

5.0 ENVIRONMENTAL CONSEQUENCES

This chapter evaluates the potential environmental consequences of the Proposed Action and No-Action alternatives. Implementation of any of the projects under Proposed Action would involve the construction and operation of the projects discussed in Section 2.0 Description of the Proposed Action, which in turn would require altering the land use zoning for Area B at USAG Fort Detrick in Frederick, Maryland.

Potential short-term and long-term impacts of the action alternatives are discussed in this chapter. Short-term impacts are those of a limited duration, such as the impacts that would occur during construction. Long-term impacts are those of greater duration, including those that would endure for the life of the proposed project and beyond, including impacts associated with operations of the six projects. The impacts are further qualified as negligible or minor. The term negligible is used to define impacts that would not be detectable and that would be insignificant; whereas, minor impacts are defined as detectable impacts that are also considered insignificant. Direct, indirect, and cumulative effects were also considered during the impact analysis.

5.1 GEOLOGY, TOPOGRAPHY, AND SOILS

18-Hole Golf Course

Direct, short-term and long-term, minor adverse impacts to geology, topography, and soils would be expected as a result of developing the 18-Hole Golf Course. As much as 125 acres of Area B would be disturbed during the golf course development process. Construction of a fifty car parking lot, Proshop, access roads, golf cart paths, and sidewalks would be expected to affect approximately five acres in the proposed golf course area. Long-term impacts to existing topography would be expected as a result of grading, cut, and fill associated with developing the golf course layout. Impacts to soils would also be expected as a result of disturbance associated with grading, cut, and fill to achieve design plans. The majority of the golf course development would occur in areas where soils have been previously disturbed as a result of development of the outdoor simulant testing grid and other past land uses.

Development of the golf course would result in the removal of existing vegetation across much of the development footprint at various times during construction of the course, exposing soils to potential erosion. It is expected that phasing of development would be implemented to reduce the amount of area of soils exposed at a given time. Replanting of the course following the initial phases of construction would be expected to reduce the potential for soil erosion over time.

According to the FD REG 415-10 under Chapter 2 in Section 1, all projects size, that require land clearing, grading, or other earth disturbance on Fort Detrick have to implement soil erosion and sediment control measures consistent with FD REG 415-10, the 1994 Maryland Standards and Specifications for Soil Erosion and Sediment Control, and the Maryland Soil Erosion and Sediment Control Regulations (COMAR 26.17.01). Development of a Soil Erosion and Sediment Control Plan would be required as a component during development of the golf course due to the amount of surface disturbance required for the construction of this project. Proper

design and implementation of soil erosion and sediment control practices during golf course development would reduce the potential for adverse effects associated with erosion and sedimentation.

In addition, projects disturbing more than 5,000 SF are required to have, as an integral component of the design, a Stormwater Management Plan and Report developed and implemented consistent with FD REG 415-10; the July 2001 Maryland Stormwater Management Guidelines for State and Federal Projects; the Maryland Stormwater Management Regulations (COMAR 26.17.02); the 2000 Maryland Stormwater Design Manual, Volumes I and II (COMAR 26.17.02.01-1); and other applicable state guidelines. Stormwater Management Plans are subject to review and approval by the Directorate of Installation Services and the Maryland Department of the Environment. Proper management of increased runoff associated with site development and operation would reduce the potential for soil erosion, stream channel scour, and sediment and nonpoint source pollutant transport off site as a result of golf course development.

Much of Area B is subject to solution weathering and the potential for the development of sinkholes. Placement of heavy structures, such as buildings, in areas subject to sinkhole development (i.e., over subsurface caverns) can increase the potential for the development of a sinkhole. Proper geotechnical and subsurface characterization prior to the placement of heavy structures would minimize the potential for adverse effects to existing geologic characteristics as a result of site development.

The use of an onsite sewage disposal system could serve as an alternative for the treatment and disposal of wastewater associated with operation of the golf course. Potential impacts to soils could occur if the system was not properly designed, located, and installed. Placement of a drainfield or other onsite disposal area in soils that are not suitable, either as a result of texture, structure or other soil characteristics, could result in inadequate treatment of effluent discharged into the soil. Proper landscape position of the disposal area (drainfield) is also necessary to ensure adequate treatment of effluent. If it is determined that the use of an onsite sewage disposal system is necessary, procedures and guidelines established at COMAR 26.04.02 would be followed and necessary permits required under the regulations would be obtained. Adherence to the guidelines and required procedures established in the regulations would minimize the potential for improper design or placement of the onsite sewage disposal system.

Paintball Fields

Impacts to geology and topography associated with development and operation of the Paintball Fields would be expected to be negligible.

Direct, long-term, minor impacts to soils would be expected as a result of the development of an access road, parking area, sidewalks, and storage shed. Impacts to soils would be expected to be minor because of the limited requirement for cut and fill associated with the proposed development and because most of the soils occurring in the area have been previously disturbed by past land use. The total area of potential disturbance of soils associated with the storage shed (1,000 SF), access road, parking area, and sidewalks would be approximately 3 acres.

Soil erosion and associated sedimentation would be expected to be negligible as a result of development of the Paintball Fields. As discussed under the 18-Hole Golf Course development

project, regardless of size, all projects that require land clearing, grading, or other earth disturbance on Fort Detrick are required to implement soil and erosion control measures consistent with Fort Detrick and Maryland State regulations and guidelines.

In addition, projects disturbing more than 5,000 SF are required to have, as an integral component of the design, a Stormwater Management Plan and Report developed and implemented consistent with Fort Detrick and Maryland State regulations and guidelines (see 18-Hole Golf Course impacts discussion). Stormwater Management Plans are subject to review and approval by the Directorate of Installation Services and the Maryland Department of the Environment. Proper management of increased runoff associated with site development and operation would minimize the potential for soil erosion, stream channel scour, and sediment and nonpoint source pollutant transport off site.

The use of an onsite sewage disposal system could serve as an alternative for the treatment and disposal of wastewater associated with operation of the paintball field. As discussed under the 18-Hole Golf Course development project, procedures and guidelines established at COMAR 26.04.02 would be followed and necessary permits required under the regulations would be obtained. Adherence to the guidelines and required procedures established in the regulations would minimize the potential for improper design or placement of the onsite sewage disposal system.

Indoor Shooting Range

Impacts to geology and topography associated with development and operation of the Indoor Shooting Range would be expected to be negligible. Minor cut and fill would be expected to be necessary to level the site for the placement of the tent structure, clubhouse, and parking area. Placement of soil to create an earth berm around the shooting range would be expected to have negligible effects on the overall topographic characteristics of the surrounding area.

Direct, long-term, minor impacts to soils would be expected as a result of the development of the Indoor Shooting Range. Impacts to soils would be expected to be minor because of the limited requirement for cut and fill associated with the proposed development and because soils occurring in the area have been previously disturbed by past land use (placement of the outdoor simulant testing grid). The total area of potential disturbance of soils associated with the Indoor Shooting Range and berm, access road, parking area, sidewalks, and club house would be approximately 2 acres.

Soil erosion and associated sedimentation would be expected to be negligible as a result of development of the Indoor Shooting Range. As discussed under the 18-Hole Golf Course development project, regardless of size, all projects that create soil disturbance on Fort Detrick are required to implement soil and erosion control measures consistent with Fort Detrick and Maryland State regulations and guidelines.

In addition, projects disturbing more than 5,000 SF are required to have, as an integral component of the design, a Stormwater Management Plan and Report developed and implemented consistent with Fort Detrick and Maryland State regulations and guidelines (see 18-Hole Golf Course impacts discussion). Stormwater Management Plans are subject to review and approval by the Directorate of Installation Services and the Maryland Department of the

Environment. Proper management of increased runoff associated with site development and operation would minimize the potential for soil erosion, stream channel scour, and sediment and nonpoint source pollutant transport off site.

No impacts to soils would be expected as a result of the accumulation of lead and other shot materials resulting from operation of the indoor shooting range due to the installation of an asphalt or concrete flooring inside the tent structure. Additionally, required weekly collection of lead and other shot material with a HEPA filtered vacuum device would further minimize the potential for adverse effects to soils within the indoor shooting range area.

As discussed under the 18-Hole Golf Course development project, much of Area B is subject to solution weathering and the potential for the development of sinkholes. Placement of heavy structures, such as buildings, in areas subject to sinkhole development (i.e., over subsurface caverns) can increase potential for the development of a sinkhole. Proper geotechnical and subsurface characterization prior to the placement of heavy structures would minimize the potential for adverse effects to existing geologic characteristics resulting from site development.

The use of an onsite sewage disposal system could serve as an alternative for the treatment and disposal of wastewater associated with operation of the Indoor Shooting Range. As discussed under the 18-Hole Golf Course development project, procedures and guidelines established at COMAR 26.04.02 would be followed and necessary permits required under the regulations would be obtained. Adherence to the guidelines and required procedures established in the regulations would minimize the potential for improper design or placement of the onsite sewage disposal system.

Recreational Vehicle (RV) Park

Impacts to geology and topography associated with development and operation of the RV Park would be expected to be negligible. The RV Park would be located on approximately 22 acres of land. Minor cut and fill would be expected to level small areas of the site for placement of three 1,000 SF support buildings, two 500 SF pavilions, and 40 to 50 campsite pads each 400 SF in size. Additional cut and fill would occur for construction of roads and parking at each site.

Direct, long-term, minor impacts to soils would be expected as a result of the development of the RV Park. Impacts to soils would be expected to be minor because of the limited requirement for cut and fill associated with the proposed development. The total area of potential disturbance of soils associated with the campsite pads, support buildings, pavilions, and access roads/parking would be approximately 2 acres.

Soil erosion and associated sedimentation would be expected to be negligible as a result of development of the RV Park. As discussed under the 18-Hole Golf Course development project, regardless of size, all projects that create soil disturbance on Fort Detrick are required to implement soil and erosion control measures consistent with Fort Detrick and Maryland State regulations and guidelines.

In addition, projects disturbing more than 5,000 SF are required to have, as an integral component of the design, a Stormwater Management Plan and Report developed and implemented consistent with Fort Detrick and Maryland State regulations and guidelines (see 18-

Hole Golf Course impacts discussion). Stormwater Management Plans are subject to review and approval by the Directorate of Installation Services and the Maryland Department of the Environment. Proper management of increased runoff associated with site development would minimize the potential for soil erosion, stream channel scour, and sediment and nonpoint source pollutant transport off site.

Placement of heavy structures, such as buildings, in areas subject to sinkhole development (i.e. over subsurface caverns) can increase the potential for the development of a sinkhole. Proper geotechnical and subsurface characterization prior to the placement of heavy structures would minimize the potential for adverse effects to existing geologic characteristics as a result of site development.

The use of an onsite sewage disposal system could serve as an alternative for the treatment and disposal of wastewater associated with operation of the RV Park. As discussed under the 18-Hole Golf Course development project, procedures and guidelines established at COMAR 26.04.02 would be followed and necessary permitting required under the regulations would be obtained. Adherence to the guidelines and required procedures established in the regulations would minimize the potential for improper design or placement of the onsite sewage disposal system.

Relocation of Seven High Frequency Antennas from Area A to Area B

Impacts to geology, topography, and soils associated with relocation of seven high frequency antennas from Area A to Area B would be expected to be negligible. Removal of the antennas from Area A would not be expected to disturb the geology, topography or soils in the area. Disturbance associated with placement of the seven antennas in Area B would be minimal. Each antenna would require construction of a 16 SF concrete pad and the placement of six guy wires for support. The total area of disturbance associated with antenna placement would be minimal (approximately 112 SF). As discussed under the 18-Hole Golf Course development project, regardless of size, all projects that create soil disturbance on Fort Detrick are required to implement soil and erosion control measures consistent with Fort Detrick and Maryland State regulations and guidelines. Implementation of soil erosion and sediment controls as necessary during the placement of the antennas would minimize potential adverse effects associated with erosion and sedimentation.

Area B Perimeter Fence

Impacts to geology, topography, and soils associated with installation of the perimeter fence would be expected to be negligible. Minor disturbance of soils would occur in association with the placement of borings for fence posts, but the extent of the disturbance would be expected to be negligible. As discussed under the 18-Hole Golf Course development project, regardless of size, all projects that create soil disturbance on Fort Detrick are required to implement soil and erosion control measures consistent with Fort Detrick and Maryland State regulations and guidelines. Implementation of soil erosion and sediment controls as necessary during the placement of the antennas would minimize potential adverse effects associated with erosion and sedimentation.

Discussion of Combined Effects

Direct short-term and long-term, minor adverse impacts to geology, topography, and soils would be expected as a result of implementing the six proposed projects on Area B. Approximately 150 acres of land on Area B would be utilized for the six projects. The largest land disturbance would be associated with development of the golf course and would encompass approximately 125 acres. The majority of the golf course development would occur in areas where soils have been previously disturbed as a result of development of the outdoor simulant testing grid and other past land uses. Direct land disturbance associated with the remaining projects would encompass approximately 7 acres associated with development of buildings, parking areas, walkways, access roads, and campsite pads (see above for discussions of impacts associated with each project). Approximately 5 acres of land within the golf course would be developed as buildings, parking areas, golf cart paths, walks, and access roads. Development of the six projects would not occur at the same time and land disturbance associated with golf course development would be expected to be phased to limit the extent of area exposed to potential erosion and sedimentation at a given time.

