

## **CHAPTER 1 INTRODUCTION**

This environmental assessment (EA) addresses the proposal by the Defense Advanced Research Projects Agency (DARPA)<sup>1</sup> to conduct an event known as the Grand Challenge for Autonomous Ground Vehicles. The Grand Challenge consists of a series of events (phases) starting in Los Angeles California on March 8, 2004 and concluding in Las Vegas on March 14, 2004. This EA covers the field testing and analysis phase of the Grand Challenge traversing off-highway vehicle (OHV) areas, designated open routes, and public roads in the Mojave and Colorado Desert region on March 13, 2004 (see Exhibit 1). This EA has been prepared to satisfy the requirements of the National Environmental Policy Act (NEPA) of 1969, as amended per the President's Council on Environmental Quality (CEQ) NEPA regulations.

The majority of lands in the Mojave Desert region are public lands managed by the U.S. Bureau of Land Management (BLM), the National Park Service (NPS), and the Department of Defense (DOD). Because of the predominance of BLM land, any route traversing the region would be, in part, on BLM lands. Therefore, BLM and DARPA have completed a Section 302 Federal Land Policy and Management Act (FLPMA) Memorandum of Agreement for the permit of this event by another federal agency on public lands, subject to the completion of this environmental assessment, identification of measures to prevent unnecessary and undue degradation of resources, and a finding of no significant impact. DARPA is working cooperatively with representatives from the Barstow (lead office), Needles, and Las Vegas field offices of the BLM in order to conduct the field testing and analysis phase of the Grand Challenge in the Mojave Desert region.

### **1.1 PURPOSE AND NEED FOR THE GRAND CHALLENGE**

The concept for the Grand Challenge is to generate widespread interest and appeal among grassroots American developers, inventors, futurists and suppliers in the development of robotic technology for unmanned ground vehicles. The Challenge was designed to meet two goals: (1) to tap into the ingenuity, creativity, and energy of innovative science enthusiasts who do not traditionally participate in defense development; and (2) to find ground-breaking solutions that will accelerate the production of these autonomous systems. The success of the Challenge will significantly reduce the risk to American armed service members by accelerating autonomous technology development.

The need for the Grand Challenge stems from Congressional authority in the National Defense Authorization Act which provides that, "It shall be a goal of the Armed Forces to achieve the fielding of

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<sup>1</sup> DARPA is a Department of Defense agency with the mission to develop imaginative, innovative and often high-risk research ideas offering a significant technological impact that will go well beyond the normal evolutionary developmental approaches; and, to pursue these ideas from the demonstration of technical feasibility through the development of prototype systems.

unmanned remotely controlled technology such that by 2015, one-third of the operational ground combat vehicles of the Armed Forces are unmanned” (Act for Fiscal Year 2001, S.2549, Section 217). Towards this end Congress has provided for, “... cash prizes in recognition of outstanding achievement that are designed to promote science, mathematics, engineering, or technology education in support of the missions of the U.S. Department of Defense” (Act for Fiscal Year 2003, H.R. 4546, Section 23746).

DARPA has established the following criteria to meet their objectives for the Grand Challenge field event:

1. Terrain types over which the vehicle will be tested must simulate a realistic military application.
2. Distance traveled must assess endurance of the vehicle under a realistic military scenario.
3. The event should attract innovators to participate beyond those usually attracted by Department of Defense projects. Considerations for attracting event participants include:
  - Proximity to a regional technology center;
  - Recognized location/destination venue;
  - Cash prize/competition;
  - Co-location with DARPA’s technology convention; and
  - Easily accessible.

The Mojave and Colorado Desert region offers a unique environment that satisfies these criteria. It provides a wide variety of technically challenging terrain that approximates realistic military applications. It provides adequate distance to encompass the endurance testing goals and runs between two major metropolitan cities that are appealing destinations. Due to the pioneering and innovative nature of the Southwest, it is expected that a large number of the teams will be based in this area. This, along with being co-located near DARPA’s technology conference in Los Angeles, encourages grassroots teams to participate.

## **1.2 CONFORMANCE WITH LAND USE PLANS**

The California Desert Conservation Area (CDCA) Plan, 1980, as amended, is the overriding BLM land use plan for the affected area in California. The Las Vegas Resource Management Plan (LVRMP) is the overriding BLM land use plan for the affected area in Nevada. On BLM lands, the Grand Challenge is restricted to existing public routes between southern California and Nevada. The event has been structured to include competitive portions where allowed and a navigational challenge on designated open routes and public roads.

In California, the competitive portions of the route are wholly contained within OHV areas that allow competitive events, while the navigational routes use only BLM “approved routes of travel” and public roads (The California Desert Conservation Area (CDCA), 1980, as amended, pg. 71). The Grand Challenge has been planned in accordance with the CDCA Plan, which describes multiple-use classes for



Source: Mojave Desert Ecosystem Program  
 Projection: UTM Zone 11 NAD 83



Exhibit 1

Affected Area

lands in the area and provides additional guidance on permitted activities. The event crosses lands designated as Class L (Limited Use), Class M (Moderate Use) and Class I (Intensive Use) as defined in Table 1, “Multiple Use Class Guidelines” in chapter 2 of the CDCA Plan, 1980, as amended.

The competitive portions of the event are authorized on Class I where, “Motorized-vehicle play is allowed in areas designated ‘open.’ All aspects of competitive events will be permitted except where specific mitigations are stipulated by the authorized officer” (CDCA Plan, Chapter 2, Table 1). The navigation portion of the event will occur on Class I, M, and L lands which allow, “Non-competitive vehicle touring and events as well as competitive events on specified recreation routes which have been delineated and designated in the CDCA Plan” (CDCA, as amended by NEMO and NECO, December, 2002).

Additional resource management parameters have been developed that amend or propose to amend the CDCA Plan, including the draft West Mojave Habitat Conservation Plan (2003), the Northern and Eastern Mojave Plan (2002), and the Northern and Eastern Colorado Plan (2002). These plans revise the boundaries for certain types of management areas, and provide additional guidance for resource management. The Grand Challenge conforms to all requirements in these plans.

The Las Vegas Resource Management Plan (1998) establishes management areas and provides guidance for resource management. The Grand Challenge will conform to all requirements in this plan, and other relevant plans that govern the affected area in Nevada.

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