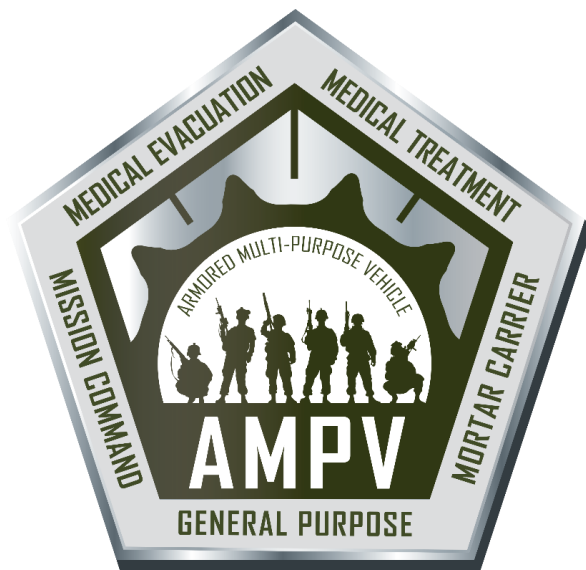


Armored Multi-Purpose Vehicle (AMPV)

Life Cycle Environmental Assessment (LCEA) and Finding of No Significant Impact (FONSI)



July 2020

Prepared by:

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**AMPV
LCEA and FONSI
July 2020**

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Executive Summary

This Life Cycle Environmental Assessment (LCEA) has been developed by the United States (U.S.) Army in accordance with the National Environmental Policy Act (NEPA) of 1969 as amended; the President's Council on Environmental Quality (CEQ) Regulations for Implementing NEPA (40 Code of Federal Regulations (CFR) 1500-1508); and Department of the Army (DA) 32 CFR 651 *Environmental Analysis of Army Actions*; Final Rule March 29, 2002, which implements NEPA and CEQ regulations. Its purpose is to inform decision-makers, fielding facilities, and the public of the potential environmental consequences of the proposed action and alternatives.

The proposed action is the execution of the Armored Multi-Purpose Vehicle (AMPV) program which includes production, testing, training, fielding and operation, maintenance, and demilitarization and disposal (D & D) of AMPV vehicles. The AMPV will replace the M113 in the Armored Brigade Combat Team (ABCT) at Brigade and below and provide support across the range of military operations (ROMO). The AMPV will provide improved force protection, survivability, mobility, situational awareness, sustainment, and capability for future growth. The AMPV will have five variants: General Purpose (GP), Mission Command (MCmd), Medical Treatment (MT), Medical Evacuation (ME), and Mortar Carrier (MC). The AMPV will provide a platform with force protection, survivability, mobility, sustainability, and maintainability comparable to the ABCT vehicles that the AMPV variants support in the formation. The Product Manager (PdM) AMPV awarded one contract to BAE Systems for the Engineering, Manufacturing, and Development (EMD) Phase with Low-Rate Initial Production (LRIP) options, which includes the procurement of prototype vehicles through full and open competition. The total projected AMPV quantity is approximately 2,000-3,000 vehicles.

This LCEA analyzes the potential environmental consequences of the Proposed Action and the No-Action Alternative. Environmental Resource Area (ERA) analyses include air quality, water quality, soil resources, land use, socioeconomics, hazardous materials and wastes, non-hazardous wastes, noise, transportation, biological resources, cultural & historical resources, and public health and safety. The analysis included in this LCEA is limited to ERAs at a programmatic level, meaning it includes a review of potential impacts that are similar at all or nearly all locations where production, testing, training, fielding, operation, maintenance, and D & D of the AMPV will occur. Some ERAs may require additional, site-specific NEPA analysis by receiving organizations based on the unique environmental conditions at the site or specific activities planned at the installation.

At a programmatic level, environmental risks associated with the AMPV are expected to be minimal over the system lifecycle. Based on this LCEA, minimal environmental impacts to air quality, water quality, soil resources, land use, hazardous materials and waste, non-hazardous waste, noise, transportation, and health and safety are anticipated at locations where the AMPV is produced, tested, operated, maintained, and demilitarized or disposed of. The environmental impacts related to AMPV are expected to be typical of tracked, combat vehicle systems within the Army inventory.

Careful adherence to Federal, State, military, and local environmental regulations, such as installation processes, spill contingency plans and pollution prevention plans, as well as procedures for testing, training, operation, maintenance, and D & D, preclude any potential significant environmental impacts associated with execution of the proposed action.

No cumulative environmental impacts are anticipated. In addition, there are no Executive Order (E.O.) 12898 Environmental Justice concerns since the proposed action does not result in any disproportionately high and adverse human health and environmental effects on minority or low-income populations. As a result, the preparation of an Environmental Impact Statement is not required and a Finding of No Significant Impact (FONSI) has been prepared and included in Appendix B of this assessment.

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1.0 Introduction

The Product Manager (PdM) Armored Multi-Purpose Vehicle (AMPV) has prepared this Life Cycle Environmental Assessment (LCEA) in accordance with the National Environmental Policy Act (NEPA) of 1969 as amended; the President's Council on Environmental Quality (CEQ) Regulations for Implementing NEPA (40 Code of Federal Regulations (CFR) 1500-1508); and Department of the Army (DA) 32 CFR 651 *Environmental Analysis of Army Actions*; Final Rule March 29, 2002. This LCEA will inform decision-makers and the public of the potential environmental consequences of the proposed action and alternatives identified in the LCEA.

The AMPV has been designated as an Acquisition Category (ACAT) IC program with the Army Acquisition Executive (AAE) serving as the Milestone Decision Authority (MDA) for the program. PdM AMPV has responsibility for all Environmental, Safety, and Occupational Health (ESOH) requirements for the AMPV program. PdM AMPV has conducted NEPA analyses and prepared this LCEA in support of the program's Low Rate Initial Production (LRIP) phase. The AMPV program reached Milestone C in January 2019.

This LCEA addresses the potential environmental impacts of the proposed action of production, testing, training, fielding and operation, maintenance, and demilitarization and disposal (D & D) of associated vehicles from the AMPV program.

2.0 Document Scope

This LCEA identifies, documents, and evaluates the direct, indirect, and cumulative effects of the Proposed Action pertaining to the production, testing, training, fielding and operation, maintenance, and D & D of the AMPV. Additionally, this LCEA evaluates the Proposed Alternative and No-Action Alternative potential impacts and their significance. The analysis is based upon impacts to Environmental Resource Areas (ERAs). Due to the fact that several Army organizations at multiple locations will receive the AMPV, the analysis included in this LCEA is limited to ERAs at a programmatic level, meaning it will include a review of potential impacts that are similar at all or nearly all locations where production, testing, training, fielding and operation, maintenance, and D & D of the AMPV will occur. In accordance with (IAW) 32 CFR 651, this LCEA documents the general environmental effects of all aspects of the program and the specific effects for all activities for which the PdM AMPV is the proponent.

Specific ERAs analyzed within this LCEA include air quality, water quality, soil resources, land use, socioeconomics, hazardous materials & wastes, non-hazardous waste, noise, transportation, biological resources, cultural & historical resources, and public health & safety.

Some ERAs may require additional, site-specific NEPA analyses conducted by receiving organizations based on the unique environmental conditions at the site or specific activities planned at the installation. Installation personnel are responsible for determining whether additional site-specific NEPA documentation is required. The site-specific environmental analysis can be accomplished through several avenues: a Categorical Exclusion (CX); a Record of Environmental Consideration (REC), which shows the applicability of a CX and/or the determination that the proposed action is sufficiently covered in an existing NEPA document; a supplemental Environmental Assessment (EA) if specific issues need further analyses,

or an Environmental Impact Statement (EIS) if site-specific impacts appear significant. In any case, the analyses within this LCEA, if applicable, need not be duplicated, but can be incorporated by reference.

For this LCEA, the proposed action and alternatives are evaluated using three types of impact categories: an insignificant impact results from an action that will have no noticeable impact to the resource area, a minimal impact results from an action that will have an impact on an ERA (but the impact will be temporary and managed through the use of existing plans and resources), and a significant impact results from an action that will have an impact on an ERA that cannot be rectified or will result in a facility or installation being in violation of its permits.

It should be noted that significant changes to future AMPV configurations during future phases that are not addressed in this LCEA may require further NEPA analysis and documentation, either in the form of a supplemental EA, REC, or EIS.

The findings from this LCEA have been published in a public notice and was made available for a 30 day public review (Appendix D).

3.0 Purpose and Need for Armored Multi-Purpose Vehicle

The AAE terminated production of the M113 Family of Vehicles (FoV) on 11 June 2007. The AMPV will replace the M113 in the Armored Brigade Combat Team (ABCT) and provide support across the range of military operations (ROMO). The AMPV will provide improved force protection, survivability, mobility, situational awareness, sustainment, and capability for future growth. A Capability Development Document (CDD) was approved in 2013 and identifies the core capabilities required of the AMPV to support Joint Forces across a range of military operations conducted in a wide range of terrains and environments.

4.0 Description of the Proposed Action

4.1 Program Overview

The PdM AMPV awarded one contract to BAE Systems for the Engineering, Manufacturing and Development (EMD) Phase procurement of prototype vehicles through full and open competition. PdM AMPV subsequently awarded BAE Systems a LRIP contract in January 2019. A full-rate production (FRP) decision for the program is scheduled for fiscal year (FY) 2022. The total Army procurement objective is approximately 2,000-3,000 vehicles.

4.2 AMPV System Description

The AMPV will be an armored, tracked vehicle which will provide a platform with sufficient protection, mobility, and network enabled function to maneuver with and support combat vehicles throughout the range of military operations.

The AMPV will have five variants:

- General Purpose (GP)
- Mission Command (MCmd)
- Medical Treatment (MT)
- Medical Evacuation (ME)

- Mortar Carrier (MC)

The AMPV variants will operate in terrain classified in two categories: improved surfaces and unimproved surfaces. Improved surfaces are primary and secondary roadways consisting of hardened surfaces subject to periodic maintenance. This includes surfaces ranging from paved, high speed roads in excellent condition, as well as rutted and pot-holed gravel roads. Unimproved surfaces are trails and cross-country “natural” surfaces with no man-made improvements or routine maintenance, and are subject to variances due to weather. Unimproved terrains include, but are not limited to, deserts, grasslands, sand, swamps, forests, tropical jungles, mountains, shallow rivers, and salt water beaches.

The AMPV will have the capability for transportation by land, sea, and air. The AMPV weight and ground pressure will be similar to the currently fielded Bradley Fighting Vehicle System. Tables 4.2-1 and 4.2-2 present information such as physical characteristics, fuel economy, and petroleum, oil, and lubricant (POL) requirements for the AMPV.

Table 4.2-1: AMPV Physical Characteristics

	GP	MCmd	MT	ME	MC
Fuel Tank Capacity (gallons)	175-250				
Physical Dimensions	-	-	-	-	-
Length (in)	297.2	298	299	299	300
Width (in)	144	144	144.8	144.8	148
Height (in)	128.1	128.1	120	120	142

Table 4.2-2: POL Standards and Capacities

Military Specification / Standard	Description	Capacity
MIL-DTL-83133	JP8 / F24 (Primary)	175-250 Gallons
ASTM D975	Diesel Fuel	175-250 Gallons
CID A-A-52624	Engine Coolant	25 Gallons
MIL-PRF-2104	Engine Oil	11 Gallons
SAE J2360	Gear Oil (Final Drive)	12 Quarts
MIL-PRF-2104	Transmission Oil	13.5 Gallons
MIL-PRF-5606	Hydraulic Fluid	< 1 Gallon
	Refrigerant (R-134a)	10-11 lbs
MIL-G-21164	Grease	
A-A-59664	Windshield Washer Solvent	

4.2.1 General Purpose Description

The GP vehicle replaces the M113 in the ABCT organization and provides protected transport for Soldiers while maneuvering with combat vehicles in support of tactical operations. A main function of the GP vehicle is to support First Sergeant tasks such as Logistics Package escort, emergency resupply, and Casualty Evacuation (CASEVAC). In the CASEVAC role, the GP vehicle is reconfigurable to accommodate one litter (stretcher) without displacing the crew or passengers. The GP can host any of the Army's current small and heavy machine guns.