As discussed above under each of the proposed projects, all projects that require land clearing, grading, and earth disturbance on Fort Detrick are required to implement soil and erosion control measures consistent with Fort Detrick and Maryland State regulations and guidelines.

In addition, projects disturbing more than 5,000 SF are required to have, as an integral component of the design, a Stormwater Management Plan and Report developed and implemented consistent with Fort Detrick and Maryland State regulations and guidelines (see individual project discussions). Stormwater Management Plans are subject to review and approval by the Directorate of Installation Services and the Maryland Department of the Environment. Proper management of increased runoff associated with site development and operations would minimize the potential for soil erosion, stream channel scour, and sediment and nonpoint source pollutant transport off site.

As discussed above, much of Area B is subject to solution weathering and the potential for the development of sinkholes. Placement of heavy structures, such as buildings, in areas subject to sinkhole development (i.e., over subsurface caverns) can increase the potential for the development of a sinkhole. Structures associated with the proposed projects are not concentrated in one area and development of the six projects would not result in a concentration of surface weight loading in one area. Proper geotechnical and subsurface characterization prior to the placement of building structures at development locations in Area B would minimize the potential for adverse effects to existing geologic characteristics as a result of implementing the six projects.

The use of an onsite sewage disposal system could serve as an alternative for the treatment and disposal of wastewater associated with operation of the 18-Hole Golf Course, Paintball Fields, Indoor Shooting Range, and the RV Park. As discussed under the 18-Hole Golf Course development project, procedures and guidelines established at COMAR 26.04.02 would be followed and necessary permitting required under the regulations would be obtained. Adherence to the guidelines and required procedures established in the regulations would minimize the potential for improper design or placement of the onsite sewage disposal systems.

No Action Alternative

No impacts to geology, topography, or soils are expected as a result of implementing the No Action Alternative. No new development or changes in current land use would occur under the No Action Alternative.

5.2 WATER RESOURCES

18-Hole Golf Course

Direct, short-term and long-term, minor adverse effects to water resources would be expected as a result of developing the 18-Hole Golf Course. As much as 125 acres of Area B would be disturbed during the golf course development process. Construction of a 50 car parking lot, Proshop, access roads, golf cart paths, and sidewalks would be expected to create approximately 5 acres of impervious surfaces in the proposed golf course area. Potential for impacts to surface water, groundwater, and wetlands could occur as a result of land disturbance during site development. Exposure of soil during construction could result in erosion and transport of sediments into surface water features and wetlands occurring in the vicinity or downstream of the proposed golf course location. In addition, much of Area B is subject to solution weathering. Surface and subsurface characteristics associated with solution weathering have the potential to provide direct and rapid transport of surface water runoff into the groundwater. Sediments carried by runoff as a result of the erosion of exposed soils could be directly transported to groundwater resources resulting in degradation of water quality.

The Monocacy River is a warm water fishery and is classified by the State of Maryland as Recreational Trout Waters and Public Water Supply (Use IV-P) (COMAR 26.08.02). Use IV-P waters are managed as special fisheries by periodic stocking and seasonal catching and have the potential for supporting adult trout populations for put-and-take fishing. Tributaries of the Monocacy River that are not designated Use IV-P are designated as Use III-P (Natural Trout Waters and Public Water Supply). These tributaries must maintain water quality standards that ensure the growth and propagation of self-sustaining trout populations and their associated food organisms. Use III-P tributaries must also provide a safe and effective public water supply source. Carroll Creek is classified as Use III-P. Transport of sediments eroded from Area B into Carroll Creek or its tributaries during construction of the golf course could adversely affect water quality in the receiving waters and result in a degradation of water quality conditions necessary to maintain Use III-P standards.

Development of the golf course would result in the removal of existing vegetation across much of the development footprint at various times during construction of the course, exposing soils to potential erosion. It is expected that phasing of development would be implemented to reduce the area of soils exposed at a given time throughout the development process. Replanting of the course following the initial phases of construction would be expected to reduce potential for soil erosion and transport of sediments into surface waters, groundwater, or wetlands resources occurring in the vicinity or downstream of the site over time.

According to the FD REG 415-10 under Chapter 2 in Section 1, all projects requiring land clearing, grading, or other earth disturbance on Fort Detrick are have to implement soil and

erosion control measures consistent with FD REG 415-10, the 1994 Maryland Standards and Specifications for Soil Erosion and Sediment Control, and the Maryland Soil Erosion and Sediment Control Regulations (COMAR 26.17.01). Development of a Soil Erosion and Sediment Control Plan would be required as a component of golf course development due to the amount of surface disturbance. Proper design and implementation of soil erosion and sediment control practices during golf course development would reduce the potential for adverse effects associated with erosion and sedimentation.

In addition, projects disturbing more than 5,000 SF of land are required to have, as an integral component of the design, a Stormwater Management Plan and Report developed and implemented consistent with FD REG 415-10; the July 2001 Maryland Stormwater Management Guidelines for State and Federal Projects; the Maryland Stormwater Management Regulations (COMAR 26.17.02); the 2000 Maryland Stormwater Design Manual, Volumes I and II (COMAR 26.17.02.01-1); and other applicable state guidelines. Stormwater Management Plans are subject to review and approval by the Directorate of Installation Services and MDE.

Stormwater discharges associated with construction activities are covered under the General Permit for Construction Activity (General NPDES permit # MDR10, State Discharge Permit #03-GP). Small and large (greater than 1 acre) construction activities are required to obtain coverage under the General Permit by submitting a Notice of Intent (NOI) to the MDE. The NOI is initiated by MDE after stormwater management and erosion and sediment control plans have been submitted and approved.

Proper management of increased runoff associated with site development would reduce potential for soil erosion and the transport of sediments or other nonpoint source pollutants into surface water, groundwater, or wetlands occurring on or in the vicinity of proposed golf course development.

Potential long-term, direct impacts to water resources would be expected as a result of increased stormwater runoff resulting from golf course development. As discussed, golf course development would result in the creation of approximately 5 acres of impervious surfaces associated with the construction of a fifty car parking lot, Proshop, access roads, golf cart paths, and sidewalks. MDE and the City of Frederick require storage to achieve water quality objectives, to protect channels from scour, to protect from overbank flooding, and because the Carroll Creek watershed is designated as an interjurisdictional flood hazard watershed due to historic and documented flood damages to avoid increasing the peak downstream from the 100-year storm. These requirements minimize potential for surface water impacts associated with development.

As discussed above, much of Area B is subject to solution weathering. Surface and subsurface characteristics associated with solution weathering have potential to provide direct and rapid transport of nonpoint source pollutants into the groundwater. Management of golf courses typically requires use of pesticides, herbicides, and fertilizers to maintain greens and fairways. Golf courses typically require more frequent and higher amounts of chemical use to maintain suitable playing conditions than other turf management scenarios. If the application of these chemicals is not properly timed and managed there is potential for their transport across and off of the site by surface water runoff and wind. There is also a potential for direct transport of these

turf management chemicals into the groundwater due to the geologic conditions (sinkholes and other subsurface solution weathering features) resulting from solution weathering in the vicinity of Area B. As a result, groundwater quality could be degraded in the vicinity of Area B and down the hydrologic gradient from the site. In addition, there is potential for introducing these chemicals into surface waters at springs located on or down the hydrologic gradient from Area B. Direct introduction of these turf management chemicals to surface water resources on and in the vicinity of Area B could also occur as a result of their transport by runoff or wind. Development and implementation of a Golf Course Management Plan that specifies proper management, application, timing, and storage of turf management chemicals would reduce the potential for adverse impacts to groundwater or surface water resources on or in the vicinity of Area B.

Surface water ponds will be developed for stormwater management and for golf course irrigation purposes. Use of groundwater for irrigation purposes is not planned. If it is determined during development of the golf course plan that use of groundwater is necessary to augment the irrigation water supply, additional NEPA analysis will be conducted as necessary.

The use of an onsite sewage disposal system could serve as an alternative for the treatment and disposal of wastewater associated with operation of the golf course. Potential impacts to surface and groundwater could occur if the system was not properly located, designed, and installed. Placement of a drainfield or other onsite disposal area in soils that are not suitable, either as a result of texture, structure, or other soil characteristics, could result in inadequate treatment of effluent discharged into the soil. Proper landscape position of the disposal area (drainfield) is also necessary to ensure adequate treatment of effluent. Placement of a drainfield in unsuitable soils, or in an improper landscape position, could result in the introduction of insufficiently treated effluent into surface water or groundwater resulting in a degradation of water quality. The occurrence of sinkholes and other subsurface solution weathering features on Area B increases the potential for degradation of groundwater quality if the drainfield is not properly located, designed, and installed. If it is determined that the use of an onsite sewage disposal system is necessary, procedures and guidelines established at COMAR 26.04.02 would be followed and necessary permits required under the regulations would be obtained. Adherence to the guidelines and required procedures established in the regulations would minimize the potential for improper design or placement of the onsite sewage disposal system and reduce the potential for degradation of water resources.

No impacts to Wild and Scenic Rivers would occur as a result of developing the 18-Hole Golf Course. There are no federally designated Wild or Scenic Rivers in the State of Maryland. Negligible effects to Maryland State designated Scenic and Wild Rivers, which include the Monocacy River and the Potomac River in Frederick and Montgomery Counties, are expected as a result of golf course development. Development and implementation of erosion and sediment control and stormwater management plans and compliance with Fort Detrick, MDE, and City of Frederick stormwater management requirements, as discussed above, minimize the potential for adverse effects to these waterways as a result of site development.

Direct, long-term, minor adverse effects to wetlands occurring in the area of the proposed golf course could occur as a result of site development. Federal activities within floodplains and wetlands are restricted under EO 11988, 33 CFR 1977, EO 11990, and AR 415-15. Executive Order (EO) 11988, Floodplain Management, directs federal agencies to avoid, to the extent

possible, the long-term and short-term adverse impacts associated with the occupancy and modification of floodplains and to avoid direct or indirect support of floodplain development wherever there is a practical alternative. EO 11990, Protection of Wetlands, states that federal agencies are to avoid to the extent possible long-term and short-term impacts associated with the destruction or modification of wetlands and to avoid direct and indirect support of new construction in wetlands whenever practical alternatives exist. The INRMP for Fort Detrick (USAG, 2001) serves as a guide for the management and protection of wetlands at Fort Detrick and directs activities to be in accordance with AR 200-3, CFR Chapter 9, and other applicable laws and regulations.

A floodplain study was conducted by USACOE on Area B in March 2004. Based on the draft results of the study, a 100-year floodplain occurs in the south central and eastern section of Area B within the area of the proposed golf course. The 100-year floodplain occurs in association with an unnamed tributary to Carroll Creek. The 18-Hole Golf Course would be designed and located to avoid encroachment into the 100-year floodplain to the maximum extent possible and would be consistent with the provisions of EO 11988. No impacts to the 100-year floodplain. Facilities and structures associated with golf course would be designed and located to avoid encroachment into the 100-year floodplain.

Wetlands and other waters of the U.S. occurring in the vicinity of the proposed golf course would be avoided to the maximum extent possible. It is possible that minor encroachment into wetland habitats could occur in association with golf course development. Impacts, if any, would be minimized and mitigated consistent with Section 404 of the Clean Water Act and Maryland's Nontidal Wetlands Act.

Paintball Fields

Direct, short-term, minor adverse effects to water resources would be expected as a result of developing the Paintball Fields. Development of an access road, parking area, sidewalks and storage shed associated with the Paintball Fields would result in the creation of approximately 3 acres of impervious surfaces. As discussed under the 18-Hole Golf Course development project, MDE and the City of Frederick require storage to achieve water quality objectives, to protect channels from scour, to protect from overbank flooding, and because the Carroll Creek watershed is designated as an interjurisdictional flood hazard watershed due to historic and documented flood damages, to avoid increasing the peak downstream from the 100-year storm. These requirements minimize potential for surface water impacts associated with development.

Potential contamination of surface and groundwater resulting from erosion and sedimentation during site development would be expected to be minimal. As discussed under the 18-Hole Golf Course development project, regardless of size, all projects that create soil disturbance on Fort Detrick are required to implement soil and erosion control measures consistent with Fort Detrick and Maryland State regulations and guidelines.

In addition, projects disturbing more than 5,000 SF are required to have, as an integral component of the design, a Stormwater Management Plan and Report developed and implemented consistent with Fort Detrick and Maryland State regulations and guidelines (see 18-Hole Golf Course impacts discussion). Stormwater Management Plans are subject to review and approval by the Directorate of Installation Services and MDE. Proper management of increased

runoff associated with site development and operation would minimize potential for soil erosion, stream channel scour, and sediment and nonpoint source pollutant transport off site.

The use of an onsite sewage disposal system could serve as an alternative for the treatment and disposal of wastewater associated with operation of the Paintball Fields. Potential impacts to surface and groundwater could occur if the system was not properly located, designed, and installed. As discussed under the 18-Hole Golf Course development project, procedures and guidelines established at COMAR 26.04.02 would be followed and necessary permitting required under the regulations would be obtained. Adherence to the guidelines and required procedures established in the regulations would minimize the potential for improper design or placement of the onsite sewage disposal system and reduce the potential for degradation of water resources.

