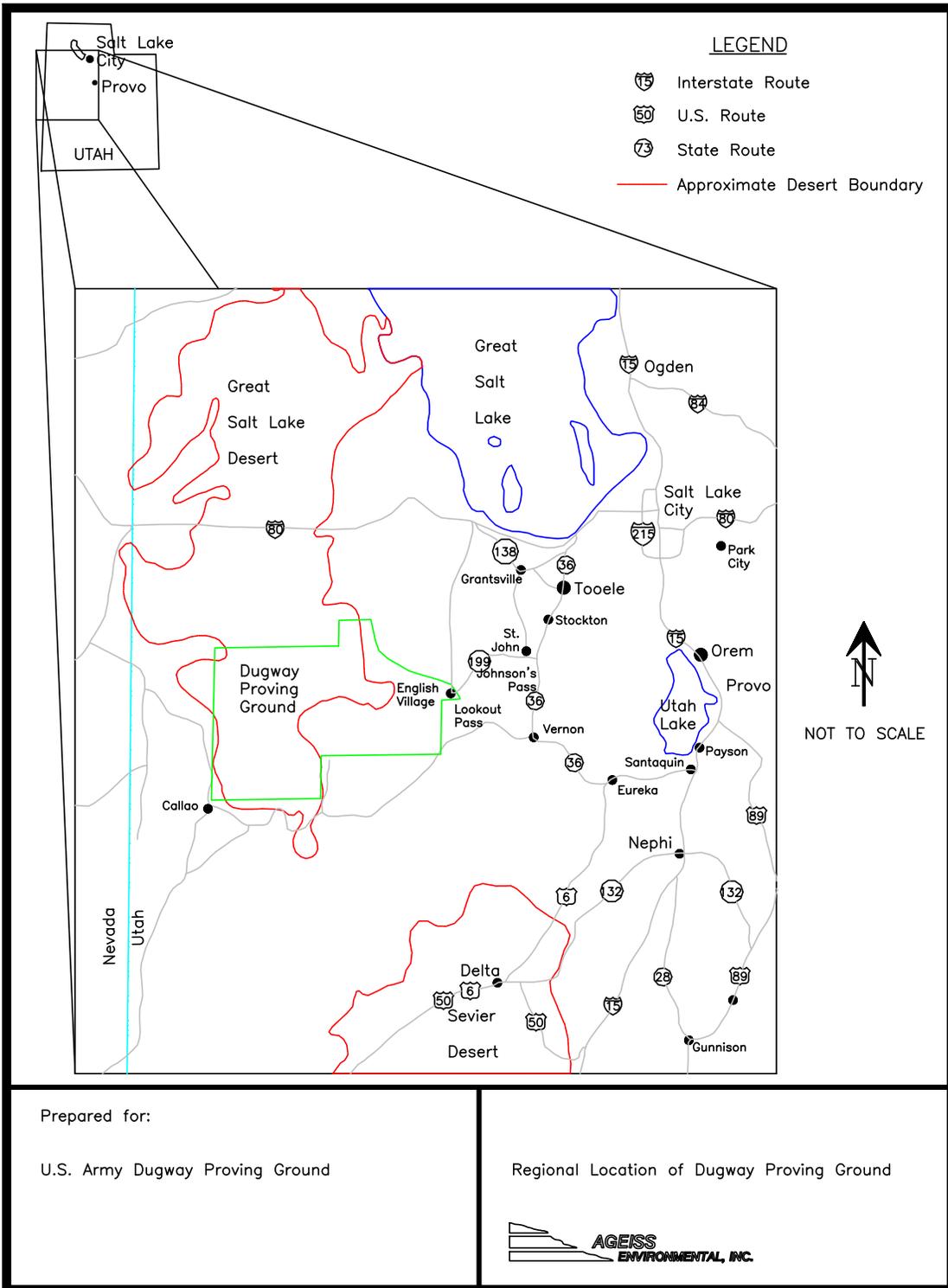


Figure 2. Major Activity Areas on Dugway Proving Ground

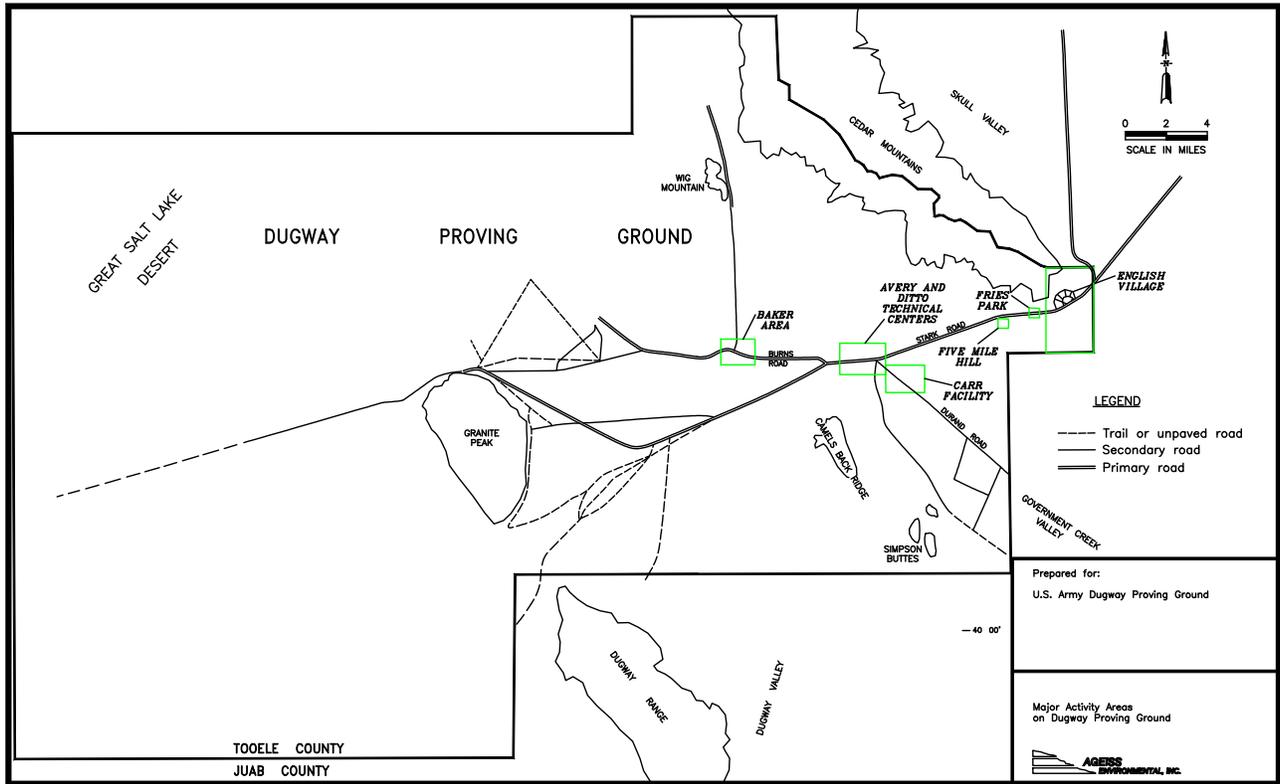
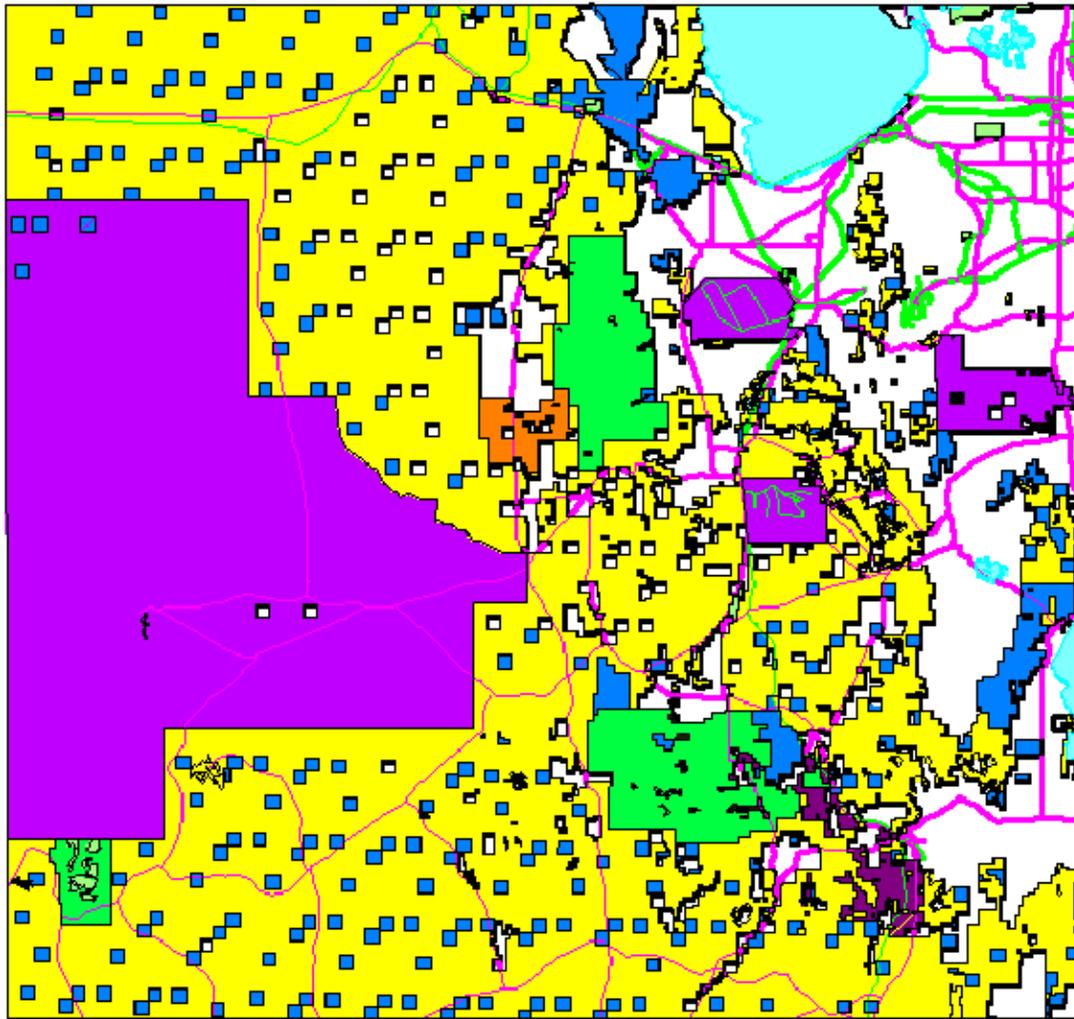


Figure 4. Ownership of Major Tracts of Land Near Dugway Proving Ground



LEGEND
— Installation Boundary
— Railroad
— Road/Highway

LAND OWNERSHIP
Forest Service
Bureau of Land Management
State of Utah
Native American Reservation
Private
Military Reservation
State Wildlife Reserve
Wilderness Area
Benthed Jones
Water

Figure 5. Interpretive Geologic Profile B-B and Theoretical Profile