4.2.2 Mission Command Description

The MCmd vehicle replaces the M1068A3 Command Post, the M577 Fire Direction Center (FDC), and the M113 Tactical Air Control Party (TACP) in the ABCT organization. The MCmd vehicle provides advanced communication capabilities (voice & data) and analysis tools that are a main component of the ABCT formation network. The MCmd vehicle's improved mobility and survivability allows it to support Commanders' operational needs at any location in the operational area. The MCmd vehicle is interoperable with current and future communications systems to ensure a common operating picture and connectivity across all echelons throughout the area of operations. The MCmd can host any of the Army's current small and heavy machine guns.

4.2.3 Medical Treatment Description

The MT vehicle replaces the M577A3 in the ABCT organization. The AMPV MT integrates medical treatment support into the ABCT by providing greater survivability, mobility and force protection to conduct required medical tasks in ABCT operational environments. The MT vehicle provides a specifically designed, environmentally controlled, area for the unit surgeon, physician's assistant and medical staff to provide immediate medical care of casualties or life stabilizing triage for casualties prior to evacuation to more capable hospital facilities.

4.2.4 Medical Evacuation Description

The ME vehicle replaces the M113 medical evacuation vehicle in the ABCT organization and integrates medical support into maneuver unit operations by providing the protected mobility and immediate casualty medical care required in tactical environments. The ME vehicle capabilities include emergency care en route, in a protected, environmentally controlled compartment, enhanced by specific lighting and a specialized medical mission equipment package.

4.2.5 Mortar Carrier Description

The MC vehicle replaces the M1064 Mortar Carrier in the ABCT organization and provides immediate, responsive, and heavy mortar fire utilizing the M121 mortar system during fast-paced, offensive operations. The MC vehicle also provides accurate and lethal high-angle fires to support operations in complex terrain and urban environments.

4.3 Production

AMPV vehicles will be built using new hulls and a mix of reclaimed combat vehicle components and new components. The AMPV vehicle production will be done at two BAE facilities (York, Pennsylvania and Aiken, South Carolina) and at Red River Army Depot (RRAD) near Texarkana, Texas.

4.4 Testing and Evaluation

EMD and LRIP testing will utilize approximately 30-50 vehicles and will include the following:

- Reliability, Availability, and Maintainability (RAM)
- Limited User Test (LUT)
- Logistics Demonstration
- Live Fire
- Electromagnetic Environmental Effects (E3)
- Production Qualification Test (PQT)
- Nuclear Weapons Effects
- Delta Log Demo
- Contractor Test and Evaluation
- Tropics Regions Testing
- Extreme Cold Natural Environmental Testing
- Initial Operation Testing

Testing will occur at the following locations:

- BAE Systems in Sterling Heights, Michigan
- Aberdeen Proving Ground (APG) in Aberdeen, Maryland
- Yuma Proving Ground (YPG) in Yuma, Arizona
- White Sands Missile Range (WSMR) in New Mexico
- Electronics Proving Ground (EPG) in Huachuca, Arizona
- Fort Hood in Killeen, Texas
- Fort Greely in Alaska

Test and Evaluation locations are responsible for executing all testing activities in accordance with Federal, State, and local environmental laws and regulations.

4.5 Training

The AMPV training plan currently consists of multiple types of training during various phases of the program. The following training activities are currently planned:

- Developmental Test Tester Training
- LUT Training
- Crew and Maintainer Log Demo Training
- Instructor and Key Personnel Training (I&KPT) Training and Professional Military Education Courses
- Initial Operation Test & Evaluation (IOT&E) Training
- New Equipment Training (NET)
- Individual, Unit, and Crew Training

The training activities will occur at the following locations:

- APG
- YPG
- EPG

- Fort Benning in Georgia
- Fort Sill in Oklahoma
- Fort Sam Houston in San Antonio, Texas
- Fort Gordon in Georgia
- Fort Lee in Prince George County, Virginia
- Camp Shelby in Hattiesburg, Mississippi
- Fort Hood in Killeen, Texas
- BAE Systems in Sterling Heights

BAE Systems developed AMPV operator and maintainer technical manuals (TM) IAW MIL-STD-40051. TMs are currently being validated by BAE and will be verified by the Government to ensure technical accuracy, safety, usability, and completeness. Field and Sustainment levels of maintenance will be called out in the Maintenance Allocation Chart found in the Operator and Field Maintenance Interactive Electronic Technical Manual (IETM).

4.6 Fielding & Operations

A Material Fielding Plan has been developed for the program. It is known that the AMPV will be fielded to multiple locations within the U.S. and abroad. The AMPV will perform an assortment of activities at the fielding locations to include, but not limited to, training exercises and regular maintenance. Fielding locations for the AMPV include:

- Fort Riley, Kansas
- Fort Bliss, Texas
- Fort Carson, Colorado
- Fort Hood, Texas
- Fort Benning, Georgia
- Fort Stewart, Georgia
- Camp Ripley, Minnesota
- Yakima Training Center, Washington
- Camp Shelby, Mississippi
- Ft. Indiantown Gap, Pennsylvania
- Gowen Field, Idaho

PdM AMPV will have the responsibility for initial fielding of the AMPV to the receiving sites. Transportation of the AMPV will utilize a combination of highway, rail, and aircraft. The receiving units will provide fielding support such as unloading the AMPV from rail cars, transporting the AMPV to designated secure storage area(s), providing adequate de-processing facilities, and providing consumable materiel for the de-processing effort. Within this LCEA, de-processing means the necessary maintenance activities and final integration of components on the AMPV prior to the units receiving AMPVs. The de-processing activities will occur prior to the units receiving the AMPV for official use.

It has been determined that there will be zero to limited impact to existing facilities and infrastructure upon fielding the AMPV. No construction of new facilities and no structural changes to facilities are anticipated. Projected AMPV annual usage rates for both active and reserve components total approximately 3,500 miles between the five variants, which is similar to other combat vehicles currently in the field.

4.7 Maintenance

The Army will use two-level maintenance (TLM) to support the AMPV. At the field level, Soldiers will maintain and support the AMPV with both scheduled and unscheduled maintenance activities. Scheduled field level maintenance activities consist of all preventive maintenance checks and services (PMCS), which includes visual or mechanical inspections, fluid servicing, and replacement and/or repair of parts to maintain the vehicle. Unscheduled field level maintenance includes removal and replacement or repair of Line Replaceable Units (LRUs). At the sustainment level, a mix of Government and Contractor personnel will maintain and support the AMPV. Sustainment level maintenance activities include all activities that are done off vehicle, along with rebuilding of LRUs that the field does not have the capability or equipment to handle. The AMPV program will use existing tools, Test Measurement and Diagnostic Equipment (TMDE), and Military Occupational Specialties (MOS's) currently in the ABCT to maintain the vehicle. The vehicle software will be designed with open systems architecture to allow for future growth.

During the EMD Phase, BAE Systems will provide both field and sustainment level maintenance and supply support to all test events. Field Service Representatives (FSRs) will support all test events and will provide technical assistance to maintainers and Logistics Assistance Representatives (LARs) in the ABCT and will also support data collection for PdM AMPV. During Performance, RAM, and LUT events, Soldiers and Government testers will operate and perform crew-level maintenance tasks. The Contractor will perform Field and Sustainment level Maintenance tasks. The Contractor will provide all support to include, but not limited to, training, tools, support equipment and spare parts to support the schedule test events.

During the Production and Deployment Phase, PdM AMPV will support the AMPV with a mix of organic and contractor support. This will change to 100% organic support for field level prior to First Unit Equipped (FUE). At the Sustainment Level, the AMPV will have a core depot capability established, with a mix of organic and contractor repair activities. PdM AMPV intends to leverage existing depot maintenance supply, and contract support infrastructure to minimize increases in the logistical footprint.

4.8 Demilitarization and Disposal (D & D)

Demilitarization is the act by which the military capabilities of decommissioned equipment are removed or rendered unusable. Disposal includes destroying, selling, transferring, abandoning, donating, or redistributing the demilitarized asset for civil, public or private use. PdM AMPV has developed a draft System Demilitarization and Disposal Plan (SDDP), which will be finalized prior to FRP. IAW the SDDP, the major item manager will provide disposition instructions requiring removal of hosted Mission Equipment Packages (MEPs) prior to D & D of the AMPV. Depot personnel will remove major components during demilitarization and reutilize serviceable/salvageable components. Demilitarization will require removal of Chemical Agent Resistant Coating (CARC) from all components. Based on commonality with other combat vehicles, PdM AMPV expects the following common waste products: vehicle fluids and greases, paint waste from abrasive blast, batteries, scrap metal, electronic components, track, and small parts containing prohibited material. Government depot or civilian contractors will demilitarize and dispose of the AMPV and components at approved facilities IAW the Department of Defense (DoD) 4160.21-M-1 standard and all applicable federal, state, and local environmental, health, and safety regulations and laws.

5.0 Proposed Alternatives

5.1 Preferred Alternative

As described in Section 3.0 (Purpose and Need for Armored Multi-Purpose Vehicle Program), the AMPV will provide improved force protection, survivability, mobility, situational awareness, sustainment, and capability for future growth. It was determined that a new system was required to fulfill these needs and the AMPV program was designed to be a viable technical alternative for fully meeting the user requirements. Therefore, the preferred alternative is AMPV through the production, testing, training, fielding, operation, maintenance, and D & D of the system, as described in Section 4.0 (Description of the Proposed Action).

5.2 Alternatives Considered but Eliminated

The 2012 AMPV Analysis of Alternatives (AoA) included analysis of the following:

- Alternative 1 – Base case, the current M113 FoV
- Alternative 2 – Current and modified capital assets to include Bradley derivatives, M113 FoV upgrades, Mine Resistant Ambush Protected (MRAP) vehicles, and Stryker vehicles
- Alternative 3 – Other non-developmental items (NDIs) and modified NDIs not covered by Alternative 2
- Alternative 4 – New start development vehicle such as the Joint Light Tactical Vehicles (JLTV)
- Alternative 5 – A combination of the alternatives listed above to fill the variety of mission roles

Alternative 1 is considered the “No-Action Alternative” and will be discussed further in Section 5.3 (No-Action Alternative). Alternative 2 is the preferred alternative, as discussed in Section 5.1 (Preferred Alternative). Alternative 3 focused on analysis of various systems within the current domestic and foreign inventories. The AoA team identified candidate vehicles for the study and a small number of these vehicles were identified as having sufficient capability to host at least one AMPV MEP. The AoA analysis concluded that none of the considered alternatives met the required performance, cost, and schedule constraints of the program; therefore Alternatives 3, 4, and 5 were rejected.

5.3 No-Action Alternative

The No-Action Alternative is prescribed by CEQ regulations and serves as a benchmark against which Federal actions can be evaluated. The No-Action Alternative refers to the continuation of existing conditions without implementation of the Proposed Action or Proposed Alternatives. The No-Action Alternative would result in the Army continuing to rely on the currently fielded M113 FoV assets to complete military operations. As noted in Section 3.0 (Purpose and Need for Armored Multi-Purpose Vehicle Program), the AMPV will provide improved force protection, survivability, mobility, situational awareness, sustainment, and capability for future growth. Therefore, the AMPV AoA eliminated the No-Action Alternative as a viable option. However, as a baseline for comparison, this LCEA includes the analysis of the No-Action Alternative in contrast to the Proposed Action.

6.0 Affected Environment (AE)

The production, testing, training, fielding and operation, maintenance, and D & D locations mentioned in Section 4.0 (Description of the Proposed Action) make up the AE for the AMPV program. For the purposes of this LCEA, environmental consequences of the proposed action and no-action alternative are analyzed at a programmatic level according to specific ERAs with regard to their potential impacts on the AEs identified above. As stated in Section 2.0 (Document Scope), the ERAs of specific interest to this analysis include:

- Air Quality
- Water Quality
- Soil Resources
- Land Use
- Socioeconomics
- Hazardous Materials and Wastes
- Non-hazardous Wastes
- Noise
- Transportation
- Biological Resources
- Cultural & Historical Resources
- Public Health & Safety

6.1 ERA Descriptions

The following ERA descriptions are used as points of consideration when conducting subsequent environmental impact analysis for each AE.