No impacts to federally designated Wild and Scenic Rivers or State designated Scenic and Wild Rivers are expected to occur as a result of developing the Paintball Fields.

No impacts to the 100-year floodplain or wetlands and other waters of the U.S. are expected as a result of developing the Paintball Fields.

Indoor Shooting Range

Direct, short-term, minor adverse effects to water resources would be expected as a result of developing the Indoor Shooting Range. Development of the Indoor Shooting Range, access road, parking area, sidewalks, and club house would result in the creation of approximately 2 acres of impervious surfaces. As discussed under the 18-Hole Golf Course development project, MDE and the City of Frederick require storage to achieve water quality objectives, to protect channels from scour, to protect from overbank flooding, and because the Carroll Creek watershed is designated as an interjurisdictional flood hazard watershed due to historic and documented flood damages, to avoid increasing the peak downstream from the 100-year storm. These requirements minimize potential for surface water impacts associated with development.

Potential contamination of surface and groundwater resulting from erosion and sedimentation during site development would be expected to be minimal. As discussed under the 18-Hole Golf Course development project, regardless of size, all projects that create soil disturbance on Fort Detrick are required to implement soil and erosion control measures consistent with Fort Detrick and Maryland State regulations and guidelines.

In addition, projects disturbing more than 5,000 SF are required to have, as an integral component of the design, a Stormwater Management Plan and Report developed and implemented consistent with Fort Detrick and Maryland State regulations and guidelines (see 18-Hole Golf Course impacts discussion). Stormwater Management Plans are subject to review and approval by the Directorate of Installation Services and the MDE. Proper management of increased runoff associated with site development and operation would minimize potential for soil erosion, stream channel scour, and sediment and nonpoint source pollutant transport off site.

The use of an onsite sewage disposal system could serve as an alternative for the treatment and disposal of wastewater associated with operation of the Indoor Shooting Range. Potential impacts to surface and groundwater could occur if the system was not properly located, designed,

and installed. As discussed under the 18-Hole Golf Course development project, procedures and guidelines established at COMAR 26.04.02 would be followed and necessary permitting required under the regulations would be obtained. Adherence to the guidelines and required procedures established in the regulations would minimize the potential for improper design or placement of the onsite sewage disposal system and reduce the potential for degradation of water resources.

No impacts to federally designated Wild and Scenic Rivers or state designated Scenic and Wild Rivers are expected to occur as a result of developing the Indoor Shooting Range.

No impacts to the 100-year floodplain or wetlands and other waters of the U.S. are expected as a result of developing the Indoor Shooting Range.

Recreational Vehicle (RV) Park

Direct, short-term, minor adverse effects to water resources would be expected as a result of developing the RV Park. Development of three 1,000 SF support buildings, two 500 SF pavilions, and 40 to 50 campsite pads (400 SF each) would result in the creation of approximately 2 acres of impervious surfaces. As discussed under the 18-Hole Golf Course development project, MDE and the City of Frederick require storage to achieve water quality objectives, to protect channels from scour, to protect from overbank flooding, and because the Carroll Creek watershed is designated as an interjurisdictional flood hazard watershed due to historic and documented flood damages, to avoid increasing the peak downstream from the 100-year storm. These requirements minimize potential for surface water impacts associated with development.

Potential contamination of surface and groundwater resulting from erosion and sedimentation during site development would be expected to be minimal. As discussed under the 18-Hole Golf Course development project, regardless of size, all projects that create soil disturbance on Fort Detrick are required to implement soil and erosion control measures consistent with Fort Detrick and Maryland State regulations and guidelines.

In addition, projects disturbing more than 5,000 SF are required to have, as an integral component of the design, a Stormwater Management Plan and Report developed and implemented consistent with Fort Detrick and Maryland State regulations and guidelines (see 18-Hole Golf Course impacts discussion). Stormwater Management Plans are subject to review and approval by the Directorate of Installation Services and the Maryland Department of the Environment. Proper management of increased runoff associated with site development and operation would minimize potential for soil erosion, stream channel scour, and sediment and nonpoint source pollutant transport off site.

The use of an onsite sewage disposal system could serve as an alternative for the treatment and disposal of wastewater associated with operation of the RV Park. Potential impacts to surface and groundwater could occur if the system was not properly located, designed, and installed. As discussed under the 18-Hole Golf Course development project, procedures and guidelines established at COMAR 26.04.02 would be followed and necessary permitting required under the regulations would be obtained. Adherence to the guidelines and required procedures established

in the regulations would minimize the potential for improper design or placement of the onsite sewage disposal system and reduce the potential for degradation of water resources.

No impacts to federally designated Wild and Scenic Rivers or state designated Scenic and Wild Rivers are expected to occur as a result of developing the RV Park.

A floodplain study was conducted by USACOE on Area B in March 2004. Based on the draft results of the study, a 100-year floodplain occurs along the eastern boundary of Area B in association with Carroll Creek. The southern corner of the proposed RV Park encroaches into the 100-year floodplain. Facilities and structures associated with the RV Park would be designed and located to avoid encroachment into the 100-year floodplain to the maximum extent possible. The proposed project would be designed to be consistent with the provisions of EO 11988.

No impacts to wetlands and other waters of the U.S. are expected as a result of developing the RV Park.

Relocation of Seven High Frequency Antennas from Area A to Area B

No impacts to water resources are expected as a result of relocating the seven high frequency antennas from Area A to Area B. Ground disturbance associated with placement of the seven antennas in Area B would be minimal. Each antenna would require construction of a 16 SF concrete pad and the placement of six guy wires for support. The total area of new impervious surface associated with antenna placement would be approximately 112 SF.

As discussed under the 18-Hole Golf Course development project, regardless of size, all projects that create soil disturbance on Fort Detrick are required to implement soil and erosion control measures consistent with Fort Detrick and Maryland State regulations and guidelines. Implementation of soil erosion and sediment controls as necessary during the placement of the antennas would minimize potential adverse effects to surface water resources associated with erosion and sedimentation.

No impacts to federally designated Wild and Scenic Rivers or state designated Scenic and Wild Rivers are expected to occur as a result of relocating the seven high frequency antennas from Area A to Area B.

No impacts to the 100-year floodplain or wetlands and other waters of the U.S. are expected as a result of relocating the seven high frequency antennas from Area A to Area B.

Area B Perimeter Fence

Impacts to water resources associated with installation of the perimeter fence would be expected to be negligible. Minor disturbance of soils would occur in association with the placement of borings for fence posts. The extent of the disturbance would be expected to be minimal and potential for transport of sediments disturbed by the placement of post would be negligible. Implementation of appropriate erosion and sediment controls would be implemented in areas where fence placement occurs in close proximity to surface water features or potential solution features (sinkholes).

No impacts to federally designated Wild and Scenic Rivers or State designated Scenic and Wild Rivers are expected to occur as a result of the installation of the new perimeter fence.

Indirect, long-term, minor impacts to the 100-year floodplain would be expected as a result of replacing the boundary fence. A floodplain study was conducted by USACOE on Area B in March 2004. Based on the draft results of the study, a 100-year floodplain occurs along the eastern boundary of Area B in association with Carroll Creek; along the northern boundary in association with an unnamed tributary to Carroll Creek; and along the southern boundary in association with an unnamed tributary to Carroll Creek. The floodplain encompasses most of the north, east, and southern boundaries of Area B. Placement of the new perimeter fence would encroach into the 100-year floodplain along these boundaries. Placement of the fence would not be expected to modify the floodplain. It is possible that the boundary fence could collect debris during high flow events. Maintenance and removal of debris from the fence would be conducted as necessary to maintain boundary security and the existing character of the 100-year floodplain.

No impacts to wetlands and other waters of the U.S. are expected as a result of the installation of the new perimeter fence. Potential placement of the new perimeter fence 20 to 30 feet inside the existing fence would only occur in areas that are not constrained by environmental resources, such as wetlands.

Discussion of Combined Effects

Direct short-term and long-term, minor adverse impacts to water resources would be expected as a result of implementing the six proposed projects on Area B. Approximately 150 acres of land on Area B would be utilized for the six projects. The largest land disturbance would be associated with development of the golf course and would encompass approximately 125 acres. Approximately 5 acres of land within the golf course would be developed as buildings, parking areas, golf cart paths, walks, and access roads. Direct land disturbance associated with the remaining projects would encompass approximately 7 acres associated with development of buildings, parking areas, walkways, access roads, and campsite pads (see above for discussions of impacts associated with each project). Development of the six projects would not occur at the same time and land disturbance associated with golf course development would be phased to limit the extent of area exposed to potential erosion and sedimentation at a given time. Phasing of land disturbance associated with project development would reduce potential for impacts to surface and groundwater resources resulting from potential rain or high wind events occurring during the development process.

As discussed above, under each of the proposed projects, all projects that require clearing, grading, and or other earth disturbance on Fort Detrick are required to implement soil and erosion control measures consistent with Fort Detrick and Maryland State regulations and guidelines.

In addition, projects disturbing more than 5,000 SF are required to have, as an integral component of the design, a Stormwater Management Plan and Report developed and implemented consistent with Fort Detrick and Maryland State regulations and guidelines (see individual project discussions). Stormwater Management Plans are subject to review and approval by the Directorate of Installation Services and the Maryland Department of the Environment. Proper management of increased runoff associated with site development and

operation would minimize potential for soil erosion, stream channel scour, and sediment and nonpoint source pollutant transport off site.

Direct, long-term, minor adverse effects to wetlands occurring in the area of the proposed golf course could occur as a result of site development. The other proposed projects would not impact wetlands located on or adjacent to Area B. Federal activities within floodplains and wetlands are restricted under EO 11990 and AR 415-15. EO 11990, Protection of Wetlands, states that federal agencies are to avoid to the extent possible long-term and short-term impacts associated with the destruction or modification of wetlands and to avoid direct and indirect support of new construction in wetlands whenever practical alternatives exist. The INRMP for Fort Detrick (USAG, 2001) serves as a guide for the management and protection of wetlands at Fort Detrick and directs activities to be in accordance with AR 200-3, CFR Chapter 9, and other applicable laws and regulations.

Approximately 12 acres of impervious surfaces would be created as a result of developing the six projects on Area B. As discussed under each of the proposed projects, MDE and the City of Frederick require storage to achieve water quality objectives, to protect channels from scour, to protect from overbank flooding, and because the Carroll Creek watershed is designated as an interjurisdictional flood hazard watershed due to historic and documented flood damages, to avoid increasing the peak downstream from the 100-year storm. These requirements minimize potential for surface water impacts associated with development.

The use of an onsite sewage disposal system could serve as an alternative for the treatment and disposal of wastewater associated with operation of the 18-Hole Golf Course, Paintball Fields, Indoor Shooting Range, and RV Park. Potential impacts to surface and groundwater could occur if the systems were not properly located, designed, and installed. As discussed under the 18-Hole Golf Course development project, procedures and guidelines established at COMAR 26.04.02 would be followed and necessary permitting required under the regulations would be obtained. Adherence to the guidelines and required procedures established in the regulations would minimize the potential for improper design or placement of the onsite sewage disposal systems and reduce the potential for degradation of water resources.

No Action Alternative

No impacts to water resources are expected as a result of implementing the No Action Alternative. No new development or changes in current land use would occur under the No Action Alternative.

5.3 BIOLOGICAL RESOURCES

18-Hole Golf Course

Direct and indirect, short-term and long-term, minor adverse effects to wildlife and wildlife habitats would be expected as a result of developing the 18-Hole Golf Course. As much as 125 acres of Area B would be disturbed during the golf course development process. Vegetation in the area of the proposed golf course is characterized by a large open field comprised of pasture land with bluegrass, fescue, and other common grasses and forbs typical of the region. Herbaceous wetland vegetation also occurs in association with the wetland located in the central

area of the proposed golf course. The area has been intensively grazed in the past and has been mowed on a regular basis. Removal of trees, shrubs, and other woody vegetation as a result of golf course development would be very limited.

In addition, compliance with the provisions of the Forest Conservation Act would require that a forest stand delineation be completed and that a forest conservation plan be developed, designed to minimize impacts to existing trees and to protect retained trees during site development if tree removal is determined to be necessary. Following initial grading to achieve golf course design requirements, the disturbed areas would be replanted and over time, a net increase in the number of trees and other woody vegetation in the area would be expected. Vegetation occurring in association with wetlands in the area would be expected to be maintained as a part of avoidance to minimize impacts to wetland habitats. Management of the golf course to maintain fairways and greens would result in a primarily maintained lawn habitat similar to the grazed and mowed habitat that currently exists.

Construction activities associated with development of the golf course would be expected to displace wildlife that currently uses the area. However, much of the wildlife that utilizes the area would be expected to be transient. Birds, deer, and other wildlife species displaced by construction activity would likely move to adjacent similar habitats in Area B. Construction activities would likely result in mortality of some less mobile fauna such as reptiles and small mammals that may utilize the open field environment. Following construction some species would be expected to move back into the area (i.e., deer, Canada geese, etc.). Ongoing maintenance of fairways and greens would limit the value of grassed areas as wildlife habitat. In addition, increased human presence associated with use and maintenance of the golf course would preclude some species from utilizing or moving back into the area.

No effects to federal or state listed threatened or endangered species would be expected as a result of developing the 18-Hole Golf Course. Based on the INRMP for Fort Detrick (USAG, 2001), there are no known federal or state listed threatened or endangered species on Area B.

Additionally, correspondence with USFWS indicated that there are no known federally proposed or listed endangered or threatened species within the area of the proposed projects for Area B. Therefore, no Biological Assessment or further Section 7 consultation with the USFWS would be required. Fort Detrick has not received a response from the Maryland Department of Natural Resources Natural Heritage Program.

Paintball Fields

Direct and indirect, short-term and long-term, minor adverse impacts to wildlife and wildlife habitats would be expected as a result of the development and operation of the Paintball Fields. Support facilities and structures associated with the Paintball Fields would be primarily located in an open field similar to the area discussed under the 18-Hole Golf Course development project. The playing field would be located on an approximately 2.5 acre section of Forest Block 1. As discussed in section 3.5.1, Forest Block 1 is a planted grove with an immature understory and minimal plant species diversity. The proposed playing field would be located in an area that is separated from the rest of Forest Block 1 by openings that border the wooded area. It is likely that some removal of vegetation and snags would be necessary to prepare the site for use. Most existing vegetation would be expected to be left in place. Compliance with the provisions of the

Forest Conservation Act would require that a forest stand delineation be completed and that a forest conservation plan be developed, designed to minimize impacts to existing trees and to protect retained trees during site development if tree removal is determined to be necessary. Over time, use of the wooded area as a paintball field would be expected to result in some damage to vegetation in the area as a result of trampling, compaction, and direct impact.

Impacts to fauna similar to those discussed under the golf course project would be expected during construction of the access road, parking area, sidewalks, and storage shed associated with the Paintball Fields. Use of the Paintball Fields following construction would be expected to displace most species that currently utilize the area due to the ongoing presence of humans and the level of activity associated with their presence. Species that currently utilize the area would likely relocate to similar adjacent habitats, or if possible move off site to similar habitats.

No effects to federal or state listed threatened or endangered species would be expected as a result of developing the Paintball Fields. Based on the INRMP for Fort Detrick (USAG, 2001), there are no known federal or state listed threatened or endangered species on Area B. Additionally, correspondence with USFWS indicated that there are no known federally proposed or listed endangered or threatened species within the area of the proposed projects for Area B. Therefore, no Biological Assessment or further Section 7 consultation with the USFWS would be required. Fort Detrick has not received a response from the Maryland Department of Natural Resources Natural Heritage Program.

Indoor Shooting Range

Direct and indirect, short-term and long-term, minor adverse impacts to wildlife and wildlife habitats would be expected as a result of the development and operation of the Indoor Shooting Range. Support facilities and structures associated with the shooting range would be located in an open field similar to the area discussed under the 18-Hole Golf Course development project. The Indoor Shooting Range and support structures would be located on an approximately 2 acre section of Area B. Vegetation removed as a result of site development would consist primarily of pasture land grasses and forbs that have been intensively grazed in the past. Following construction, undeveloped areas would be replanted.

Impacts to fauna similar to those discussed under the golf course project would be expected during construction of the Indoor Shooting Range, access road, parking area, sidewalks, and club house. Following construction some species would be expected to move back into the area (i.e., deer, Canada geese, etc.). Increased human use and possible noise associated with operation of the facility would preclude some species from moving back into the area.

No effects to federal or state listed threatened or endangered species would be expected as a result of developing the Indoor Shooting Range. Based on the INRMP for Fort Detrick (USAG, 2001), there are no known federal or state listed threatened or endangered species on Area B. Correspondence with U.S. Fish and Wildlife Service and the Maryland Department of Natural Resources Wildlife and Heritage Division is currently ongoing. The EA will be modified to address issues or concerns expressed in responses from the agencies. Additional correspondence with the agencies would be conducted if determined to be necessary based on their initial correspondence.

Recreational Vehicle (RV) Park

Direct and indirect, short-term and long-term, minor adverse impacts to wildlife and wildlife habitats would be expected as a result of the development and operation of the RV Park. The RV Park would be located on approximately 22 acres of land and include three 1,000 SF support buildings, two 500 SF pavilions, and 40 to 50 campsite pads of 400 SF in size. Vegetation removed as a result of site development would consist primarily of pasture land grasses and forbs that have been maintained as mowed lawn in the past. Following construction, undeveloped areas would be replanted.

Impacts to fauna similar to those discussed under the golf course project would be expected during construction of the three 1,000 SF support buildings, two 500 SF pavilions, and 40 to 50 campsite pads. Following construction some species would be expected to move back into the area. Increased human use and possible noise associated with use of the RV Park would preclude some species from moving back into the area. Impacts to species that currently utilize the area resulting from increased human presence would be expected to be minor. The area proposed for the RV Park is currently almost entirely surrounded by development and human activities in these areas would be expected to preclude species sensitive to human presence from currently occurring in the area.

No effects to federal or state listed threatened or endangered species would be expected as a result of developing the RV Park. Based on the INRMP for Fort Detrick (USAG, 2001), there are no known federal or state listed threatened or endangered species on Area B. Additionally, correspondence with USFWS indicated that there are no known federally proposed or listed endangered or threatened species within the area of the proposed projects for Area B. Therefore, no Biological Assessment or further Section 7 consultation with the USFWS would be required. Fort Detrick has not received a response from the Maryland Department of Natural Resources Natural Heritage Program.

Relocation of Seven High Frequency Antennas from Area A to Area B

Direct, long-term, minor adverse effects to wildlife would be expected as a result of the relocation of seven high frequency antennas from Area A to Area B. Placement of the seven additional towers in Area B has the potential to result in the mortality of some avian species that fly through the area. Existing studies indicate, however, that most avian species mortality caused by collisions with towers, guy wires, and other support structures occurs in association with tall towers (>200 feet) that are lighted and supported by guy wires.

No effects to federal or state listed threatened or endangered species would be expected as a result of relocating the seven high frequency antennas from Area A to Area B. Based on the INRMP for Fort Detrick (USAG, 2001), there are no known federal or state listed threatened or endangered species on Area B. Correspondence with U.S. Fish and Wildlife Service and the Maryland Department of Natural Resources Wildlife and Heritage Division is currently ongoing. The EA will be modified to address issues or concerns expressed in responses from the agencies. Additional correspondence with the agencies would be conducted if determined to be necessary based on their initial correspondence.

Area B Perimeter Fence

Indirect, long-term, minor adverse effects to wildlife and wildlife habitat would be expected as a result of replacing the four-foot fence with an eight-foot chain link fence topped with barbed wire, or by placing the new fence 20 to 30 feet inside of the existing four foot fence. Under the second scenario the four-foot fence would remain in place. Impacts to vegetation or other wildlife habitats under either scenario would be expected to be minimal. As described under the description of the proposed action, placement of the new fence 20 to 30 feet inside the existing fence would only occur in areas that are not constrained by existing environmental resources such as wetlands or streams. It is expected that tree and/or shrub removal would be limited to replace the four foot fence. Only minor removal of trees or shrubs would be expected as a result of placing the new fence 20 to 30 feet inside the existing fence.

Minor potential adverse effects to wildlife occurring in Area B would be expected to occur as a result of replacing the four-foot fence with an eight-foot chain link fence topped with barbed wire. Placement of the new eight-foot fence would restrict some wildlife species (i.e., small mammals) from leaving or accessing the site. Placing the new fence 20 to 30 feet inside the existing fence could further restrict mobility on and off the site. Over time, restriction of mobility on and off the site could limit genetic variability and affect the health of species populations that become restricted to the site. Fort Detrick is currently working on a Deer Management Plan to address current and future deer population issues for both Area A and B at Fort Detrick.

No effects to federal or state listed threatened or endangered species would be expected as a result of replacing the perimeter fence. Based on the INRMP for Fort Detrick (USAG, 2001), there are no known federal or state listed threatened or endangered species on Area B. Correspondence with U.S. Fish and Wildlife Service and the Maryland Department of Natural Resources Wildlife and Heritage Division is currently ongoing. The EA will be modified to address issues or concerns expressed in responses from the agencies. Additional correspondence with the agencies would be conducted if determined to be necessary based on their initial correspondence.

Discussion of Combined Effects

Direct and indirect, short-term and long-term, minor adverse effects to wildlife and wildlife habitats would be expected as a result of developing the six proposed projects. As much as 125 acres of Area B would be disturbed during the golf course development process. Vegetation in this area is characterized by a large open field comprised of pasture land with bluegrass, fescue, and other common grasses and forbs typical of the region. Herbaceous wetland vegetation also occurs in association with the wetland located in the central area of the proposed golf course. The area has been intensively grazed in the past and is mowed on a regular basis. Removal of trees, shrubs, and other woody vegetation as a result of golf course development would be very limited. Following initial grading to achieve golf course design requirements, the disturbed areas would be replanted and over time, a net increase in the number of trees and other woody vegetation in the area would be expected. Vegetation occurring in association with wetlands in the area would be expected to be maintained as a part of avoidance to minimize impacts to wetland habitats. Management of the golf course to maintain fairways and greens would result

in a primarily maintained lawn habitat similar to the grazed and mowed habitat that currently exists.

Support facilities and structures associated with the Paintball Fields would be primarily located in an open field similar to the area discussed under the 18-Hole Golf Course development project. The playing field would be located on an approximately 2.5 acre section of Forest Block 1. As discussed in section 3.5.1, Forest Block 1 is a planted grove with an immature understory and minimal plant species diversity. The proposed playing field would be located in an area that is separated from the rest of Forest Block 1 by openings that border the wooded area. It is likely that some removal of vegetation and snags would be necessary to prepare the site for use. Most existing vegetation would be expected to be left in place. Over time, use of the wooded area as a paintball field would be expected to result in some damage to vegetation in the area as a result of trampling, compaction, and direct impact.

Support facilities and structures associated with the Indoor Shooting Range would also be located in an open field similar to the area discussed under the 18-Hole Golf Course development project. The Indoor Shooting Range and support structures would be located on an approximately 2 acre section of Area B. Vegetation removed as a result of site development would consist primarily of pasture land grasses and forbs that have been intensively grazed in the past. Following construction, undeveloped areas would be replanted.

The RV Park would be located on approximately 22 acres of land and include three 1,000 SF support buildings, two 500 SF pavilions, and 40 to 50 campsite pads of 400 SF in size. Vegetation removed as a result of site development would consist primarily of pasture land grasses and forbs that have been maintained as mowed lawn in the past. Following construction undeveloped areas would be replanted.

Under each of the development projects, compliance with the provisions of the Forest Conservation Act would require that a forest stand delineation be completed and that a forest conservation plan be developed, designed to minimize impacts to existing trees and to protect retained trees during construction. Planting of trees to replace any removed as a result of project development would be required. Based on existing conditions, and the proposed locations of the projects, tree removal to accommodate the development projects would be expected to be minimal.

Development of the six proposed projects would be expected to displace wildlife during construction. Development of the six projects would not be expected to occur at the same time. Birds, deer, and other wildlife species displaced by construction activity would likely move to adjacent similar habitats on Area B. Construction activities would likely result in mortality of some less mobile fauna such as reptiles and small mammals that may utilize the open field environment. Following construction some species would be expected to move back into the areas (i.e., deer, Canada geese, etc.). Ongoing maintenance of fairways and greens on the golf course would limit the value of these grassed areas as wildlife habitat. Increased human presence associated with operation of each of the projects would preclude some species from utilizing or moving back into the areas. Overall, suitability of Area B for species that currently utilize the site would be reduced primarily as a result of increased human presence.

Placement of the seven additional towers in Area B has the potential to result in the mortality of some avian species that fly through the area. Existing studies indicate, however, that most avian species mortality caused by collisions with towers, guy wires, and other support structures occurs in association with tall towers (>200 feet) that are lighted and supported by guy wires.

Replacement of the four-foot perimeter fence with an eight-foot chain link fence topped with barbed wire, or the placement of the new eight-foot chain linked fence 20 to 30 feet inside of the existing four-foot fence would be expected to result in minimal impacts to existing vegetation or other wildlife habitats. Placement of the new fence 20 to 30 feet inside the existing fence would only occur in areas that are not constrained by existing environmental resources such as wetlands or streams. Placement of the new eight foot fence would restrict some wildlife species (i.e., small mammals) from leaving or accessing the site. Placing the new fence 20 to 30 feet inside the existing fence could further restrict mobility on and off the site. Over time, restriction of mobility on and off the site could limit genetic variability and affect the health of species populations that become restricted to the site. Fort Detrick is currently working on a Deer Management Plan to address current and future deer population issues for both Area A and B at Fort Detrick.

No effects to federal or state listed threatened or endangered species would be expected as a result of the combined effects of developing the six projects. Based on the INRMP for Fort Detrick (USAG, 2001), there are no known federal or state listed threatened or endangered species on Area B. Correspondence with U.S. Fish and Wildlife Service and the Maryland Department of Natural Resources Wildlife and Heritage Division is currently ongoing. The EA will be modified to address issues or concerns expressed in responses from the agencies. Additional correspondence with the agencies would be conducted if determined to be necessary based on their initial correspondence.

No Action Alternative

No impacts to wildlife and wildlife habitat would be expected as a result of implementing the No Action Alternative. No new development or changes in current land use would occur under the No Action Alternative.