6.1.1 Air Quality

Air quality is described qualitatively by the presence of Hazardous Air Pollutants (HAPs), Volatile Organic Compounds (VOCs), Ozone Depleting Chemicals (ODCs), Green House Gases (GHGs), Clean Air Act (CAA) criteria air pollutants (sulfur dioxide, nitrogen dioxide, carbon monoxide, ozone, lead, and particulate matter), and other compounds foreign to the makeup of natural ambient air in a given area. Some indicators of poor air quality may include smog, smoke, or odorous emissions, while others may not be so obvious, occurring in higher altitudes with reduced ozone or contributors to acid rain.

6.1.2 Water Quality

Water quality refers specifically to the presence and concentration of pollutants dissolved, suspended, or floating in reservoirs (lakes, rivers, streams, water sheds, etc.), groundwater (subterranean hydrologic aquifers) and storm water (water shed from buildings, roads, parking lots, and other man-made structures).

6.1.3 Soil Resources

Soil resources include the soil, minerals and their respective health as they overlay natural bedrock, manmade structures, and other parent material. Specific soils exhibit specific physical, chemical, and biological characteristics that aid in delivering a healthy ecosystem.

6.1.4 Land Use

Land use is the human use of land which encompasses activities performed on either natural or man-made surfaces. This includes the building of structures on previously uninhabited land and performing activities on existing roadways and test ranges.

6.1.5 Socioeconomics

Socioeconomics refers broadly to the “use of economics in the study of society”. For the purposes of this analysis, socioeconomics will specifically focus on the social impacts and related economic changes directly affected by production, testing, training, fielding and operation, maintenance, and D & D of the AMPV. Socioeconomics may also consider how all affected environments relates to Environmental Justice (E.O. 12898, 1994) – evaluating consequences to specific ethnic and financial groups, race, and peoples of a specific geographical location. Socioeconomic metrics may include financial opportunity, life expectancy, literacy rates, employment levels, education, wealth, and overall quality of life.

6.1.6 Hazardous Materials

Hazardous materials shall refer to any physical, chemical, or biological agent that may cause or present harm to humans, animals, or the environment by itself or through interaction with other common agents.

6.1.7 Hazardous Wastes

Hazardous wastes are hazardous materials in the form of liquid, solid, semi-solid, or gas that characteristically exhibit ignitability, reactivity, corrosivity, or toxicity. Hazardous wastes are defined in the Resource Conservation and Recovery Act (RCRA). These substances pose a threat to public health and environment and their treatment, storage, and disposal are regulated by RCRA. Hazardous wastes cannot be disposed by common means and often require treatment or a phase change to render the substance inert. In some cases, special containment may be required for disposal.

6.1.8 Non-Hazardous Wastes

Non-hazardous wastes are those wastes not regulated as hazardous wastes by RCRA. This includes municipal solid waste and non-hazardous industrial wastes. Solid non-hazardous wastes are regulated at the Federal, State, and local levels. The Environmental Protection Agency (EPA) has established mandatory minimum requirements for environmentally acceptable waste management facilities that receive non-hazardous solid waste (40 CFR Parts 257 and 258). States must establish comparable or more stringent standards.

6.1.9 Noise

Noise generally refers to an unwanted sound often creating an annoyance or is capable of causing harm. Noise regulation guidelines are established at the Federal, State, province, and municipal levels of government.

6.1.10 Transportation

Transportation considers the increased traffic (if applicable), whether by rail, air, or road (vehicular or by foot) and evaluates its direct influence to increased congestion and degradation of transportation infrastructures.

6.1.11 Biological Resources

A biological resource is a substance or object required by an organism for normal growth, maintenance, and reproduction. These resources generally include food, water, and territory or other vital constituents of sustenance aiding in an organisms natural biologic processes. An eco-balanced habitat making up the Biological Resource, provides the basis for naturally occurring indigenous plant (flora) and animal (fauna) life to be sustained and flourish.

6.1.12 Cultural and Historical Resources

Humans relate to their environment through their culture, which may include the natural environment, the built environment, and human social institutions. Cultural resources are the remains and sites associated with human activities, to include Native American archaeological sites, historic archaeological sites, historic buildings, and elements of the natural landscape which have traditional cultural significance. This includes, but is not limited to, those resources listed in or eligible for the National Register of Historical Places.

6.1.13 Public Health & Safety

NEPA imposes certain responsibilities on the Federal government, including an obligation to assure a safe and healthful environment free from degradation and to achieve a wide range of beneficial uses without risk to health, safety, or undesirable consequences to the public.

7.0 Environmental Consequences

The following review assesses the environmental impacts of the proposed action on the Affected Environments related to each of the ERAs identified in Section 6.0 (Affected Environment) and considers practical mitigation to minimize the potential environmental consequences, if applicable.

7.1 Air Quality

Production

AMPV variants will be manufactured in contractor and military sites responsible for their own oversight and management of human health and environmental consequence according to Federal, State, and local

regulations. Per contractual requirements, regulatory compliance and related permitting is the responsibility of the manufacturer for all processes associated with the production of the AMPV.

Environmental aspects that exist as part of the production process of the AMPV will not vary dramatically from those typically identified, managed, and mitigated within the manufacturing process of military combat vehicles. Common environmental aspects for combat vehicles include the application of CARC and corrosion resistant plated fittings and fasteners. Processes used for these aspects include materials selection, welding, grinding, forging, cleaning, stamping, surface preparation, painting, and assembly. Each of these processes brings with them their own environmental aspects that may include airborne dusts, particulate matter, VOCs, and HAPs. Process specific products such as ozone, steam, or solvent evaporation may be present, as well as volatiles from supporting products such as adhesives, sealants, and thread-lockers. These source pollutants however, are regulated and managed according to site specific air permits and operating guidelines as well as State and Federal regulations.

In regard to CARC paint, high concentrations of isocyanates readily exist and, if not managed with process controls and personal protection equipment (PPE), can cause irritation to the skin, eyes, throat, and nose and inhibit proper respiratory function. Once cured, CARC primers and topcoats remain benign to the environment. However, when welding, grinding, sanding, or applying heat in excess of 170°C to CARC coated surfaces, cyanates can once again become air-borne, requiring proper process controls, PPE, collection, and disposal per regulatory guidelines and laws. CARC removal during production will be infrequent and limited to small areas (less than one square foot) for occasional touch-up according to quality assurance goals. As a result, very limited quantities of air-borne cyanates will be generated outside of the highly controlled application booths used for the initial painting.

As a matter of best work practices, safety, Standard Operating Procedures (SOPs) and operational guidelines, primers, topcoat, and solvent containers will remain closed and sealed when not used to prevent fugitive air emissions. Additionally, all AMPV painting activities will occur inside paint booths that have associated air emission permits.

Testing, Training, and Fielding & Operations

Potential impacts to air quality during testing, training, fielding, and operation are related to dust generation, engine emissions, release of refrigerants and fire suppressants, and release of toxic by-products as a result of a vehicle fire.

AMPV testing, training, fielding, and operation activities will require operation of AMPV vehicles on varied drive surfaces. These surfaces could include improved (i.e. paved, gravel, sand, dirt, dirt / rock mix) primary and secondary roads, or unimproved (i.e. off-road, heavily rutted natural trails, mud, streams, etc.) drive surfaces. The operation of AMPV vehicles on improved, slightly improved, and unimproved surfaces will result in the dispersion of dust and mineral particulate matter into the air. The amount of air-borne particulate matter generated will be a function of drive surface type and density, as well as frequency of passes, velocity, payload, and free spin of drive wheels required to satisfy the test or complete the training exercise. Individual air-borne particulate matter is expected to settle readily according to atmospheric conditions (i.e. humidity, wind, rain, etc.) at the time of the operation. Testing and training will occur on a periodic basis and for a limited duration at existing facilities. Site-specific NEPA analyses will be conducted by receiving organizations based on the unique environmental conditions at the site or specific activities

planned at the installation. Any air-borne particulate matter produced by AMPV testing or training will be comparable to that of other military vehicles performing the same operations on a given drive surface and will be temporary.

Based on 40 CFR, Section 1068.225, the AMPV is covered by a National Security Exemption (NSE) because it has permanently installed armor, making it exempt from both on-highway and non-road diesel engine EPA emission standards. Per contracts and regulations, the contractor shall ensure that NSE labeling requirements are met IAW EPA regulations. Although a non-certified engine will be used, AMPV is in compliance with EPA engine emission requirements through use of the NSE. Emissions from the AMPV will be minimized based on the limited use of the AMPV vehicles during peace-time operations.

The AMPV vehicles will be equipped with an Automatic Fire Extinguishing System (AFES). The AMPV will utilize a combination of FM-200 (HFC-227ea) and FM-200 + 10% sodium bicarbonate in the crew and engine compartment AFES system. FM-200 is a colorless and odorless halocarbon in a gaseous state, has a short atmospheric life, low global warming potential, and no ozone depleting potential. In addition, each vehicle will be equipped with hand-held fire extinguishers containing carbon dioxide (CO₂). The AFES will not be used except to combat vehicle fires. Based on the use of non-ozone depleting and low-global warming potential extinguishing agents and the limited release of the agents, the use of the AFES and fire extinguishers will not have a significant environmental impact.

In the case of a vehicle fire, burning of vehicle POLs, track, hoses, plastics, paint primers, topcoats, and fiberglass components would result in the formation of various combustion by-products typical of any commercial grade vehicle fire. These by-products could include carbon monoxide, hydrogen cyanide, aldehydes, halogenated compounds, aromatic compounds, hydrocarbons, and oxides of nitrogen, lead, sulfur, carbon, and phosphorus. A vehicle fire would be quickly extinguished, and combustion by-product concentrations would be limited – quickly dispersed by air currents to non-critical concentrations. As a result, a vehicle fire would have a negligible impact on the surrounding long term air quality.

Air conditioning units for the AMPV will contain R-134a (1,1,1,2-Tetrafluoroethane) as the refrigerant. R-134a is non-ozone depleting, has a Global Warming Potential (GWP) of 1430 (relative to that of CO₂ with a GWP of 1), and will be handled with care by certified personnel only. AMPV TMs will contain a work package for servicing the air conditioning units. R-134a is the industry standard for air conditioning in motor vehicles. During normal operations, the refrigerant will remain in the system and will not be released to the atmosphere. Should a leak occur, the vehicle will immediately be sent for repair by a certified technician. Accidental releases are expected to be infrequent and the impact to air quality will be negligible.

GHGs related to the operation of the AMPV will include combustion products from burning of fossil fuels in the engine (CO₂ and Nitrogen Oxides), R-134a refrigerant, and HFC-227ea fire suppressant. As mentioned above, the quantity and limited use of AMPV vehicles during peace time operations are nominal. In addition, R-134a and HFC-227ea will remain in the system and will not be released to the atmosphere during normal operations. Thus, release of GHGs from AMPV operations will not significantly contribute to climate change.

Maintenance

Potential impacts to air quality during maintenance are related to accidental release of refrigerants and fire suppressants, and the use of volatile substances contained within paints, solvents, and adhesives. As described in Section 4.7 (Maintenance), a TLM strategy will be utilized to support the AMPV. At the sustainment level, a mix of Government and Contractor personnel will maintain and support the AMPV. Contractor and Government facilities are responsible for air quality compliance at their respective facilities.

Maintenance and repair will be required during testing and training activities. Specific to air quality, these activities will include the use of small amounts of cleaning solvents and adhesives that can contain VOCs and HAPs. These materials will be used on a limited basis in conjunction with site safety and environmental management plans and will not contribute to significant air pollution.

Field level maintenance (general maintenance and upkeep functions) will be conducted at the fielding locations to include minor touch-up of painted surfaces, replacement of POLs, track, batteries, hoses, brakes, and installation of various expendable components. Some of these maintenance tasks shall require the use of solvents, adhesives, thread lockers, and anti-seize compounds which often contain volatile organic hazardous air pollutants (VOHAPs) and VOCs. Based upon consumable and expendable materials lists in current Army ground vehicle systems' TMs, the required types and amounts of materials for AMPV maintenance and repair (including criteria pollutants, VOCs, and VOHAPs) would be similar to those used during maintenance activities on other existing ground vehicle systems. Therefore, the AMPV would not require use of unique or new materials and would not represent an exceptional potential for air pollution. Further, the use of VOC / VOHAP laden sealants and adhesives would be used sparingly per current procedures and would not represent significant fugitive emissions. Appendix A provides a list of materials related to maintenance and repair activities.

Once fielded, the AMPV will require sustainment level maintenance (periodic overhaul or remanufacturing) that will include general heavy cleaning, assembly and component degreasing, removal of coatings to include CARC primer and topcoats, sanding, grinding, and removal of corrosion. Subsequently, respective rebuild operations shall be employed to include the reapplication of CARC primer and topcoats (of which the hexavalent pretreatments are prohibited), replacement of expendable parts, and replenishment of POLs.

Major overhaul and remanufacturing operations will not be conducted in the field, however these operations will be performed at qualified industrial depots facilitated for the task and permitted accordingly. Possible VOCs emitted using the specified primers and topcoats are expressed in Table 7.1.

Table 7.1: CARC Paint Systems

Military Standards	Title	VOHAPs	VOCs
MIL-DTL-53022 Type II	Corrosion Inhibiting Epoxy Primer	0	420 grams/liter (3.5 pounds/gallon)
MIL-DTL-53030 Type II	Water-based Epoxy Primer	0	340 grams/liter (2.8 pounds/gallon)
MIL-DTL-53039 Type III	Single Component, Aliphatic, Polyurethane Chemical Agent Resistant Coating	0	180 grams/liter (1.5 pounds/gallon)
MIL-DTL-64159 Type II	Water Dispersible Aliphatic Polyurethane Camouflage Coating	0	220 grams/liter (1.8 pounds/gallon)
MIL-PRF-32348 Type II	Powder Coating, Camouflage Chemical Agent Resistant Coating	0	0
MIL-PRF-22750 Type II	Coating, Epoxy, High-Solids	0	340 grams/liter (2.8 pounds/gallon)

Although these materials do contain VOCs and produce hazardous and non-hazardous wastes when sanded, grinded, or stripped, the facilities at which these processes are performed are adequately equipped with process controls to capture and mitigate fugitive emissions. Personnel are task oriented and trained specifically to conduct the tasks to minimize environmental impacts and health hazards. Each depot or industrial facility performing remanufacturing shall have their own site safety, permitting, and environmental plans for which air emissions will be controlled and regulated. Based on this information, minimal impacts to air quality are anticipated as a result of sustainment level maintenance.

As mentioned previously, air conditioning units for the AMPV will contain R-134a (1,1,1,2-tetrafluoroethane) as the refrigerant and will be handled with care by certified personnel only. As required, EPA certified refrigerant technicians using task specific equipment will evacuate and refill the R-134a into the air conditioners' condensers to minimize the possibility of any discharge of R-134a to the atmosphere. Once filled with R-134a, the air conditioning units retain the refrigerant during vehicle operation. Maintenance activities will include the periodic inspection of the air conditioning unit to ensure there are no R-134a leaks. Accidental releases are expected to be infrequent and the impact to air quality will be negligible.

Similarly, the AFES will be inspected on a regular basis to ensure it is operational and that leaks do not exist. Only certified technicians will evacuate and fill the fire suppressant bottles. Accidental releases are expected to be infrequent and the impact to air quality will be negligible.

Demilitarization & Disposal (D & D)

Disposal of the AMPV will require several activities that may generate air-borne contaminants. Prior to disassembly of the vehicle hull, the CARC system will have to be removed. Removal will include abrasively removing the coatings by using blast media in self-contained blast chambers. These chambers contain filtration systems designed to remove air-borne contaminants. The spent blast media and removed coatings will be collected and placed into appropriate storage containers for proper disposal. AMPV hull and frame disassembly will be accomplished by cutting (by torch or other similar tool) into pieces. This type of cutting process generates toxic fumes through the heating of the hull's metal substrate. Safe working practices have been developed to protect workers and the environment during metal cutting. These practices range from proper ventilation of the work area to remote control of the cutting process. In addition, SOPs and regulations effectively mitigate environmental and worker health impacts.

7.2 Water Quality

Production

Fabrication and production of the AMPV will be performed at contractor and military sites subject to Federal, State, and local wastewater discharge requirements. Wastewater produced as a result of the production of the AMPV will be treated according to the production site's own National Pollutant Discharge Elimination System (NPDES) permit or be discharged to a Publically Owned Wastewater Treatment (POWT) plant. The wastewater will be appropriately treated according to governing regulations prior to being discharged to the environment, released to natural or artificial staging reservoirs, or being provided for use by the general public.

Testing, Training, and Fielding & Operations

Potential impacts on water quality during AMPV testing, training, and fielding and operations would be a result of fording operations and leaks or spills of vehicle fluids, resulting in the subsequent discharge or transport of these fluids into local bodies of water.

The majority of AMPV testing and training activities will occur in areas absent of rivers, streams, and bodies of water. Further, the function of AMPV testing will not present significant aspects that can permanently harm aquatic ecosystems. However, as part of the AMPV operational requirements, the vehicle will be capable of traversing bodies of surface water. The AMPV system will be capable of fording.

Test sites have implemented hardened surfaces at the water fording areas of the test range to include heavy coarse aggregate or concrete. These hardened surfaces will mitigate the creation of deep ruts and sediment dispersion. Any fording done as a part of training exercises should be coordinated with the local environmental office at the installation to ensure that no restrictions apply. Any minor disruptions that do occur will be temporary as the minor rutting and suspended solids will settle naturally aided by time, varying water levels, and flowing water. Exhaust emissions should remain above the water column and not present a water quality aspect. When crossing streams, the operation of the AMPV will comply with the installations' Integrated Training Area Management (ITAM) program and Range and Training Land Program (RTLTP) as part of the Sustainable Range Program with their primary objectives requiring:

- The integration of environmental planning procedures into all operations
- The protection of natural and cultural resources
- The compliance with all existing statutory regulations
- The prevention of future pollution and the reduction of hazardous waste and toxic releases

Aside from testing and training the operational functions and vehicle performance when fording waterways, the majority of AMPV operation will be limited to roadways, off-road trails, and controlled ranges. These test and training exercises will be consistent with those typical of existing Army tracked, combat vehicles and will not present additional out-of-ordinary, exceptional hazards or risks to local bodies of surface water, wetlands, or floodplains.

When used within its intended purpose, AMPV's contact with rivers, streams, and waterways will be limited, significantly reducing the quantity of spilled or leaked vehicle fluids subject to contact with natural and man-made water resources. As with most vehicles, the potential for spills due to unintentional accidents or catastrophic failure is possible when engaged in testing and training exercises, however this is an unlikely scenario. In this unlikely event, vehicle fluids could be released into the environment. The AMPV is considered to have a sealed hull that will contain fluid leaks. Because of this, there is a possibility of the vehicle collecting a mixture of fluids, which can be drained. However, testing, training, and operations will take place at existing facilities that have Spill Prevention and Countermeasures Plans (SPCCP) and pre-planned protocols to immediately respond, contain, remediate, and prevent ground water contamination. Frequent PMCS will be performed on the AMPV to ensure those design features and related components remain in good working order and within original equipment manufacturer (OEM) specifications. Should a leak or spill occur, operators are trained to immediately employ the proper containment and collection of the POLs according to the Installation Spill Containment Plan (ISCP) and the SPCCP.

Once fielded, storage of the AMPV vehicles will be within motor pools or in areas that typically have concrete or bituminous surfaces. Many of these parking areas incorporate perimeter berms to prevent the migration of leaked or spilled POLs from entering storm drains. Inspections will be completed at regular intervals to identify any leaks. Also, as a matter of protocol, select containers and catch basins will be employed under the vehicle to catch and retain any fluids that may leak and drip while parked. Environmental impacts to water quality related to leaks and spills are expected to be minimal based on the limited annual operations of the vehicle and the existing plans and procedures in place at the installations for management and clean-up of spills.

Maintenance

Potential impacts to water quality during maintenance activities are related to spilled (new or used) vehicle fluids and wastewater management from chemical processes during sustainment level maintenance.

Occasional maintenance and repairs on AMPV vehicles will occur during testing, training, and fielding. These activities involve periodic removal or addition of hydraulic fluid, engine coolant, fuel, and oil, and are conducted in specifically designed maintenance bays at the installations. These maintenance areas have hardened or concrete floors equipped with oil/water separators in the floor drains and plumbing. These infrastructure features enable containment, collection, and proper disposal of vehicle fluids preventing the migration of spent engine fluids to surrounding water resources.

Field level and sustainment level maintenance will follow procedures specified in TMs, which includes complying with local environmental laws, regulations, and policies including SPCCPs and ISCPs. These plans are designed to minimize, if not eliminate, the migration of vehicle fluids into the installation sanitary sewer lines and surrounding bodies of water. For example, work areas have spill containment kits, and if a spill occurs during fluid draining, the FSRs or maintainers would utilize the kits to minimize the spill and prevent fluid migration into installation sewers or nearby bodies of water. By following the TM procedures, other installation requirements, and utilizing the appropriate equipment, the migration of vehicle fluids to local waterways or groundwater would be minimized, if not eliminated.

As an additional mitigation, using vehicle specific TMs, protocols will be performed to identify potential fluid leaks and the necessary preventive maintenance to prevent the leaks from occurring. Maintenance will be performed in controlled maintenance areas and all POLs, hazardous, and non-hazardous waste will be contained, collected, and disposed of according Federal, State, and local regulations.

Periodically, sustainment level maintenance will be required to be performed at an industrial depot. This level of maintenance constitutes a rebuild or remanufacture and will include similar processes to those required during the production or fabrication of the vehicle, in addition to preparatory processes. These processes may include a vehicle tear-down and fluid purge, general cleaning, precision cleaning and stripping, non-destructive inspection of reusable components, and various organic and inorganic refinishing processes to make ready for re-assembly. From tear-down to decontamination, process treatment, and re-assembly, all sustainment maintenance will be performed at facilities specifically designated, permitted, and facilitated to conduct the required operations according to protocols that specifically limit environmental impacts. These mitigative protocols account for process wastewater, treatment, and recycle, as well as weather related run-off into storm drains and sewers which prevent contamination of natural water resources and potable water supplies. By complying with wastewater regulations, other installation requirements, and utilizing the appropriate equipment, the migration of vehicle fluids to local waterways or groundwater will be minimized, if not eliminated.

Demilitarization & Disposal (D & D)

Potential impacts to water quality during D & D operations could result from improper disposal of vehicle fluids, vehicle fluids spills, outdoor storage of vehicle components that may contain grease or leaking fluids, and improper handling or storage of paint waste following paint removal. Similar to scheduled maintenance, D & D activities will be conducted within existing facilities designed for D & D operations.

During D & D operations, any vehicle fluids will be removed and properly stored until appropriate disposal methodology is identified in accordance with environmental laws and regulations. Recycling is the preferred method of disposal for vehicle fluids. If the D & D facility determines the need for disposal of fluids rather than recycling, the wastes will be handled IAW with applicable environmental regulations.

Outdoor storage of vehicles or parts awaiting disposal may occur which could result in pollutants entering bodies of water including dripping fluids, washing away of greases during rainfall, or washing away of paint waste dust if the vehicle is stored outdoors after paint removal. However, D & D facilities are equipped with proper containment controls, have existing ISCP's and SPCCPs, and are responsible for compliance with applicable regulations. Many of these storage areas incorporate perimeter berms to prevent the migration of leaked or spilled POLs from entering storm drains. Also, as a matter of protocol, select

containers or catch basins will be employed under the vehicle to catch and retain any fluids that may leak and drip while parked.

By following the standard D & D procedures, other installation requirements, and utilizing the appropriate equipment, the migration of vehicle fluids and other wastes to local waterways or groundwater will be minimized, if not eliminated.

7.3 Soil Resources

Production

Fabrication and production of the AMPV will be performed at existing contractor and military sites that do not exist solely for the acquisition of vehicles through the AMPV program. Instead, the potential manufacturing sites are pre-existing for the manufacture of varied goods and equipment and would continue to produce goods outside of the AMPV if the AMPV contract did not exist or was not awarded. Therefore, soil erosion, compaction, or altered chemical and biological characteristics due to the manufacture of the AMPV will not occur in excess of that which already exists. Simply, the sites will continue to conduct the manufacture of goods of similar magnitude whether or not the AMPV program remains. Thus, at the point of manufacture, soil resources are neither harmed nor improved.