No effects to federal or state listed threatened or endangered species would be expected as a result of implementing the No Action Alternative. No new development or changes in current land use would occur under the No Action Alternative. Correspondence with U.S. Fish and Wildlife Service and the Maryland Department of Natural Resources Wildlife and Heritage Division is currently ongoing. The EA will be modified to address issues or concerns expressed in responses from the agencies. Additional correspondence with the agencies would be conducted if determined to be necessary based on their initial correspondence.

5.4 AIR QUALITY

A project construction and operations-related General Conformity Applicability Analysis was performed for the proposed construction and operation activities under each proposed project. The General Conformity applicability analysis estimated the level of potential air emissions (VOC and NO_x) for the action alternatives. It is assumed that the No-Action Alternative would

not impact air quality beyond existing conditions; therefore, it was not included in the analysis. Appendix B contains a detailed description of the assumptions and methodology used to estimate potential emissions for the construction and operation phases of the proposed six projects.

Some odors such as those generated by construction and vendor vehicles may originate during the construction of the proposed projects for Area B. These odors will be transitory and will not result in significant environmental impacts. It is not expected that the operation of the proposed projects would generate odors that are qualitatively or quantitatively different from those currently generated within Area B. However, the proposed sewage dump station could potential produce odors during each pump out operation that are not currently generated within Area B. As a result, adverse impacts associated with the operation the dump station are considered to be short-term and minor.

Proposed Projects

Table 5-1 shows that the emissions associated with implementing the proposed six projects, when compared to the *de minimis* values for this ozone non-attainment area of 25 tons per year (tpy) for both NO_x and VOC, fall below the *de minimis* values under all projects or individually. Additionally, a more conservative analysis was considered that assumed that all six proposed projects would be constructed within the same time period. It was found that, if all six projects were completed simultaneously within one year, emission estimates from construction would be 13.1 tpy for NO_x and 1.7 tpy for VOC. During operation, combined emissions would include the operation of an emergency generator for backup power for the seven antennas and also emissions resulting from customers and operators traveling to and from the proposed projects. Emission estimates for the simultaneous operation of all six projects results in 6.7 tpy of NO_x and 8.9 tpy for VOC. Under this conservative assumption, emission levels, when compared to the *de minimis* values for this ozone non-attainment area of 25 tpy for both NO_x and VOC, fall below the *de minimis* values for both construction and operation. Impacts to air quality under the operation and the construction of the six projects would be minor.

An air ventilation system would be installed for the Indoor Shooting Range to constantly intake and discharge air during the operation of the range. Filtration of the discharged air for lead particulate removal would occur to minimize potential impacts to the local air quality in Area B and the adjacent properties.

Each RV site would include one fire ring. Multiple and prolong use of the fire rings could produce short-term minor adverse impacts to the air quality within Area B and adjacent properties due to smoke creation.

No Action Alternative

Implementation of the No Action Alternative would not change current conditions and is not expected to impact the current air quality conditions in the region.

TABLE 5-1 – TOTAL PROJECT EMISSIONS

Construction Activity	Total Annual Construction Emissions –tpy		Total Annual Operation Emissions –tpy		<i>De Minimus Values –tpy</i>	
	NO _x	VOC	NO _x	VOC	NO _x	VOC
18-Hole Golf Course	5.10	0.75	3.78	5.51	25	25
Paintball Field	0.58	0.07	0.72	1.09		
Indoor Shooting Range	2.39	0.37	1.29	1.96		
Recreational Vehicle (RV) Park	3.67	0.44	0.88	0.31		
Relocation of Seven Antennas	0.67	0.05	0.03	0.05		
Modify Perimeter Fence	0.71	0.08	0.00	0.00		
Totals	13.12	1.77	6.70	8.92		

No Action Alternative

Implementation of the No Action Alternative would not change current conditions and is not expected to impact the current air quality conditions in the region.

5.5 CULTURAL RESOURCES

Potential impacts to cultural resources have been evaluated based on the extent of known cultural resources in the area. Per Section 106 of the National Historic Preservation Act, only those cultural resources that are eligible or are listed on the National Register of Historic Places are considered federally protected resources and are the subject of this impact analysis. An impact, or effect, to a cultural property occurs if an action would alter in any way the characteristics that qualify the property for inclusion or potential listing on the national register. If the action would diminish the integrity of any of these characteristics, it is considered to be an adverse effect.

18-Hole Golf Course

No impacts to cultural resources are expected with the construction and operation of the golf course. A Phase I investigation determined that Prehistoric Site 18FR679, which is located within the proposed project area of the golf course, lacked integrity and archeological research potential and was not considered eligible for or listed on the NRHP. No other potential cultural resource is located within the proposed project boundary.

Paintball Fields

No impacts to cultural resources are expected with the construction and operation of the Paintball Fields and its support facilities. No cultural resource sites have been identified in previous archeological or historic architecture investigations. The proposed location of the one Paintball Field is adjacent to the southeast corner of the small cemetery along Kemp Road. To reduce the possibility of paintballs entering the cemetery, a 20-foot high and approximately 100-foot long

nylon mesh fence supported by telephone poles would be installed. Paintballs would burst on impact with the fence and would not enter the cemetery.

Indoor Shooting Range

No impacts to cultural resources would be expected with the construction and operation of the Indoor Shooting Range. The proposed location of the Indoor Shooting Range does not occur within the vicinity of the cemetery along Kemp Road or archeological sites 18FR679 and 18FR682.

Recreational Vehicle (RV) Park

No impacts to cultural resources would be expected with the construction and operation of the RV Park. The proposed location of the RV Park does not occur within the vicinity of the cemetery along Kemp Road or archeological sites 18FR679 and 18FR682.

Relocation of Seven High Frequency Antennas from Area A to Area B

No impacts to cultural resources would be expected to occur during both construction and operation. The proposed location of the antenna site does not occur within the vicinity of the cemetery along Kemp Road or archeological sites 18FR679 and 18FR682.

Area B Perimeter Fence

No impacts to cultural resources would be expected to occur during both construction and operation. The historic lime kiln site (18FR682) is located approximately 30 feet inside the existing perimeter fencing of Area B along the northern boundary. A Phase II study of the lime kiln site indicated that there is a lack of archeological and structural integrity; therefore, the site does not qualify for NRHP listing and no further investigation of this site is warranted. If the perimeter fence is set back at this location, it would be routed to avoid the lime kiln site.

Discussion of Combined Effects

The combination of construction and operation of the six proposed projects and the changing of land use would not adversely impact cultural resources on Area B.

No Action Alternative

The No Action Alternative would not create additional impacts to cultural resources at Fort Detrick's Area B or the surrounding area.

5.6 HAZARDOUS MATERIAL AND WASTE

18-Hole Golf Course

Short-term and long-term minor adverse impacts are expected to result from hazardous material and waste associated with the construction and operation of the 18-Hole Golf Course. Hazardous waste typically generated by golf courses includes used aerosol cans, used oil, pesticide packaging, spent or unused pesticides and other chemicals, and spent batteries. Used oil would be generated in conjunction with vehicle and groundskeeping equipment used for maintenance operations. Additionally, potentially hazardous materials and waste that would be used and

generated during construction include paints, solvents, cleaners, asphalt, and fuels and motor oils.

Procurement, use, storage, recycle, and disposal of hazardous materials and waste would be properly managed according to FD REG 200-3, FD PAM 200-3a, and FD PAM 200-3b, HWMP. Additionally, all waste identified as hazardous must be properly labeled, packaged, stored, collected, and transported per RCRA, U.S. Department of Transportation (USDOT) regulations and the Fort Detrick HWMP (USAG, 2003a). Adherence to the above regulations would reduce the potential for adverse impacts that could occur with the management of hazardous materials and waste during construction and operation of the 18-Hole Golf Course.

Furthermore, Fort Detrick has developed an Integrated Contingency Plan (ICP) that is designed to consolidate several redundant plans (i.e., the Facility Response Plan [FRP], the Spill Prevention Control and Countermeasures Plan [SPCCP], and the Installation Spill Contingency Plan [ISCP]) into one comprehensive plan. The ICP provides simultaneous compliance with several regulations governing spill prevention and planning including the requirements of AR 200-1, AR 500-60, Oil Pollution Act (OPA), Clean Water Act (CWA), RCRA, CERCLA, Emergency Planning and Community Right-to-Know Act (EPCRA), and MDE regulations. The ICP identifies all of the sites on the Installation where the potential exists for significant spills of hazardous material/waste or petroleum, oil, or lubricants (POL), and establishes a spill prevention program for each of those sites. The identified sites include underground storage tanks, aboveground storage tanks, hazardous material storage areas, pesticide storage areas, and fueling facilities. The plan describes the procedures that will be implemented to identify, notify, and react to spill incidents involving hazardous material/waste or POL products (USAG, 2003a). Any use of hazardous material/waste or POL needed for golf course operation would comply with the Fort Detrick ICP, which would reduce the potential adverse impacts associated with management of hazardous material/waste or POL.

The national average pesticide usage for an 18-hole golf course is roughly 780 pounds of pesticides per year (USGA, 2004). The development of an Integrated Pest Management (IPM) program and a Golf Course Management Plan would assist the golf course managers by identifying pests and evaluating, selecting, and implementing the best possible management options based on reduction in environmental, economic, and human health risk. The IPM decision-making process determines if, where, when, and how pest management practices should be applied. A comprehensive IPM program would reduce the amount of pesticides used, which in turn would be better for the environment and more cost-effective.

The proposed location of the golf course encounters 6 of the 12 areas of environmental concern on Area B. Three of the 6 areas of environmental concern include the Area B Outdoor Simulant Testing Grid (B-Grid) (FTD 05), Area B-Skeet Range (FTD 29), and B-20 Detonation Areas (FTD 43). It is anticipated that no further remedial actions are required for these sites. Fort Detrick plans to prepare and submit decision documents to MDE recommending no further action at these sites under the IRP/Defense Environmental Restoration Program (DERP).

The remaining three areas of environmental concern, Area B-6 Landfill (FTD 69); Area B-8 Landfill (FTD 70); and Area B-11 Landfill (FTD) are still under investigation. The interim removal action for hot spots in the chemical waste pits in Area B-11 is close to completion.

However, waste materials are known to exist in the remainder of Area B-11. Prior to construction of the 18-Hole Golf Course, RI investigations and remediation actions for the three areas of environmental concerns would need to be completed in accordance with applicable federal and state regulations and approvals. Upon completion of the remedial actions, adverse impacts associated with the potential disturbance of the hazardous waste would not be considered significant. Depending on the type of remediation (e.g., clay cap), development and design restrictions may be instituted. For example, certain types of trees and vegetation should not be planted on top of a capped landfill due to the potential for root system invasion. Another potential alternative to avoid significant impacts associated with the three areas of environmental concerns would be avoidance by design and layout of the greens and fairway.

Paintball Fields

No adverse impacts would be expected during the construction and operation of the Paintball Fields. Potentially hazardous materials that would be used during construction include paints, solvents, cleaners, asphalt, and fuels and motor oils. Use, storage, and disposal of these materials would be in accordance with the Fort Detrick ICP and other applicable federal and state laws.

No hazardous waste would be generated and no pesticides would be used for the maintenance of the Paintball Fields. The paintball capsule consists of a gelatin exterior filled with water-soluble dye that is a non-hazardous substance.

Paintball Field 1 is not located within an area of environmental concern; however, Paintball Fields 2, 3, and 4 are located within an area of environmental concern: Area B-Skeet Range. The abandoned skeet range was used for trap and skeet shooting between the 1950s and 1999. Due to surface and subsurface soil samples, which demonstrated elevated levels of lead, the range surface area was scraped in 2001 to remove a majority of the lead and clay pigeon contamination. Soils that did not meet Toxicity Characteristic Leaching Procedure (TCLP) concentrations for lead were removed as hazardous waste. The remaining soils were used at the Fort Detrick landfill as daily cover. Additional sampling will be conducted to define the extent of any remaining contamination and provide more accurate information for the RI. Based upon limited sampling performed during the removal, it is anticipated that no further remedial actions would be needed for this site; therefore, no adverse impacts associated with hazardous waste/material are expected.

Adjacent to Paintball Fields 1, 2 and 3 is Area B-18, an historic landfill. Area B-18 is an area of environmental concern that has received a variety of waste up until 1950. Some surface debris and waste are located within this area. Fencing would be installed around the Paintball Fields to restrict access to Area B-18 and its associated sinkholes.

Indoor Shooting Range

No adverse impacts would be expected during the construction and operation of the Indoor Shooting Range. Potentially hazardous materials that would be used during construction include paints, solvents, cleaners, asphalt, and fuels and motor oils. Use, storage, and disposal of these materials would be in accordance with the Fort Detrick ICP and other applicable federal and state laws.

Management of hazardous lead shot/particulates and recycling of clay pigeons, lead shot, and brass casings would occur during the operation of the Indoor Shooting Range. Procurement, use, storage, recycle, and disposal of hazardous materials and waste would be properly management according to FD REG 200-3, FD PAM 200-3a, and FD PAM 200-3b, HWMP. Additionally, all waste identified as hazardous must be property labeled, packaged, stored, collected, and transported per RCRA, U.S. Department of Transportation (USDOT) regulations and the Fort Detrick HWMP (USAG, 2003a). Adherence to the above regulations would reduce the potential for adverse impacts that could occur with the management of hazardous materials and waste during construction and operation of the Indoor Shooting Range.

The Navy Environmental Health Center Technical Manual NEHC-TM6290.99-10 Rev.1, *Indoor Firing Ranges Industrial Hygiene Technical Guide*, will serve as a reference guide during the design of the proposed Indoor Shooting Range to assist in recognizing, evaluating and controlling safety and health hazards. A Lead Compliance Plan would be developed to comply with the OSHA requirements to determine the proper process for the removal of lead dust and recycling lead shot (U.S. Navy, 2002). In addition, the fully enclosed small arms shooting range and the canvas covered skeet shooting range, both located inside the tent, would be designed to prevent shot and bullets from escaping these facilities.

Recreational Vehicle (RV) Park

Adverse impacts are expected to be negligible during the construction and operation of the RV Park. Potentially hazardous materials that would be used during construction include paints, solvents, cleaners, asphalt, and fuels and motor oils. Use, storage, and disposal of these materials would be in accordance to FD REG 200-3, FD PAM 200-3a, and FD PAM 200-3b, HWMP. The proposed location of the RV Park does not occur within or adjacent to any areas considered as an environmental concern on Area B.

Additionally, no hazardous waste would be produced by the operation of the RV Park. Potential POL spills and leaks from RVs could occur during the operation of the RV Park. Therefore, the RV Park would need to be identified in the ICP and establish a spill prevention and clean-up program for this site.

Relocation of Seven High Frequency Antennas from Area A to Area B

No adverse impacts would be expected during the relocation and operation of the seven high frequency antennas from Area A to Area B. Potentially hazardous materials that would be used during construction include paints, solvents, cleaners, asphalt, and fuels and motor oils. Use, storage, and disposal of these materials would be in accordance to FD REG 200-3, FD PAM 200-3a, and FD PAM 200-3b, HWMP. The proposed location of the seven antennas in the northern section of Area B does not occur within or adjacent to any areas considered as an environmental concern on Area B.

Additionally, no hazardous waste would be produced by the operation of the antennas.

Area B Perimeter Fence

Adverse impacts are expected to be negligible during the construction and operation of enhanced perimeter fence for Area B. Potentially hazardous materials that could potentially be used during

construction include paints, solvents, cleaners, asphalt, and fuels and motor oils. Use, storage, and disposal of these materials would be in accordance to FD REG 200-3, FD PAM 200-3a, and FD PAM 200-3b, HWMP.

Construction of a new perimeter fence located 20 to 30 feet inside the existing perimeter fence along the southwestern section of Area B could potentially disturb two areas of environmental concerns: Area B-11 and B-6. Constructing the new perimeter fence in these areas would be conducted in a manner to avoid impacts associated with exposure to hazardous waste.

Discussion of Combined Effects

Short-term and long-term, minor adverse impacts would be expected. The golf course and the Indoor Shooting Range would be the major contributors to the storage, use, and disposal of hazardous material and waste.

Proper management and disposal of the hazardous material and waste, through the adherence to the FD REG 200-3, FD PAM 200-3a, and FD PAM 200-3b, HWMP and other federal and state requirements, would eliminate significant adverse impacts associated with hazardous material and waste. Additionally, all waste identified as hazardous must be properly labeled, packaged, stored, collected, and transported per RCRA, U.S. Department of Transportation (USDOT) regulations and the Fort Detrick HWMP (USAG, 2003a). No hazardous materials and/or wastes would be used or generated during the operation of the Paintball Fields, RV Park, the high frequency antennas, or the perimeter fence.

The construction of the all six projects would require soil disturbance for earth shaping, building foundations, roads, sidewalks, parking lots, and trenching for utility lines. Completion of RIs and remediation actions, as required by federal and state regulations, would be required prior to disturbing any soils located within an area of environmental concern for the proposed area of disturbance. Upon completion of the remedial actions adverse impacts associated with the potential disturbance of the hazardous waste would not be considered significant.

No Action Alternative

The No Action Alternative would not create additional impacts to human health and safety resulting from exposure to hazardous material and waste. However, beneficial impacts associated with the improvement of security for Area B would not occur.

5.7 LAND USE

18-Hole Golf Course

Direct, long-term, minor impacts to land use would be expected as a result of developing the 18-Hole Golf Course. The proposed golf course is considered a recreation land use according to the land use categories under the 2003 Land Use Plan for Fort Detrick. Area B is currently surrounded by residential land use to the north, west, and south and government land use (Frederick County Office buildings) to the east. Recreation land use is considered to be consistent with the surrounding land uses.

Paintball Fields

Impacts to land use under this proposed project would be the same as those under the 18-Hole Golf Course proposed project.

Indoor Shooting Range

Direct, long-term, minor impacts to land use would be expected as a result of developing the Indoor Shooting Range. The proposed Indoor Shooting Range is considered a recreation land use according to the land use categories under the 2003 Land Use Plan for Fort Detrick. The current land use category for the proposed area of the Indoor Shooting Range is agrifield and landfill (reserved for future landfill expansion). Area B is currently surrounded by residential land use to the north, west, and south and government land use (Frederick County Office buildings) to the east. Recreation land use is considered to be consistent with the surrounding land uses. If required in the future, the current landfill land use proposed for conversion to recreation could revert back to the landfill for expansion.

Recreational Vehicle (RV) Park

The proposed RV Park is considered a recreation land use according to the land use categories under the 2003 Land Use Plan for Fort Detrick. The current land use category for the proposed area of the RV Park is recreation; therefore, no adverse impacts to existing land use are expected.

Relocation of Seven High Frequency Antennas from Area A to Area B

Direct, long-term, minor impacts to land use would be expected as a result of relocating the seven high-frequency antennas from Area A to Area B. The existing location of the seven antennas in Area A is delineated as agrifield under the 2003 Land Use Plan for Fort Detrick. The current land use category for the proposed location of the seven antennas in the northern section of Area B is training. The residential land use adjacent to the proposed area for the seven antennas in Area B is separated by a forested buffer. This forested buffer during spring and summer months would shield the majority of the antennas from view; however, without foliage during the fall and winter months the antennas could be more readily visible to adjacent residential properties located northeast of Area B.

Area B Perimeter Fence

Land use impacts associated with the modifications to the perimeter fence would be negligible. Moving the perimeter fence back 20 to 30 feet would not directly impact existing land uses on Area B.

Discussion of Combined Effects

Direct long-term, minor adverse and beneficial impacts would be expected as a result of changing the land use zoning plan for Area B from an agricultural mission to a recreational mission. Table 5-2 compares the amount of land in acres for each land use category from the 2003 Installation Master Plan EA for Area B and the proposed land use changes resulting from the implementation of the proposed projects evaluated in this EA.

TABLE 5-2 – COMPARISON OF THE 2003 MASTER PLAN AND THE PROPOSED LAND USE CHANGES BY LAND USE CATEGORY

Land Use Category	2003 Master Plan (acres)	Proposed Land Use Plan (acres)	Change (acres)
Agrifield/Landfill	Agrifield = 182 Landfill = 96 Total = 278	Total = 128	-150
Operations	.5	21.5	20
Training	72	25	-47
Recreational	6	182	176
Open Buffer	42.5	42.5	0
Totals	399	399	---

Existing forested and forestation areas would not be significantly impacted by the proposed land use changes and the implementation of the proposed six projects for Area B. Minor forest clearing could occur during the construction of the perimeter fence. The proposed land use changes for Area B would decrease the amount of land currently planned for agrifield, landfill, and training, and would increase land use for recreation and operations. Some of the land proposed for recreation, which includes the Indoor Shooting Range and Paintball Fields, could also be classified as a training land use.

The location of two golf holes along the western boundary of Area B and the location of the RV Park on the eastern boundary would intersect the open buffer (perimeter security standoff) land use. No support facilities for the 18-Hole Golf Course and the RV Park would be constructed within the perimeter security standoff. Additionally, the construction of the eight-foot high chain-link perimeter fence topped with barbed wire would provide additional protection for the above two open space areas located within the perimeter security standoff.

Approximately 9.5 acres of land currently reserved for future landfill was converted to recreational land for the construction of the Indoor Shooting Range. No impacts are expected to the life capacity of the landfill. If this land was required in the future for landfill expansion, it could be converted back to its landfill land use category.

In general, transforming a large portion of Area B from an agricultural to a recreational land use would provide beneficial impacts related to the missions and needs of the MWR program, the Fort Detrick SPO and PMO, the MARS program. Also, improved landscaping and improved and regular maintenance programs associated with the proposed projects would be expected to result in a long-term beneficial effect on Area B.

No Action Alternative

Under the No Action Alternative, the modifications to the perimeter fence would not be implemented; therefore, beneficial impacts associated with the improvement of security for Area B would not occur. No impacts to land use are expected under the No Action Alternative.

5.8 TRAFFIC, ROADWAYS, AND TRANSPORTATION SYSTEMS

The future traffic operations projected as a result of each proposed project were compared with the traffic operations for the existing condition. Impacts to traffic occurring during construction of all six projects was also evaluated.

18-Hole Golf Course

Adverse impacts to the local transportation system would be short-term and minor during construction and long-term and minor during the operation of the 18-Hole Golf Course. Construction vehicles, commuting activities of the construction workforce and supplier deliveries of construction materials may interfere with normal roadway transportation within Area B and in adjacent off-post areas during the construction of the golf course.

Using the projected peak use of the golf course (300 golfers per day) and a golf staff of 20 personnel, it is estimated that approximately 640 vehicle trips (to and from the golf course) would be generated. The majority of the vehicle trips generated due to the operation of the golf course would be staggered throughout the day. In addition, peak use of the golf course would be likely to occur on the weekends between the months of April and September. Therefore, golf course traffic would not be likely to add further congestion to the intersection of Rosemont Avenue and Montevue Lane during weekday AM or PM peak use. Commuting activities of the workforce (approximately 20 personnel) and transportation associated with golfers coming and leaving the golf course would have only minor long-term impacts to the local road network.

Paintball Fields

Adverse impacts to the local transportation system would be negligible during construction and operation of the Paintball Fields. Impacts expected during the construction activities for the Paintball Fields on Area B are negligible due to the limited amount of construction required.

Using the projected peak use of the Paintball Fields (100 players per day) and an operation staff of 10 personnel, it is estimated that approximately 220 vehicle trips (to and from the Paintball Fields) would be generated. The Paintball Fields would only operate on Fridays, Saturdays, and Sundays with peak use most likely occurring on the weekend. Vehicle trips generated during weekend use of the Paintball Fields would not add further congestion to the intersection of Rosemont Avenue and Montevue Lane during weekday AM or PM peak use. As a result, negligible adverse impacts to the local road network during the operation of the Paintball Fields would be expected.

Indoor Shooting Range

Adverse impacts to the local transportation system would be short-term and minor during construction and long-term and minor during the operation of the Indoor Shooting Range.

Construction vehicles, commuting activities of the construction workforce and supplier deliveries of construction materials may interfere with normal roadway transportation within Area B and in adjacent off-post areas during the construction of the Indoor Shooting Range.

To determine the impact to the local transportation system projected peak vehicle trips were calculated. Using an estimated peak use of 200 participants and a facility staff of 20 personnel, it was estimated that the operation of the Indoor Shooting Range would generate 440 vehicle trips (i.e., to and from the facility) during peak use. The majority of the vehicle trips generated due to the operation of the Indoor Shooting Range would be staggered throughout Saturdays and Sundays; therefore, it is unlikely that further congestion to the intersection of Rosemont Avenue and Montevue Lane would occur.

Recreational Vehicle (RV) Park

Adverse impacts to the local transportation system would be short-term and minor during construction and negligible during the operation of the RV Park. During the construction of the RV Park the number of construction vehicles, commuting construction workers, and the delivery of construction materials to and from Area B would increase. As a result, vehicle traffic within the local road network surrounding Area B would increase.

To determine impacts to the local transportation system, projected peak vehicle trips were calculated for the operation of the RV Park. Using an estimated peak use of 100 RVs (15 RVs per day) coming to and leaving the RV Park per week and a park staff of 10 personnel, it was calculated that the operation of the RV Park would generate 50 vehicle trips per day (i.e., to and from the park) during peak use. Commuting activities of the workforce (approximately 10 personnel) and transportation associated with RVs coming to and leaving the RV Park would occur primarily on Saturdays and Sundays, which as for the other projects, does not impact weekday congestion.

Relocation of Seven High Frequency Antennas from Area A to Area B

Adverse impacts to the local transportation system would be short-term and minor during the relocation and construction and negligible during the operation of the seven antennas on Area B. Construction vehicles, commuting activities of the construction workforce and supplier deliveries of construction materials may interfere with normal roadway transportation within Area A and B and in adjacent off-post areas during the dismantling, movement, and reassembling the seven antennas. Commuting activities of the workforce (approximately 2 personnel) would have a negligible impact to the local road network.

Area B Perimeter Fence

Adverse impacts to the local transportation system would be short-term and minor resulting from construction of the modified Area B perimeter fence. Increased traffic in Area B and the surrounding local road network would occur during the construction of the modified perimeter fence. There are no commuting activities associated with this project.

Discussion of Combined Effects

Adverse impacts to the local transportation system would be short-term and minor during construction and long-term and minor during the combined operations of the proposed projects

on Area B. Completing the construction of the proposed projects at the same time would increase the construction traffic within Area B and the surrounding local road network.