Testing, Training, and Fielding & Operations

Potential impacts to soil resources during testing, training, fielding, and operations of the AMPV include erosion, soil compaction, and contamination of soil.

AMPV vehicles will operate on existing test ranges and training maneuver areas that have already been utilized for testing and individual, unit, and crew training of other tracked combat vehicles (i.e., Bradley Fighting Vehicle Systems FoV, Abrams Tank Systems, and M113 FoV). Since the actual test and training areas have already been disturbed by prior activities, any disturbance to soils surrounding the roadways will have already occurred, and as a result, installation personnel will have already constructed and implemented erosion control plans. Testing, training, and operation of the AMPV vehicles and subsystems will be performed IAW existing erosion control plans.

Outside of testing and training, operation of the AMPV during fielded use will primarily occur on paved or improved drive surfaces intended for vehicular travel. Off-road use may occasionally occur, however repetitive off-road use will likely be restricted to designated ranges that are maintained and managed according to specific environmental plans.

Any soil erosion and compaction that does occur due to AMPV operations will be addressed by site-specific NEPA documentation, if necessary. Each site will have unique soil characteristics, making a programmatic evaluation of soil erosion and compaction difficult to accurately assess. However, installation personnel are commissioned to conduct the necessary evaluations and prepare related NEPA assessments to include soil resources. Ground pressure data has been estimated for the AMPV and can be used by site personnel to determine the extent of potential soil compaction or erosion caused by the proposed action. This will further assist in determining a means for implementing useful mitigative actions. AMPV ground pressure data is similar to the currently fielded Bradley Fighting Vehicle System and should not cause additional soil erosion or compaction.

As discussed in the previous water quality section, the potential for spills due to unintentional accidents or catastrophic failure is possible but unlikely when engaged in testing and training exercises. In this unlikely event, vehicle fluids could be released into the environment. The AMPV is considered to have a sealed hull that will contain fluid leaks. Because of this, there is a possibility of the vehicle collecting a mixture of fluids, which can be drained. However, testing, training, and operations will take place at existing facilities that have SPCCPs and pre-planned protocols to immediately respond, contain, remediate, and prevent ground water contamination. Frequent PMCS will be performed on the AMPV to ensure those design features and related components remain in good working order and within OEM specifications. Should a leak or spill occur, operators are trained to immediately employ the proper containment and collection of the POLs according to the ISCP and the SPCCP.

In regards to the potential release of POLs, hazardous materials, and non-hazardous materials and accelerated soil erosion and compaction, deployment of the AMPV is highly unlikely to alter or degrade soil, mineral content and their respective health as they overlay natural bedrock, manmade structures and other parent material. Fielding of the AMPV is not expected to exhibit any exceptional soil impact beyond that observed from the operation and deployment of current combat vehicles.

Maintenance

Potential impacts to soil resources during maintenance activities are related to spilled or leaked vehicle fluids onto the ground.

Occasional maintenance and repairs will occur during testing, training, and fielding of the AMPV. These activities will include the replacement of vehicle POLs, to include hydraulic fluid, engine coolant, fuel, and oils. In addition, adhesives, sealers, thread locking compounds, and solvents will be used during maintenance activities. These repair and maintenance activities will be performed according to TM protocol written to mitigate spillage and release of hazardous materials into surrounding soils. These repairs and maintenance activities will be performed in motor pools and designated maintenance areas that have paved or hardened surfaces. Where applicable, containment berms and collection basins will be utilized, together preventing leaks and spills from migrating into surrounding soils.

Maintenance and repair of AMPV vehicles following fielding will be required and shall be conducted in designated maintenance areas designed to minimize environmental impacts to soil and other resource areas. Significant environmental release of foreign materials – either hazardous or non-hazardous – is not expected and should not present a threat to physical, chemical, and biological characteristics of soil resources.

Scheduled sustainment level maintenance will be performed on the AMPV to ensure specified working order of the vehicle and to prolong the useful service life of the asset. Sustainment level maintenance will be performed at specially equipped pre-existing depots that currently support sustainment operations of other materiel. In addition to the required processes for remanufacture of the AMPV, the pre-existing depots are equipped with the necessary infrastructure to prevent the release of vehicle fluids and contaminants to soil resources during sustainment operations. Also, given that overhaul and remanufacture will be conducted at pre-existing depots, no additional soil disruption is likely to occur based on the existence of the AMPV alone. Whatever environmental aspect is presented by performing sustainment level maintenance on the AMPV, the responsible depots have environmental management, mitigative, countermeasure, and response plans in place with extensive experience in employing those plans when

necessary. Therefore, disruption to soil resources as result of sustainment level maintenance performed on the AMPV is unlikely.

Outdoor storage of vehicles or parts awaiting maintenance may occur, which could result in soil contamination from the following: dripping fluids, washing away of greases during rainfall, or washing away of paint waste dust if the vehicle is stored outdoors after paint removal. However, depot facilities are equipped with proper containment controls, have existing ISCP's and SPCCPs, and are responsible for compliance with applicable regulations. AMPV storage prior to maintenance will likely be done on hardened surfaces as to not alter soil density and provide an impervious surface for fluids that may occasionally leak or drip from the vehicle. Spill berms will be used to prevent any leaking fluids from migrating to storm drains. Spill pans will also be employed while the vehicle is staged to further mitigate the leaching of leaked vehicle fluids into concrete or paved surfaces. These procedures will mitigate the possibility of releasing vehicle fluids outside of the controlled staging area should a leak exist.

Demilitarization & Disposal (D & D)

Potential impacts to soil resources during AMPV D & D operations could result from improper disposal of vehicle fluids, vehicle fluids spills, outdoor storage of vehicle components that may contain grease or leaking fluids, and improper handling or storage of paint waste following paint removal. Similar to scheduled maintenance, D & D activities will be conducted within existing facilities designed for D & D operations.

D & D facilities are equipped with proper containment controls, have existing ISCP's and SPCCPs, and are responsible for compliance with applicable regulations. D & D will typically be performed in smaller batches instead of the entire fleet of vehicles, thus making permanent soil impacts improbable if a small release were to occur. As a matter of protocol, drip pans will be employed to mitigate release of fluids to soil resources for all staged vehicles awaiting D & D. If a spill were to occur, existing clean up procedures will be followed. Any fluids collected in the drip pans will be recycled or disposed of IAW Federal, State, and local regulations.

By following the standard D & D procedures, other installation requirements, and utilizing the appropriate equipment, soil contamination will be minimized and a significant impact is not anticipated.

7.4 Land Use

Production

Production of the AMPV vehicles will take place at existing commercial and military facilities as discussed in Section 4.3 (Production). The acquisition and production of the AMPV is not expected to require the construction of new facilities that will adversely alter the natural environment or surrounding land. Consequently, it is not anticipated that the production of the AMPV will burden the manufacturing site, adjoining property, or host community with environmental impacts beyond those already planned or permitted by the manufacturer.

Testing, Training, Fielding & Operations, and Maintenance

Testing, training, fielding and operations, and maintenance of AMPV will occur on existing test courses, ranges, and installations. Construction of new test and training courses, installations, or facilities are not planned. Impacts on land are expected to be similar to that observed using other tracked, combat systems proven to exhibit nominal impacts to the environment.

Environmental management procedures for existing testing and training courses have already been established for previous generation vehicles and will translate easily for the testing and training of the AMPV with proven effectiveness. Therefore, no additional land development, rearrangement, or terrain modification is expected to be needed in order to meet the AMPV program requirements.

Fielding and maintenance will occur at installations that already have, maintain, and manage vehicles with similar requirements. Thus, the AMPV will utilize existing infrastructures for storage, maintenance, cleaning, and transport of which are subject to existing environmental management plans. New land development for the storage, maintenance, operation or overhaul of the AMPV is not anticipated.

Demilitarization & Disposal (D & D)

AMPV D & D activities will not require new, additional, or unique structures or equipment. D & D of the AMPV will be performed at existing depots or civilian operated contracted facilities and will not require the development, rearrangement, or modification of land; nor will D & D activities impact or interact with neighboring lands. Instead, D & D will be performed within the confines of existing infrastructures subject to existing environmental management, regulations, and permitting specific to those functions required for D & D.

7.5 Socioeconomics

No negative social or economic impacts are expected for the Government due to the acquisition and production of the AMPV. To the contrary, acquisition of the AMPV should assist in sustaining employment for the manufacturer, stimulate the purchase of materials from suppliers, provide financial gain to transporters, and assist in maintaining a vital tax base for the local community. Beyond the sustainment of employment and contributing to the vitality of existing businesses, there are no expected consequences that may uniquely impact specific ethnic groups or peoples of low income. Additionally, there are no known or expected hazards associated with the production of the AMPV that will impact the life expectancy of workers or citizens dwelling within the neighboring communities.

While activities will be performed at various existing locations, impacts to socioeconomic metrics are not anticipated as levels of activity resulting from AMPV activities are nominal when compared to the overall activity of each respective site. Manpower to conduct AMPV activities will be provided by existing government employees, contractors, and military personnel stationed at the activity sites. Therefore, no significant hiring initiatives will be required to support the AMPV program.

All D & D functions will be performed at existing sites and, while depots or contractors may benefit temporarily from D & D revenue streams, there should be no negative consequence to specific ethnic groups, race, or overall quality of life.

There is no E.O. 12898 “Environmental Justice” concerns associated at the programmatic analysis level of the AMPV since it is not anticipated that the proposed action will result in any disproportionate high and adverse human health and environmental effects on children, minority, or low income populations. Although no significant impacts are anticipated, personnel at installations which receive the AMPV will determine if additional site specific NEPA documentation is required to address potential and real socioeconomic impacts.

7.6 Hazardous Materials & Wastes

Production, Testing, Training, Fielding & Operations, and Maintenance

Hazardous materials required for vehicle production, operation, and maintenance of the AMPV will include items such as paints, adhesives, solvents, solder, sealants, batteries, refrigerants, fire suppressants, coolants, various POLs, and metal plating materials. The amount and type of hazardous materials used during AMPV activities are consistent with the current type and volume of hazardous materials used on other ground vehicle systems. The use of these hazardous materials during testing, training, and fielding activities will also result in the generation of hazardous wastes.

The AMPV contract included requirements to eliminate or minimize the use of hazardous materials required for production, operation, and sustainment of the AMPV. All remaining hazardous materials have been identified and tracked in a Hazardous Materials Management Report (HMMR). A list of known AMPV hazardous materials are included in Appendix A. A brief discussion of the AMPV hazardous materials and potential impacts is included below.

The vehicle fluids required in the AMPV are listed in Table 4.2-2 in Section 4.2 (AMPV System Description). These fluids will sometimes require draining, filling, and disposal. This will occur at regular intervals throughout the life of the vehicle. Testing, training, fielding, and maintenance activities will be conducted in a maintenance bay or garage where facilities exist for proper handling and storage of POLs. Unless Federal, State, or local laws state otherwise, used vehicle POLs, not contaminated by heavy metals or other contaminants, are usually considered non-hazardous wastes and are either recycled or disposed of as a non-regulated waste through the installation hazardous waste management facility. Military installations also have SPCCPs, ISCPs, and other SOPs that address POL handling, storage, disposal, and clean-up in case of an accidental spill. These activities will also be periodically taught during training activities.

In addition to hazardous fluids, the AMPV will utilize multiple maintenance free, Absorbed Glass Mat (AGM), sealed lead acid batteries. The sealed batteries prevent acid leaks and spillage, even when the battery is tilted at extreme angles or positions. AMPV TMs will include instructions for proper handling and disposal of the batteries. Used or expired batteries will be stored and disposed of IAW site safety and environmental procedures.

As mentioned previously, R-134a (1,1,1,2-Tetrafluoroethane) refrigerant will be used in the AMPV air conditioning system. The AFES will utilize both pure FM-200 and a FM-200 + 10% sodium bicarbonate powder as extinguishing agents. These materials will be handled only by EPA certified technicians. See Section 7.1 (Air Quality) for additional discussion. Any refrigerant or fire suppressant evacuated from the system will be reclaimed for reuse or disposed of IAW EPA regulations.