Summing the estimated peak vehicle trips generated for each proposed project results in the potential generation of 1,350 daily vehicle trips during peak use of the 18-Hole Golf Course, Paintball Fields, Indoor Shooting Range, and the RV Park. Peak vehicle trips generated from the operation of the recreational facilities would likely occur on Saturdays or Sundays between the months of April and September. These vehicle trips would be staggered throughout day and would not occur at one specific time of day (i.e., morning or evening). Therefore, the local transportation system and the intersection of Rosemont Avenue and Montevue Lane would sustain only minor long-term impacts due to the simultaneous operation of the four proposed recreational facilities. Additionally, the City of Frederick has recently started a project that will run until FY2005 to widen Rosemont Avenue to relieve traffic congestion on Rosemont Avenue.

No Action Alternative

No additional vehicle trips would be created and impacts to the local transportation system would occur as a result of the No Action Alternative.

5.9 INFRASTRUCTURE

18-Hole Golf Course

To analyze the impacts to the existing infrastructure systems resulting from operating an 18-Hole Golf Course, each utility system was analyzed separately. The following provides a discussion of the impacts for the three utility systems (water, wastewater, and electricity).

Water – To determine the impacts on Fort Detrick’s water system to operate an 18-Hole Golf Course on Area B, the following three assumptions were made:

- (1) The golf course and its support facilities would be designed for the use of 300 golfers per day.
- (2) Each golfer would use 8 gallons per day (gpd) of water. Typical gpd of water use for the golf course was estimated using the Federal Water Use Indices provided by the Federal Energy Management Program. Water use for a golf course per golfer is not provided in these indices. To estimate water use for the golf course, commercial water use per customer for a restaurant with restrooms was used for the analysis.
- (3) Surface water ponds would be developed for stormwater management and for golf course irrigation purposes. Potable water supplied from the Fort Detrick water system would not be used for irrigation.

Using these assumptions, it was estimated that approximately 2,400 gpd of potable water would be used for golfers needs. The WTP has a current excess capacity of 0.6 mgd during peak water demand; therefore, an additional 2,400 gpd would not impact the capacity of the WTP. Additionally, the 8-inch water main that services Area B would be

capable of supplying the required estimated demand. To service the proposed golf clubhouse with water, feeder lines from the water main located in the eastern section of Area B would be required (Roszell, pers. comm., 3/26/04). Impacts associated with supplying the golf course with potable water on Area B would be minor. Also, the installation of water-efficient control devices, such as low-flow faucets and toilets would reduce water demands during the facility operations.

Wastewater – It was assumed that the wastewater generated from the operation of the golf course would be 90 percent of the total amount of water supplied per day. Using the above estimated water demand for the golf; roughly 2,160 gpd of wastewater would be generated by the operation of the golf course. The WWTP has an excess capacity that ranges from 0.8 to 1.0 mgd; therefore, the addition of 2,160 gpd would not impact the capacity of the WWTP. Feeder lines connecting to the sewer main located in the eastern section of the property would be required. As a result, impacts associated with conveying wastewater from the golf course on Area B would be minor (Roszell, pers. comm., 3/26/04). Discussions of impacts associated with the operation of an onsite sewage disposal system as an alternative for the treatment and disposal of wastewater are presented in Section 5.2 – Water Resources.

Electricity – Assuming electrical requirements for the operation of the Proshop, storage space, maintenance, golf cart charging, and lighting, it is estimated that the golf course during operation would consume approximately 133,590 kilowatts hours per year (kW/hrs per year) or 366 kW/hrs per day. The current main power supply to Area B from Area A is nearing capacity. Upgrading the existing main transmission line from Area A to Area B may be required to provide adequate power to operate the golf course (Schmidt, pers. comm., 3/29/04). Upgrading this transmission line to provide adequate power to the proposed projects in Area B is likely to be required for their operation. The use of energy-efficient interior and exterior lighting fixtures and controls would reduce energy demands and resultant demand is unlikely to significantly impact the total energy consumption of the Frederick area or Fort Detrick.

Paintball Fields

To analyze the impacts to the existing infrastructure systems as a result of operating the Paintball Fields, each utility system was analyzed separately. The following provides a discussion of the impacts for three utility systems (water, wastewater, and electricity).

Water – To determine the impacts on Fort Detrick’s water system to operate the Paintball Fields on Area B the following two assumptions were made:

- (1) The Paintball Fields and its support facilities would be used by approximately 100 customers per day.
- (2) Each customer would use 8 gpd of water. Typical gpd of water use for the Paintball Fields was estimated using the Federal Water Use Indices provided by the Federal Energy Management Program. Water use for a paintball field per customer is not provided in these indices. To estimate water use for the Paintball Fields,

commercial water use per customer for a restaurant with restrooms was used for the analysis.

Using these assumptions, it was estimated that approximately 800 gpd of water would be used to operate the Paintball Fields. The WTP has a current excess capacity of 0.6 mgd during peak water demand; therefore, an additional 800 gpd will not impact the capacity of the WTP. Additionally, the 8-inch water main that services Area B would be capable of supplying the required estimated demand (Roszell, pers. comm., 3/26/04). To service the proposed project location with water, feeder lines from the water main located in the eastern section of Area B would be required. Resultant impacts associated with supplying the operations of the Paintball Fields with potable water on Area B would be minor. Also, the installation of water-efficient control devices, such as low-flow faucets and toilets would reduce water demands during the facility operations.

Wastewater – It was assumed that the wastewater generated from the operation of the Paintball Fields would be 90 percent of the total amount of water supplied per day. This results in the generation of roughly 720 gpd of wastewater. The WWTP has an excess capacity that ranges from 0.8 to 1.0 mgd; therefore, the addition of 720 gpd would not impact the capacity of the WWTP. Feeder lines connecting to the sewer main located in the eastern section of the property would be required. Impacts associated with conveying wastewater from the Paintball Fields on Area B would be minor (Roszell, pers. comm., 3/26/04). Discussions of impacts associated with the operation of an onsite sewage disposal system as an alternative for the treatment and disposal of wastewater are presented in Section 5.2 – Water Resources.

Electricity – Based on assumed electrical requirements for the operation of the storage shed and lighting it is estimated that the Paintball Fields during operation would consume approximately 10,640 kW/hrs per year or 68 kW/hrs per day (operating only 3 days per week). The energy estimate also takes into account the operation of the Paintball Fields one day a week during the winter (20 weeks) and three days a week during the spring, summer and fall (32 weeks). As for the 18-Hole Golf Course, energy consumption does not constitute a significant impact. However, see the above discussion for the proposed golf course regarding the potential need to upgrade the transmission line.

Indoor Shooting Range

To analyze the impacts to the existing infrastructure systems as a result of operating an Indoor Shooting Range, each utility system was analyzed separately. The following provides a discussion of the impacts for three utility systems (water, wastewater, and electricity).

Water – To determine the impacts on Fort Detrick’s water system to operate an Indoor Shooting Range on Area B the following two assumptions were made:

- (1) The Indoor Shooting Range and its support facilities would be used by approximately 200 customers per day.
- (2) Each customer would use 10 gpd of water. Typical gpd of water use for the Indoor Shooting Range was estimated using the Federal Water Use Indices provided by the

Federal Energy Management Program. Indoor shooting range water use per customer is not provided in these indices. To estimate water use commercial water per customer for a restaurant with restrooms with an additional 2 gpd for each customer for post firing hand washing was used for the analysis.

Using these assumptions, it was estimated that approximately 2,000 gpd of water would be used to operate the Indoor Shooting Range. The WTP has a current excess capacity of 0.6 mgd during peak water demand; therefore, an additional 2,000 gpd will not impact the capacity of the WTP. Additionally, the 8-inch water main that services Area B would be capable of supplying the required estimated demand (Roszell, pers. comm., 3/26/04). To service the proposed Indoor Shooting Range with water, feeder lines from the water main located in the eastern section of Area B would be required. Resultant impacts associated with supplying the operations of the Indoor Shooting Range with potable water on Area B would be minor. Also, the installation of water-efficient control devices, such as low-flow faucets and toilets would reduce water demands during the facility operations.

Wastewater – It was assumed that the wastewater generated from the operation of the Indoor Shooting Range would be 90 percent of the total amount of water supplied per day. This results in the generation of roughly 1,800 gpd of wastewater. The WWTP has an excess capacity that ranges from 0.8 to 1.0 mgd; therefore, the addition of 1,800 gpd would not impact the capacity of the WWTP. Feeder lines connecting to the sewer main located in the eastern section of the property would be required. Impacts associated with conveying wastewater from the Indoor Shooting Range on Area B would be minor (Roszell, pers. comm., 3/26/04). Discussions of impacts associated with the operation of an onsite sewage disposal system as an alternative for the treatment and disposal of wastewater are presented in Section 5.2 – Water Resources.

Electricity – Based on assumed electrical requirements for the operation of tent lighting, outside lighting, clubhouse, and mechanical loads (e.g., the air filtration system) it is estimated that the Indoor Shooting Range during operation would consume approximately 242,320 kW/hrs per year or 664 kW/hrs per day. As for the 18-Hole Golf Course, energy consumption does not constitute a significant impact. However, see the above discussion for the proposed golf course regarding the potential need to upgrade the transmission line.

Recreational Vehicle (RV) Park

To analyze the impacts to the existing infrastructure systems, as a result of operating a RV Park, each utility system was analyzed separately. The following provides a discussion of the impacts for three utility systems (water, wastewater, and electricity).

Water – To determine the impacts on Fort Detrick's water system to operate a RV Park on Area B the following two assumptions were made:

- (1) The RV Park and its support facilities would be used by approximately 200 (50 Camp Sites multiplied by 4 people) customers per day during peak summer use.

- (2) Each customer would use 30 gallons per day (gpd) of water. Typical gpd of water use for the RV Park (Campground) was estimated using the Federal Water Use Indices provided by the Federal Energy Management Program.

Using these assumptions, it was estimated that approximately 6,000 gpd of water would be used to operate the RV Park during peak use. The WTP has a current excess capacity of 0.6 mgd during peak water demand; therefore, an additional 6,000 gpd will not impact the capacity of the WTP. Additionally, the 8-inch water main that services Area B would be capable of supplying the required estimated demand (Roszell, pers. comm., 3/26/04). To service the proposed RV Park with water, feeder lines from the water main located in the eastern section of Area B would be required. Impacts associated with supplying the operations of the RV Park with potable water on Area B would be minor. Also, the installation of water-efficient control devices, such as low-flow faucets and toilets would reduce water demands during the facility operations.

Wastewater – It was assumed that the wastewater generated from the operation of the RV Park would be a combination of two sources: facility wastewater (i.e., park restrooms and showers) and RV sewage tanks. Facility wastewater is determined by taking 90 percent of the total amount of water supplied per day to the RV Park. This results in the generation of roughly 5,400 gpd of wastewater. A pump-out station at the RV Park would be provided to allow RV owners to pump out their sewage tanks. The average gpd of wastewater pumped into the pump-out station is calculated by multiplying the average RV sewage tank size (90 gallons (black and gray water tanks)) by the number of RV camp sites (50). Using this methodology it is assumed that approximately 4,500 gpd of wastewater will be pumped to the pump-out station. The combination of facility wastewater and the pump-out station will total roughly 9,900 gpd of wastewater during peak RV Park capacity. The WWTP has an excess capacity that ranges from 0.8 to 1.0 mgd; therefore, the addition of 9,900 gpd would not impact the capacity of the WWTP. Feeder lines connecting to the sewer main located in the eastern section of the property would be required. Impacts associated with conveying wastewater from the RV Park on Area B would be minor (Roszell, pers. comm., 3/26/04). Discussions of impacts associated with the operation of an onsite sewage disposal system as an alternative for the treatment and disposal of wastewater are presented in Section 5.2 – Water Resources.

Electricity – Based on assumed electrical requirements for the operation of the RV Park's support facilities (i.e., office, recreation room, showers, and restrooms), wastewater pump station, exterior lightings, and 50 RV electrical hookups at 50 ampere it is estimated that the RV Park during operation would consume approximately 647,641 kW/hrs per year. During the summer months, peak RV Park use, roughly 2,246 kW/hrs per day would be required for the operation of the RV Park. Off season use it was estimated that about 1,248 kW/hrs per day would be required for RV Park operations. As for the 18-Hole Golf Course, energy consumption does not constitute a significant impact. However, see the above discussion for the proposed golf course regarding the potential need to upgrade the transmission line.

Relocation of Seven High Frequency Antennas from Area A to Area B

Building 1224, the Communication Building, which currently supports the operation of the two antennas on Area B, is provided with electricity and telecommunications services; however, this facility is not currently provided with water or sewer service. This facility would support the operation of the additional antennas on Area B. Electricity will need to be provided by underground lines to each of the seven antennas. Also, underground transmission lines from the antennas to the Communication Building would need to be installed.