Manufacture of the AMPV will require the use of CARC paint processes requiring surface pretreatments and primers. Application and removal of CARC may be required to support testing, training, and fielding activities. When unit personnel use CARC for touch ups and spot painting, they are required to use only small quantities. Full re-painting of the AMPV would take place during sustainment level maintenance and would be performed in a permitted paint booth. For any paint system, substrate cleaning is required and may be conducted using solvents or aqueous based detergents that may contain some VOC content. Process controls and operational protocols limit fugitive emissions outside of the process boundary for cleaning and coating application processes, promoting the controlled collection, containment, treatment, and proper disposal of the hazardous material. Also, chromate-free pretreatment systems are preferred and directed for use. Painting operations generate spent thinners, stripping solvents, waste paint, fiberglass paint filters, and used paint thinner. Any paint waste stream will be treated as hazardous wastes in accordance with Federal, State, and local laws and regulations.

Cured primers and topcoats are benign to the environment. However, stripping processes such as grinding, sanding, scraping, media blasting, or solvent removal generate a hazardous waste stream. If primer and topcoat removal is required, maintenance personnel will collect, handle, store, and dispose of the removed coating materials IAW applicable plans, procedures, and regulations.

Small amounts of toxic metals such as hexavalent chromium, cadmium, and lead will be present on AMPV components. Cadmium and hexavalent chromium are used for plating the military-type electrical connectors and fasteners used on AMPV. Lead is used in solder, some engine components, and in the batteries. During operation, these materials pose a negligible risk to personnel and the environment. The risks associated with using these materials exist primarily in the application process of the hazardous element or in the removal and disposal of the material. Maintenance processes such as grinding, sanding, and media blasting could release toxic metals as respirable particles. These activities will be performed in areas with proper ventilation controls by personnel following applicable plans and procedures while wearing the required protection equipment. Wastes generated from processes with heavy or toxic metals will be collected, handled, stored, and disposed of IAW applicable Federal, State, and local laws and regulations. Most plated metal components will be recycled as scrap metal.

Various other hazardous materials will be associated with the AMPV production and maintenance which are typical of tracked, combat vehicles. Various solvents, aqueous cleaners, adhesives, sealants, chemical strippers, and anti-seize compounds will be required for AMPV maintenance. Production may include acid baths used for the application of inorganic coatings, aqueous rinse, and solvent cleaners; and a myriad of adhesives and sealants. The use of some of these materials will result in hazardous wastes which will be disposed of IAW with applicable regulations.

Although hazardous materials will be used throughout the phases of the AMPV program, they will be managed according to Federal, State, and local environmental regulations. Compliance with these regulations will be the responsibility of the facility using the hazardous materials or generating the hazardous waste (manufacturer, testing site, training site, fielding site, or depot). These materials will be comparatively similar to those required for other military vehicles and present nothing unique in the way of stocking items, handling, storage, and disposal. Therefore, existing protocols for proper transport, handling, storage, application, and disposal of the hazardous materials and associated hazardous wastes will be used. Based upon the frequency of maintenance and repair conducted for currently fielded vehicles, the

quantity of repairs should remain limited to several vehicles and trailers per month. As a result, quantities of hazardous waste will be limited in volume. As a matter of protocol, hazardous materials will be stored in areas with hardened floors equipped with perimeter spill-retention berms. Should a spill or release of hazardous substance occur, personnel would respond according to the sites' existing ISCP and SPCCP protocols.

Overall, the hazardous materials and wastes related to the AMPV will not present extraordinary use, storage, or quantities and will not require special materials or infrastructures as compared to current tracked, combat vehicles within the Army inventory. Therefore, assimilation of the AMPV into field installations will be seamless and not generate new or additional waste streams of materials hazardous to human health or the environment.

Demilitarization & Disposal (D & D)

Some hazardous waste will also be generated during D & D of the AMPV. The main source of the hazardous waste will be the removal of hazardous coatings and the media used for removal. Vehicle fluids will also be drained, electronics removed, and batteries removed. All waste will be managed and disposed of according to Federal, State, and local laws and regulations. If the vehicle undergoes D & D at a military or Government-owned, contractor-operated (GOCO) facility, Defense Logistics Agency (DLA) Disposition Services is responsible for disposing of all of the items. If the vehicle is demilitarized at a contractor-owned, contractor-operated (COCO) facility, the facility's management is responsible for the disposal of the materials. Alternatives available for disposal include recycling, reuse, reprocessing, and discard. Recycling is the preferred method of disposal.

Before disposal, all items will be categorized as either hazardous or non-hazardous waste by Federal, State, and local standards and regulations. All recyclable materials will be processed at the appropriate facilities. Furthermore, any facilities that receive recyclable materials, non-hazardous waste, or hazardous waste must meet all Federal, State, and local laws and regulation for the type of materials or wastes that their facility accepts.

7.7 Non-Hazardous Wastes

Production

Production of the AMPV requires an extensive Bill of Materials (BOM) that will be made up the raw components, bonding agents, spent and disposable tooling, raw material packaging, etc. Some of the scrap or left over materials from manufacture are likely to be recycled for use on other fabrication projects, while some may be recycled at the local municipal recycling plant. The respective volumes of non-hazardous wastes, however, are not anticipated to significantly increase or overwhelm waste streams to local landfills or recycling facilities. All wastes shall be handled according to the manufacturing facilities' waste disposal plan. Disposal will be in accordance with applicable State and local requirements.

Testing, Training, Fielding & Operations, and Maintenance

Non-hazardous wastes associated with the AMPV will mainly consist of track, POLs, packaging, wrappings, and pallets. If vehicle fluids are not contaminated with heavy metals, they are considered non-hazardous and will be recycled when possible or disposed of according to site requirements subject to

Federal, State, and local law. Additionally, field maintenance and repair will be required, to include reattaching loose components, replenishing vehicle fluids, replacing components, and other related activities. These maintenance activities will generate a small quantity of non-hazardous waste, which would primarily consist of packaging material, including cardboard boxes, pallets, plastic containers, and wrappings. Sustainment level maintenance will result in similar non-hazardous wastes to those from production. Unique or new non-hazardous waste streams will not be generated by maintenance activities. The volume of non-hazardous waste generated by AMPV maintenance and repair is not anticipated to exceed other similar ground vehicle systems' and will be easily managed by existing non-hazardous waste protocols at each respective site. When applicable, parts and wastes will be recycled in lieu of disposal in accordance with existing site procedures and guidelines.

Demilitarization & Disposal (D & D)

During the demilitarization process, personnel will strip AMPV systems of all easily removable, unclassified components that will be retained, disposed of, or demilitarized. Personnel will then demilitarize the remaining vehicle structure and components. Fluids will be drained and, if not contaminated with heavy metals, will be recycled when possible or disposed of in accordance with Federal, State, and local laws. Major subsystems such as the power packs, fuel tanks, and batteries will be removed; and every effort will be made to reutilize serviceable components. The vehicles' structure and attached fixtures will be sold as scrap metal, as they are considered a "high grade" scrap material that is readily marketable for reuse or recycling as a common, environmentally-preferable process. Any remaining non-hazardous wastes associated with D & D will be disposed of IAW Federal, State, and local regulatory laws.

7.8 Noise

Fabrication and production activities associated with the AMPV shall not present noise beyond that expected for fabricating similar combat vehicles. Cutting, welding, forging, metal stamping, fastening, sanding, and painting are routine functions for the manufacturing sites and would occur whether or not the AMPV was being fabricated. Similar noise will result from maintenance and D & D activities which will be performed at existing industrial areas. Noise levels above the 85 decibel (dB) time weighted average are to be expected and will be mitigated with the proper PPE according to site safety and Occupational Safety and Health Administration (OSHA) regulations. Nuisance noise beyond site zoning laws and permitting is not expected and should not have any impact on neighboring properties.

Operation of the AMPV during testing, training, and fielding activities will generate noise from the engines and weapon firing that may adversely affect nearby wildlife and may potentially cause human health risks. Weapons used on the AMPV system are all common weapons found in the Army system. PdM AMPV does not plan to collect noise data from these weapons, with the exception of the MC variant, which will go through noise testing. AMPV engine noise data will also be collected. According to the AMPV performance specification, the AMPV shall conform to the requirements of MIL-STD-1474D for steady-state and impulse noise in personnel occupied areas. Based on noise data collected from similar systems, hearing protection will likely be required for operators and maintainers working both inside and outside of the vehicle.

The Noise Control Act of 1972 established that Federal agencies should comply with Federal, State, interstate, and local requirements requiring control and abatement of environmental noise to the same extent

as private entities. Per Army Regulation (AR) 200-1, testing, training, and fielding facilities are required to comply with the Army's Environmental Noise Management Program (ENMP). The goals of the Army's ENMP are to: (1) control environmental noise to protect the health and welfare of people, on- and off- post / Civil Works Facilities (CWF), impacted by all Army-produced noise, including on- and off-post / CWF noise sources; and (2) reduce community annoyance from environmental noise to the extent feasible, consistent with Army testing, training, and fielding activities.

During testing, training, or fielding and operations, the AMPV will not exhibit sufficient sound levels to create an annoyance, harm, or noise pollution to environments, ecosystems, and communities beyond that of the testing, training, or fielding site. The AMPV will be operated at existing testing, training, and fielding sites which already house military ground systems and perform supporting operation and maintenance activities. These facilities are located in developed areas away from residential neighborhoods to reduce community annoyance and protect environmental welfare. In addition, AMPV noise generation will be similar to existing systems which have not shown a significant impact to personnel or the environment when the system is used and maintained in accordance with TMs and the facility ENMP. Therefore, impacts related to AMPV noise generating activities are expected to be insignificant.

7.9 Transportation

Production

As stated in Section 4.3 (Production), AMPV vehicle production will be done at two BAE facilities (York, Pennsylvania and Aiken, South Carolina) and at RRAD near Texarkana, Texas.

These facilities are equipped with existing infrastructure facilitated and operated with full-time employees supporting the production of the AMPV among other products. Significant hiring of employees, either temporary or permanent, is not anticipated. Since other products are currently being produced, a steady flow of raw materials to the manufacturing site is considered normal and the production of the AMPV will not represent a significant flux in increased traffic – either by raw material deliveries, foot-traffic, or by employee daily commutes. Therefore, it is not expected that the production of the AMPV will contribute to increased vehicular congestion on local roadways or contribute significantly to the degradation of local transportation infrastructures.

Testing & Training

Delivery of the AMPV to testing and training sites will be facilitated by a combination of road (via Heavy Equipment Transporter (HET)) and rail. Road transportation will include freeways, highways, and inner city streets. The HET will be required to maintain legal weight limits and only a small number of vehicles will be delivered for test and training activities. Testing and training exercises will be conducted primarily within the boundaries of the select testing and training sites and will not have any bearing on external transportation infrastructures. Transportation of the AMPV associated with testing and training activities will be for a limited quantity of vehicles and for a limited duration. Impacts due to the transportation of the AMPV for testing and training are expected to be insignificant.

Fielding & Operations

The AMPV will have the capability to be transported by towing, self-propulsion, or by carrier via railways, highways, waterways, oceans, and airways by meeting the transportability requirement of MIL-STD-1366E, MIL-STD-209K, and MIL-STD-810G. Whether by road, rail, sea, or air, the transportation of the AMPV to fielding sites shall not restrict, bottleneck, or cease the flow of Government or civilian essential traffic conduits. All Federal, State, and local transportation laws will be strictly adhered to. There is no extraordinary characteristic of the AMPV either in weight or dimensions that make it likely to contribute to excessive wear of drive surfaces. When transported by military or commercial HETs, the AMPV will be within the maximum highway permit limits established by the Federal Government, individual states, and appropriate foreign authorities. The AMPV will meet the DoD rail clearance profile and withstand the rail impact test IAW MIL-STD-810G. Impacts due to the transportation of the AMPV for fielding are expected to be insignificant.

Demilitarization & Disposal (D&D)

D & D activities are not anticipated to impact flow of traffic or degrade transport infrastructures. The volume of traffic created by the AMPV D & D per given time is nominal when compared to daily commercial, Government, and civilian volumes of traffic. D & D will be performed at existing industrial sites and will not require the significant hiring of laborers or construction of facilities. Therefore, increased local traffic is not expected. Delivery of the AMPV to D & D sites will likely be facilitated by HET or railway subject to all Federal, State, and local transportation and environmental laws.

7.10 Biological Resources

AMPV production, maintenance, and D & D activities will occur in existing facilities already being used for similar activities. All processes will be performed in such a manner to reduce the possibility of fugitive emissions to ground, air, and water. Whether hazardous or non-hazardous, all contractors and supply vendors are required to conduct production activities in a manner that minimizes the release of agents to surrounding environments. Therefore, the proposed action will neither provide nor deny sustenance for native biological organisms; nor should it alter the environment to encourage the development or settling of foreign organisms.

Testing, training, and operations will occur on existing military installations which are currently used for similar activities for other military ground systems. The sites have existing natural resource management programs. These programs will include a site-specific Natural Resources Management Plan, Integrated Training Area Management Programs, and other resource management programs as required by Service unique requirements.

Site personnel will be responsible for ensuring that AMPV operations will not embark on protected habitat areas that support endangered and threatened species. By nature of the AMPV being a mobile vehicle, any exposure of the AMPV to biological resources will be extremely temporary. By following existing management plans and procedures, no significant impact to biological resources is anticipated due to AMPV operations. However, prior to operations, site personnel will be responsible for assessment of site-specific biological resources and determining if additional NEPA documentation is required to assess site-specific impacts.

D & D activities for the AMPV will be conducted at existing industrial sites with the expectation that the dismantling, collecting, and disposal of the AMPV are functions within the normal operational parameters and mission of the site. Therefore, suitable infrastructures such as buildings, floors, cranes, collection bins, storm drains and sewer systems, perimeter berms, recycle, and trash receptors shall be in place to mitigate excessive or damaging wear to soil, minerals, and associated biological characteristics to the natural ecosystem.

7.11 Cultural & Historical Resources

Production

As stated in Section 4.3 (Production), AMPV vehicle production will be done at two BAE facilities (York, Pennsylvania and Aiken, South Carolina) and at RRAD near Texarkana, Texas.

The National Register of Historic Places is the official list of districts, sites, buildings, structures, and objects deemed worthy to preserve according to its history or cultural significance. Each of the aforementioned cities have evolved from attributes and historical influences provided by Native Americans, the Civil War, the Industrial Revolution, specific natural resources, and skilled labor that were instrumental to their creation.

At all four locations, the AMPV will be produced in existing industrial facilities that have been approved and permitted by State and local governments to conduct industrial activities. The production of the AMPV is not expected to require the construction of new supporting infrastructure. No impact on cultural resources is expected as a result of AMPV production.

Testing, Training, Fielding & Operations, and Maintenance

Testing, training, operations, and maintenance will take place at existing military installations or facilities. AMPV operators and maintainers will follow existing site cultural resource management programs. These mandated programs will include site specific Integrated Cultural Resources Management Plans (ICRMP) as required by Service unique requirements. The ICRMP is an internal U.S. compliance and management plan that ensures known and potential cultural resources are protected during site activities. According to ICRMP, site cultural resource managers will evaluate the operation and maintenance of the AMPV and their impact on cultural resources prior to activities commencing. AMPV testing, training, operations, and maintenance will not require new construction of buildings, test tracks, or maintenance hubs. Therefore, disruption or impact to Native American or historical archaeological sites, historic buildings, or elements of culturally significant landscapes is not likely.

By following existing management plans and procedures, no significant impact to cultural resources is anticipated due to AMPV operations or maintenance. However, prior to operations, site personnel will be responsible for assessment of site-specific cultural resources and determining if additional NEPA documentation is required to assess site-specific impacts.

Demilitarization & Disposal (D & D)

AMPV D & D activities will be performed at established government or industrial facilities properly zoned to conduct the required demolition. Therefore, these sites have complied with Federal, State, and local

zoning laws and do not interact, damage, degrade, or destroy Native American archaeological sites, historic sites or buildings, buildings listed in the National Register of Historic Places, or landscapes of cultural significance.

7.12 Public Health & Safety

The AMPV program follows MIL-STD-882E, “DoD Standard Practice for System Safety”. MIL-STD-882E is a systems engineering process to identify ESOH hazards and manage associated risks. Risk management includes the implementation of mitigative responses to ESOH impacts for the operation of the AMPV and for the immediate environment and general public for which the AMPV inhabits.

Inherent safety hazards always exist when conducting system tests and training operators on the use and maintenance of new equipment. These risks are often mitigated by abiding by system specific safety guidelines and utilizing the specified tools, equipment, and PPE designated for the particular task by system TMs and site safety protocols. The AMPV will be fielded at existing locations currently fielding similar systems such as the Bradley Fighting Vehicle and the Abrams Tank System. Thus, the infrastructures for maintenance, sustainment, and ESOH activities already exist and will easily accommodate the similar requirements of the AMPV.

In regards to Public Health & Safety, testing, training, maintenance, and operations will be performed at existing locations that frequently conduct similar activities for varied systems beyond the AMPV. These sites have been zoned and permitted by local authorities to conduct such operations and do so in separation from residential and general commerce communities. Therefore, most AMPV activities will be conducted in controlled areas isolated from the general public and will not subject the general public to environmental, health or safety risks. However, given the AMPV mission requirements, the AMPV will be deployed worldwide – in missions of peace and conflict. The existence of the AMPV and its operation are relatively benign to the safety and well-being of the general populace and its surroundings. The AMPV does not require materials or substances of extraordinary hazard to operate nor does it emit engine exhausts, electromagnetic radiation, radioactive emissions, heat, sound, or other hazards beyond that expected from commercial grade utility trucks approved for use within public environments daily.

All aspects of D & D functions that potentially impact human health and environment will be contained, managed, and mitigated according to applicable Federal, State, and local law within the site performing the work. To the general public, there is no exceptional characteristic of the AMPV that would present a potential or likely hazard during D & D; nor is there any exceptional quality or contamination – organic, chemical or biological – that would present a threat to the D & D site, bordering properties or surrounding communities.

8.0 No-Action Alternative

Under the No-Action alternative, AMPV production, testing, training, fielding and operations, maintenance, and disposal would not occur. The U.S. Army would continue to use, train with, and maintain existing weapon systems.

The manufacturing sites would remain without the production of the AMPV, conducting similar operations for the fabrication of other goods. Existing test sites would continue to host other tests for ground vehicle

systems with similar environmental aspects. The results of these tests would exhibit similar environmental impacts as those tests conducted for the AMPV. Also, without the AMPV, the current stock of vehicles would likely require design enhancements that would need to be tested for compliance of updated operational capability requirements.

Under the No-Action Alternative, AMPV fielding would not occur. Instead, those installations that would have received the AMPV would continue to host and utilize other military vehicles for the expressed purposes for which the AMPV was designed. Based upon historical observations, the operation of current vehicle systems would have similar environmental impacts as all variants and subsystems of the AMPV and would be less suited for the mission, current military tactics, and operational needs. Therefore, a greater number of vehicles of current stock may be required to complete the task or the use of current stock may limit mission capability and occupant survivability.

Additionally, the No-Action Alternative would eliminate the need for D & D of all the AMPV. However, currently fielded systems dedicated to take on the AMPV operational role would also require D & D. The impacts associated with the D & D of those vehicular systems would be similar to those associated with the AMPV.

9.0 Conclusion

At a programmatic level, environmental risks associated with the AMPV are expected to be minimal over the system lifecycle. Mitigation measures have been identified as part of this analysis. In addition, careful adherence to Federal, State, military, and local environmental regulations; installation processes, including spill contingency plans and pollution prevention plans; and procedures for testing, training, operation, maintenance, and D & D should preclude any potential significant environmental impacts associated with execution of the proposed actions: production, testing, training, fielding and operating, maintaining, and D & D of the AMPV.

The environmental impacts related to AMPV are typical of existing military tracked, combat vehicles. It is expected that minimal impacts to air quality, water quality, soil resources, land use, hazardous materials, non-hazardous waste management, noise, transportation, and health and safety could potentially occur at locations where the AMPV is produced, tested, operated, maintained, and demilitarized or disposed of. However, these impacts would be temporary because activities performed with or on the system would be for limited durations at any given facility. In addition, AMPV activities take place at existing facilities where similar activities already occur. These facilities have active programs, plans, and SOPs in place to mitigate potential environmental impacts.

For times of conflict or national emergency in which the AMPV may be deployed by executive order outside of its controlled area, the proposed action is not subject to E.O. 12114 and 32 CFR 651. However, even in this case, without a catastrophic event, significant environmental impacts or hazards to public safety as a result of deploying the AMPV are not anticipated.

Each individual site having AEs will be responsible for determining if additional NEPA analyses is required according to specific use and activities of the AMPV according to site-specific potential impacts. IAW implementing regulations for the NEPA (40 CFR 1508.7), cumulative impacts must be addressed in an EA. A cumulative impact is the "...impact on the environment, which results from the incremental impact of

the action when added to other past, present and reasonably foreseeable future actions...” Although no cumulative impacts have been identified in this LCEA, individual installation NEPA analyses would consider cumulative impacts for AMPV related activities at their specific locations if they are considered significant.

Table 9.0 qualitatively summarizes the impacts to each ERA of specific interest to this analysis according to key life-cycle milestones of the AMPV. The impact categories identified in the table are defined as follows:

- *Insignificant:* Impacts that occur as part of the existence of the AMPV, however remain benign in altering the ecosystem, local and surrounding environments, as well as community socioeconomics and do NOT impart short or long term effects on human or animal health.
- *Minimal:* Impacts that occur temporarily or may be easily repaired or naturally remediated and do NOT present or promote long term change to the hosting ecosystem, local and surrounding environments, community socioeconomics and human or animal health.
- *Significant:* Impacts that directly impart long term change to the ecosystem or environment; or catalyze indirect or cumulative effects to the supporting community, environment, and economy; or promote hazards to human health or wildlife.

Table 9.0: Summary of Environmental Impacts

Environmental Resource Areas	Production	Testing & Evaluation	Training	Fielding & Operations	D&D
Air Quality					
Water Quality					
Soil Resources					
Land Use					
Socioeconomics					
Hazardous Materials & Wastes					
Non-Hazardous Waste					
Noise					
Transportation					
Biological Resources					
Cultural / Historical Resources					
Public Health & Safety					

Insignificant
 Minimal
 Significant

Based upon this analysis, it is determined that the proposed action would not have a significant impact upon the environment. As a result, the preparation of an EIS is not required, and a Finding of No Significant Impact (FONSI) has been prepared (Appendix B).

10.0 List of Persons Contacted / Agencies Consulted

Product Manager, Armored Multi-Purpose Vehicle

Combat Capabilities Development Command Ground Vehicle Systems Center, Materials, Environmental, and Corrosion Team

11.0 References

Electronic Code of Federal Regulations, Title 32: National Defense; Part 651: Environmental Analysis of Army Actions (AR 200-2).

Electronic Code of Federal regulations, Title 40: Protection of Environment; Part 1500.

Executive Order 12114 – Environmental Effects Abroad of Major Federal Actions, 44 Federal Register 1957, dated 4 January 1979.

AMPV Request for Proposal, 2014.

AMPV Capability Development Document, Version 1.6, 18 July 2012.

MIL-STD-882E, Department of Defense, Standard Practice for System Safety, May 2012.

U.S. Environmental Protection Agency. Toxicological Review of Hexavalent Chromium. National Center for Environmental Assessment, Office of Research and Development, Washington, DC. 1998.

U.S. Environmental Protection Agency. Integrated Risk Information System (IRIS) on Cadmium. National Center for Environmental Assessment, Office of Research and Development, Washington, DC. 1999.

12.0 List of Preparers

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Appendix A: AMPV Hazardous Materials List

Material / Process	Material Usage / Location	Specification
Vehicle Fluids		
Windshield Washer Solvent	Windshield washer reservoir	A-A-59664
Engine Coolant / Antifreeze	Radiator	A-A-52624
Engine Oil	Power train / Drive train	MIL-PRF-2104
Gear Oil	Vehicle differentials	SAE J2360
Engine fuel (JP8 / F24)	Power train, fuel tank and lines	MIL-DTL-83133
Engine fuel (Diesel No.2)	Power train, fuel tank and lines	MIL-DTL-83133
Transmission Oil	Transmission case	MIL-PRF-2104
Hydraulic Fluid	Power steering, transfer case, transmission	MIL-PRF-5606, MIL-PRF-46170, MIL-PRF-6083, MIL-PRF-83282
Automotive Petroleum Grease	Lubrication on frame joints, gears, and other lubrication joints	MIL-PRF-10924
Refrigerant (R-134a)	Vehicle cooling system	
Brake fluid	Brake master and slave cylinders, booster pump, reservoir	
Fire Suppressants		
FM-200	Fire suppression system	
Sodium Bicarbonate	Fire suppression system	
Carbon Dioxide	Fire suppression system	

Material / Process	Material Usage / Location	Specification
Coatings		
Water-based Epoxy Primer	Vehicle structure and parts	MIL-DTL-53030
Corrosion Inhibiting Epoxy Primer	Vehicle structure and parts	MIL-DTL-53022
Water Dispersible Aliphatic Polyurethane Camouflage Coating	Vehicle structure and parts	MIL-DTL-64159
Single-Component, Aliphatic, Polyurethane Chemical Agent Resistant Coating	Vehicle structure and parts	MIL-DTL-53039
Powder Coating, Camouflage Chemical Agent Resistant Coating	Vehicle structure and parts	MIL-PRF-32348
Coating, Epoxy, High-Solids	Vehicle structure and parts	MIL-PRF-22750
Adhesive and Sealers		
Adhesives	Vehicle body and parts	A-A-3097, ASTM D5363, MIL-A-46050, MIL-A-46106, MIL-A-46146, MMM-A-121, MMM-A-1617
Threadlocker Adhesive	Fasteners	
Threadlocker Sealant	Power pack / Drive train	MIL-S-22473
Silicone Based Sealant	Gaskets	
Anti-seize Lubricant Compounds	Fasteners	MIL-A-13881, MIL-T-22361, A-A-58092
Gasket Sealer	Engine	
Miscellaneous		
Cadmium	Electrical connectors and fasteners	
Hexavalent Chromium	Electrical Connectors and fasteners	
Cleaning Compound Solvent	Used to clean vehicle parts and body	MIL-PRF-680
Lead	Engine bearings	

Material / Process	Material Usage / Location	Specification
Miscellaneous		
Beryllium Copper	Electronic connector clips	
Lead Acid Batteries	Batteries	
Tin-Lead solder	Electronics and wire harness	J-STD-001

Appendix B: Finding of No Significant Impact (FONSI)

PROPOSED ACTION:

Production, testing, training, fielding and operation, maintenance, and demilitarization and disposal (D & D) of the Armored Multi-Purpose Vehicle (AMPV).

DISCUSSION:

The proposed action is the execution of the Armored Multi-Purpose Vehicle (AMPV) program which includes production, testing, training, fielding and operation, maintenance, and D & D of the AMPV vehicles. The AMPV will replace the M113 in the Armored Brigade Combat Team (ABCT) at Brigade and below and provide support across the range of military operations (ROMO). The AMPV will provide improved force protection, survivability, mobility, situational awareness, sustainment, and capability for future growth.

In accordance with the National Environmental Policy Act (NEPA) and Title 32 Code of Federal Regulations (CFR) Part 651, Environmental Analysis of Army Actions, Final Rule; Project Manager AMPV has prepared a Life Cycle Environmental Assessment (LCEA) for the AMPV program. It analyzes the potential environmental impacts associated with the production, testing, training, fielding and operation, maintenance, and D & D of the AMPV. Additionally, this LCEA evaluates the No-Action Alternative.

The AMPV LCEA identifies, documents, and evaluates the direct and indirect impacts for the proposed action. Additionally, the LCEA addresses the no-action alternative. The Environmental Resource Areas (ERAs) considered include air quality, water quality, soil resources, land use, socioeconomics, hazardous materials, hazardous wastes, non-hazardous waste, noise, transportation, biological resources, cultural and historical resources, and public health and safety. Due to the fact that several Army organizations at multiple locations will receive the AMPV, the analysis included in this LCEA is limited to ERAs at a programmatic level, meaning it will include a review of potential impacts that are similar at all or nearly all locations where production, testing, training, fielding, operation, maintenance, and D & D of the AMPV will occur.

The environmental impacts related to AMPV are typical of current Army tracked combat vehicles. It is expected that minimal impacts to air quality, water quality, soil resources, land use, hazardous materials, non-hazardous waste management, noise, transportation, and health and safety could potentially occur at locations where the AMPV is produced, tested, operated, maintained and demilitarized or disposed. However, these impacts would be temporary because activities performed with or on the system would be for limited durations at any given facility. Careful adherence to Federal, State, military, and local environmental regulations; installation processes, including spill contingency plans and pollution prevention plans; and procedures for testing, training, operation, maintenance, and D & D should preclude any potential significant environmental impacts associated with execution of the proposed action. Based upon this analysis, it is determined that the potential impacts to the ERAs would be minimal and temporary and the proposed action would not have a significant impact upon the environment.

Receiving organizations and installations are responsible for preparing any additional NEPA analyses required to address unique environmental concerns not assessed within this LCEA or cumulative impacts that are expected to be significant.

The LCEA will be made available to the public for review and comment. Comments must be received no later than 30 days from publication date of the Notice of Availability. To obtain additional information regarding this decision or to request a copy of the AMPV LCEA contact:

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Appendix C: Glossary of Acronyms and Abbreviations

Acronym	Definition
AAE	Army Acquisition Executive
ABCT	Armored Brigade Combat Team
ACAT	Acquisition Category
AE	Affected Environment
AFES	Automatic Fire Extinguishing System
AGM	Absorbed Glass Mat
AMPV	Armored Multi-Purpose Vehicle
AoA	Analysis of Alternatives
APG	Aberdeen Proving Ground
AR	Army Regulation
BOM	Bill of Materials
CAA	Clean Air Act
CARC	Chemical Agent Resistant Coating
CASEVAC	Casualty Evacuation
CCDC	Combat Capabilities Development Center
CDD	Capability Development Document
CEQ	Council on Environmental Quality
CFR	Code of Federal Regulations
CO ₂	Carbon Dioxide
COCO	Contractor-owned, Contractor-operated
CWF	Civil Works Facilities
CX	Categorical Exclusion
D & D	Demilitarization and Disposal
DA	Department of the Army
dB	Decibel

Acronym	Definition
DLA	Defense Logistics Agency
DoD	Department of Defense
E3	Electromagnetic Environment Effects
EA	Environmental Assessment
EIS	Environmental Impact Statement
EMD	Engineering, Manufacturing and Development
ENMP	Environmental Noise Management Program
EO	Executive Order
EPA	Environmental Protection Agency
EPG	Electronic Proving Ground
ERA	Environmental Resource Area
ESOH	Environment, Safety, and Occupational Health
FDC	Fire Direction Center
FONSI	Finding of No Significant Impact
FoV	Family of Vehicles
FRP	Full-Rate Production
FSR	Field Service Representative
FUE	First Unit Equipped
FY	Fiscal Year
GCS	Ground Combat Systems
GHG	Green House Gases
GOCO	Government-owned, Contractor-operated
GP	General Purpose
GWP	Global Warming Potential
HAP	Hazardous Air Pollutant
HET	Heavy Equipment Transporter

Acronym	Definition
HMMR	Hazardous Materials Management Report
I&KPT	Instructor and Key Personnel Training
IAW	In accordance with
ICRMP	Integrated Cultural Resources Management Plan
IETM	Interactive Electronic Technical Manual
IOT&E	Initial Operation Test & Evaluation
IRIS	Integrated Risk Information System
ISCP	Installation Spill Containment Plan
ITAM	Integrated Training Area Management
JLTV	Joint Light Tactical Vehicle
LAR	Logistics Assistance Representative
LCEA	Life Cycle Environmental Assessment
LCMC	Life Cycle Management Command
LRIP	Low-Rate Initial Production
LRU	Line Replaceable Unit
LUT	Limited User Test
MC	Mortar Carrier
MCmd	Mission Command
MDA	Milestone Decision Authority
ME	Medical Evacuation
MEP	Mission Equipment Package
MIL-DTL	Military Detail Specification
MIL-PRF	Military Performance Specification
MIL-STD	Military Standard
MRAP	Mine Resistant Ambush Protected
MOS	Military Occupational Specialty

Acronym	Definition
MT	Medical Treatment
NDI	Non-Developmental Item
NEPA	National Environmental Policy Act
NET	New Equipment Training
NPDES	National Pollutant Discharge Elimination System
NSE	National Security Exemption
ODC	Ozone Depleting Chemical
OEM	Original Equipment Manufacture
OSHA	Occupational Safety and Health Administration
PdM	Product Manager
PEO	Program Executive Office
PMCS	Preventive Maintenance Checks and Services
POL	Petroleum, Oils, and Lubricants
POWT	Publicly Operated Wastewater Treatment
PPE	Personal Protection Equipment
PQT	Production Qualification Test
RAM	Reliability, Availability, and Maintainability
RCRA	Resource Conservation and Recovery Act
REC	Record of Environmental Consideration
ROMO	Range of Military Operations
RRAD	Red River Army Depot
RTLTP	Range and Training Land Program
SDDP	System Demilitarization and Disposal Plan
SOP	Standard Operating Procedure
SPCCP	Spill Prevention Control and Countermeasures Plan

Acronym	Definition
TACOM - LCMC	TACOM - Life Cycle Management Command
TACP	Tactical Air Control Party
TLM	Two-Level Maintenance
TM	Technical Manual
TMDE	Test Measurement and Diagnostics Equipment
U.S.	United States
VOC	Volatile Organic Compound
VOHAPs	Volatile Organic Hazardous Air Pollutants
WSMR	White Sands Missile Range
YPG	Yuma Proving Ground

Appendix D: Public Notification

NOTICE

Pursuant to the regulations implementing the National Environmental Policy Act (32 CFR 651.14 [b] 2), the Department of the Army gives notice that a Draft Life Cycle Environmental Assessment (LCEA) has been prepared to evaluate potential environmental impacts of the proposed action pertaining to the production, testing, training, fielding and operation, maintenance, and demilitarization & disposal of the Armored Multi-Purpose Vehicle (AMPV). Based on the Draft LCEA, the Army has concluded that the environmental impacts from the AMPV program activities will not be significant. As a result, a Draft Finding of No Significant Impact (FONSI) has been prepared, which concludes that an Environmental Impact Statement (EIS) is not required for the AMPV program. For additional information, comments, or copies of the associated documents, please contact:

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The Department of the Army will receive comments on this proposal for a 30-day period from the date this notice is published.

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NOTICES PUBLIC NOTICE NOTICE <p>Pursuant to the regulations implementing the National Environmental Policy Act (32 CFR 651.14 [b] 2), the Department of the Army gives notice that a Draft Life Cycle Environmental Assessment (LCEA) has been prepared to evaluate potential environmental impacts of the proposed action pertaining to the production, testing, training, fielding and operation, maintenance, and demilitarization & disposal of the Armored Multi-Purpose Vehicle (AMPV). Based on the Draft LCEA, the Army has concluded that the environmental impacts from the AMPV program activities will not be significant. As a result, a Draft Finding of No Significant Impact (FONSI) has been prepared, which concludes that an Environmental Impact Statement (EIS) is not required for the AMPV program. For additional information, comments, or copies of the associated documents, please contact:</p> <p>Product Manager AMPV – Environmental Engineer 6501 E. Eleven Mile Rd. Warren, MI 48397-5000 Office Symbol: SFAE-GCS-AP Mail Stop: 563 586-282-9700 <i>usarmy.detroit.peo-gcs.mbx.mav-ops@mail.mil</i></p> <p>The Department of the Army will receive comments on this proposal for a 30-day period from the date this notice is published.</p>	PUBLIC NOTICE 100% COVERAGE <p>69,000 people suffer preventable or premature deaths every year as a direct result of our health care system. This loss of lives can be prevented by expanding Medicare eligibility to 65 plus all uninsured Americans. Fund by taxing capital gains the same as other income.</p> <p>Thehumanrightsparty.org</p>	BUSINESS BUSINESS OPPORTUNITIES Accredited Investors Only! <p>We work with you every step of the way. Even in the most trying times.</p> <p>www.PostionMyCapital.com</p>
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