To analyze the impacts to the existing infrastructure systems as a result of operating the seven antennas in Area B, the water, sewer, and electrical utility systems were analyzed. To estimate approximate water use, wastewater generation, and electrical consumption it was assumed that operation of the seven antennas would be a one-person operation 24 hours per day, 7 days per week. Typical gpd of water use for an office per person is 15 gpd, according to the Federal Water Use Indices provided by the Federal Energy Management Program. Since the facility would operate 24 hours per day, 3 shifts would be needed, each requiring roughly 15 gallons of water, totaling 45 gpd. It was assumed that the wastewater generated from the operation of Building 1224 would be 90 percent of the total amount of water supplied per day. This results in the generation of roughly 40.5 gpd of wastewater. Due to the small amount of water needed and wastewater generated from this facility no impacts to the existing utility systems are expected.

Electrical requirements for the operation of the seven antennas in Area B and Building 1224 are to consume approximately 19,506 kW/hrs per year or roughly 54 kW/hrs per day. This assumes that each antenna rotator would operate one hour per day to move the antenna into position. As for the 18-Hole Golf Course, energy consumption does not constitute a significant impact. However, see the above discussion for the proposed golf course regarding the potential need to upgrade the transmission line.

Area B Perimeter Fence

No utility services are required for the operation of the modified perimeter fence. As a result no impacts to existing utility systems resulting from the construction and operation of the proposed modifications to the perimeter fence in Area B are expected.

Discussion of Combined Effects

Combined operations of the proposed projects would require approximately 11,245 gpd (4.1 million gallons per year) of water. Based on the current water consumption by the installation, the increase in water consumption by the proposed projects would be expected to be less than 1 percent of the total consumption of the Installation. Impacts to the Fort Detrick water system from the implementation of the proposed projects would be minor. Additionally, the installation of water-efficient control devices, such as low-flow faucets and toilets would reduce water demands during the facility operations.

Combined operations of the proposed projects would generate approximately 14,620 gpd (5.3 million gallons per year) of wastewater. Based on the current wastewater generation at the Installation, the increase in wastewater by the proposed projects would be expected to be less than 1.5 percent of the total wastewater currently generated by the Installation. Impacts to the

Fort Detrick wastewater system from the implementation of the proposed projects would be minor.

Combined operations of the proposed projects would require approximately 1,053,696 kW/hrs per year or 3,894 kW/hrs per day during peak use (i.e., summer months on weekends) of electricity. The main power supply to Area B from Area A (an overhead 100 amp line) is nearing capacity (Schmidt, pers. comm., 3/29/04). Upgrading the existing main transmission line from Area A to Area B may be required to provide adequate power to operate the proposed projects in Area B (Schmidt, pers. comm., 3/29/04). Upgrading this transmission line to provide adequate power to the proposed projects in Area B is likely to be required for their operation. The use of energy-efficient interior and exterior lighting fixtures and controls would reduce energy demands and resultant demand is unlikely to significantly impact the total energy consumption of the Frederick area or Fort Detrick.

No Action Alternative

The No Action Alternative would not create additional impacts to current utility systems at Fort Detrick or the surrounding area.

5.10 ENVIRONMENTAL JUSTICE AND PROTECTION OF CHILDREN

18-Hole Golf Course

No impacts would be expected. The implementation of the golf course would not significantly impact the socioeconomic factors or create disproportionately high and adverse human health or environmental effects to minority or low-income populations at Fort Detrick or in the surrounding area. To determine impacts, the percent of minority population and percent population below the poverty level for the census tracts surrounding Area B were compared to standards set forth in the CEQ Environmental Justice Guidance. The minority or low-income population levels in census tracts surrounding Area B were well below levels that trigger environmental justice concerns. Furthermore, the golf course would not be expected to significantly impact environmental health and safety in a way disproportionate to children at Fort Detrick or in the surrounding area. The perimeter fencing surrounding Area B would ensure that children living off post would not be able to access construction areas or any other activities that might pose a health and safety risk. Although there are residents under the age of 18 living on-post at Fort Detrick, all applicable local jurisdictional safety requirements during construction would be implemented to ensure the protection of the public, including children.

Paintball Fields

Impacts to environmental justice and the protection of children under the construction and operation of the Paintball Fields would be the same as under the proposed golf course.

Indoor Shooting Range

Impacts to environmental justice and the protection of children under the construction and operation of the Indoor Shooting Range would be the same as under the proposed golf course.

Recreational Vehicle (RV) Park

Impacts to environmental justice and the protection of children under the construction and operation of the RV Park would be the same as under the proposed golf course.

Relocation of Seven High Frequency Antennas from Area A to Area B

Impacts to environmental justice and the protection of children under the relocation and operation of the seven high frequency antennas would be the same as under the proposed golf course.

Area B Perimeter Fence

Impacts to environmental justice and the protection of children during the construction of the modified Area B perimeter fence would be the same as under the proposed golf course. Additionally, the proposed modification to the Area B perimeter fencing would further ensure that children living off post would not be able to access construction areas or any other operating activities that might pose a health and safety risk on Area B.

Discussion of Combined Effects

The combined construction and operations of the six proposed projects and changes in land use for Area B would not be expected to create significant impacts or changes to the socioeconomic characteristics, including environmental justice and the protection of children, at or surrounding Fort Detrick.

No Action Alternative

The No Action Alternative would not be expected to create significant impacts or changes to the socioeconomic characteristics, including environmental justice and the protection of children, at or surrounding Fort Detrick.

5.11 NOISE

18-Hole Golf Course

Under this proposed project, for the duration of construction for the golf course, short-term minor noise impacts associated with normal construction activities would be expected to occur. During operation, as a result of golf course maintenance (e.g., mowing) and increase in local traffic, long-term minor noise impacts would be expected.

Paintball Fields

Due to the limited amount of construction required for the operation of a Paintball Fields on Area B, the associated noise impacts would be negligible. The operation of the Paintball Fields would generate long-term minor noise impacts associated with communication of paintball players (e.g., yelling) and increase in local traffic.

Indoor Shooting Range

Under this proposed project, for the duration of construction of the Indoor Shooting Range, short-term minor noise impacts associated with normal construction activities would be expected to occur. During operation, noise impacts to the surrounding community are considered to be minor long-term impacts for the following reasons:

- Small arms shooting would take place in a fully enclosed structure located inside the tent. This fully enclosed structure would reduce the exterior noise generated from rifle and pistol shooting.
- The skeet shooting section of the Indoor Shooting Range would be designated by a canvass area supported by multiple telephone poles and cables. This enclosed area within the tent, surrounded by canvas walls on three sides and a canvas top, would prevent shotgun shot from leaving the designated skeet shooting area, from damaging or puncturing the tent's PVC covering, and potentially reduce noise generated by skeet shooting. However, the final design for the indoor skeet shooting area may consist of another building material for its protective shell (i.e., concrete blocks, wood, etc.) that would further minimize the possibility of shotgun shot from leaving the designated skeet shooting area and noise reduce from the tent.
- The exterior base of the dome tent would be completely surrounded by a 4- to 6-foot high earth berm that would be planted with at least three rows of 6- to 7-foot evergreen trees. The combination of the earth berm and trees would reduce exterior noise levels resulting from facility operations.
- According to a noise study completed for the previous outdoor skeet shooting range on Area B, the use of a 3-dram equivalent powder load would reduce the A-weighted maximum noise level by approximately 4 dBA (USAG Fort Detrick, 1998a). This reduction in A-weighted maximum noise level reduced the 60 dB A-weighted Maximum Level Noise contour from the center of the previous outdoor skeet range. The original 60 dB A-weighted Maximum Level Noise contour ranged between 1,000 feet to 2,500 feet. After taking into account the use of a 3-dram equivalent powder load, the 60 dB A-weighted Maximum Level Noise contour was reduced to a radii ranging from 750 feet to 2,000 feet. As a result, the required use of a 3-dram equivalent powder load for skeet shooting would further reduce any noise impacts associated with the operation of the Indoor Shooting Range.
- Per an Army Environmental Hygiene Agency study Noise Assessment on Small Arms Ranges at Fort Devens, Massachusetts: "As a rule of thumb small arms fire is not annoying at distances greater than 500 meters." The proposed location for the Indoor Shooting Range is located in the center of Area B; as a result, a 500 meter radius from the proposed location does not exceed the property boundaries of Area B.

In addition to the above, a noise analysis will be completed prior to the construction of the Indoor Shooting Range to determine any further design requirements that may be needed to mitigate potential noise impacts to the surrounding communities of Area B.

Recreational Vehicle (RV) Park

Under this proposed project, for the duration of construction of the RV Park, short-term minor noise impacts associated with normal construction activities would be expected to occur. During operation, long-term minor noise impacts would be expected resulting from RVs entering and exiting the RV Park, air conditioning units, occasional generator operations and other noises associated with a park/picnic atmosphere. RV generators are designed to emit very little noise and would only operate during power outages. Each RV site would be supplied with a 50 amp hookup for electricity; therefore, the use of RV generators would occur infrequently.

Relocation of Seven High Frequency Antennas from Area A to Area B

Under this proposed project, for the duration of construction, short-term minor noise impacts associated with normal construction activities for the foundation for each of the seven antennas would be expected to occur. During operation, noise impacts would be negligible.

Area B Perimeter Fence

Under this proposed project, for the duration of construction, short-term minor noise impacts associated with normal construction activities would be expected to occur. During operation, noise impacts would be negligible.

Discussion of Combined Effects

Direct short-term and long-term minor adverse impacts would be expected. Direct short-term minor adverse impacts would be associated with the construction of the six proposed projects. Construction would only take place during daytime hours and not at night to adhere to local and state noise ordinances. The combined operation of the proposed facilities would increase automobile traffic on adjacent local roads during daytime hours (especially during the summer months on the weekends), which could potentially cause a minor increase in noise in the surrounding communities. The majority of Area B is surrounded by a forested buffer that has either been increased or enhanced by reforestation. This vegetated buffer would provide noise attenuation between the proposed project areas and off-post residential neighborhoods during the construction and operation of the six proposed projects. Special considerations for noise attenuation during the operation of the Indoor Shooting Range are also being implemented.

No Action Alternative

The No Action Alternative would not create additional impacts to current noise levels at Fort Detrick or the surrounding area.

5.12 HUMAN HEALTH AND SAFETY

18-Hole Golf Course

Minor adverse impacts may occur during both the construction and operation of the golf course. Potential impacts to the health and safety of construction workers would be minimized by adherence to accepted work standards and OSHA regulations, 29 CFR Part 1926, *Safety and Health Regulations for Construction*. Also, prior to construction of the 18-Hole Golf Course, RI investigations and remediation actions for the three areas of environmental concerns would need

to be completed in accordance with applicable federal and state regulations and approvals. Upon completion of the remedial actions, potential adverse impacts associated with human health and safety would be considered minor.

Golf course operations would require storage, use, and disposal of hazardous material and waste. Potential adverse impacts to human health and safety are expected to be minor through the adherence of FD REG 200-3, FD PAM 200-3a, and FD PAM 200-3b.

Paintball Fields

Minor adverse impacts associated with construction of the four Paintball Fields and support facilities would be expected. Adherence to applicable OSHA regulations would minimize potential adverse impact to workers.

A standard operating procedure (SOP) for operation of the four Paintball Fields would be developed to minimize potential adverse impacts to facility workers and participants. Additionally, a 20-foot high netting would be constructed at the northwest corner of Paintball Field 1 stop paintballs from entering the cemetery or reaching vehicles along Kemp Road.

Indoor Shooting Range

Minor adverse impacts associated with construction of the Indoor Shooting Range and support facilities would be expected. Adherence to applicable OSHA regulations would minimize potential adverse impact to workers.

Minor adverse impacts to human health and safety are expected with the operation of the Indoor Shooting Range. Adherence to the Navy Environmental Health Center Technical Manual NEHC-TM6290.99-10 Rev.1, *Indoor Firing Ranges Industrial Hygiene Technical Guide*, will assist in recognizing, evaluating and controlling safety and health hazards. Noise attenuating measures, such as, enclosing the facility, constructing a berm covered with trees around the entire facility, and limiting powder loads to 3-dram, would be implemented to reduce impacts to human health and safety. The facility would be an enclosed facility located in the center of Area B, which would be completely surrounded by a modified perimeter fence to decrease accessibility to the site.

Recreational Vehicle (RV) Park

Minor adverse impacts associated with construction of the RV Park and support facilities would be expected. Adherence to applicable OSHA regulations would minimize potential adverse impact to workers.

No impacts to human health and safety are expected with the operation of the RV Park.

Relocation of Seven High Frequency Antennas from Area A to Area B

Minor adverse impacts associated with relocation and construction of the seven high frequency antennas and support facilities would be expected. Adherence to applicable OSHA regulations would minimize potential adverse impact to workers.

Adherence to OSHA and the Federal Communications Commission (FCC) regulations and requirements, such as fencing around the antennas and marking with appropriate warning signs, would minimize potential adverse impacts associated with human health and safety with regard to exposure to radio frequency fields.

Area B Perimeter Fence

Minor adverse impacts associated with construction of the Indoor Shooting Range and support facilities would be expected. Adherence to applicable OSHA regulations would minimize potential adverse impact to workers.

Overall, beneficial impacts would be expected to human health and safety as a result of constructing the modified perimeter fence. The modified perimeter fence will decrease accessibility to Area B, which in turn, will further limit human safety risks associated with proposed and existing operations on Area B.

Discussion of Combined Effects

The construction of the all six projects would require soil disturbance for earth shaping, building foundations, roads, sidewalks, parking lots, and trenching for utility lines. Completion of RI investigations and remediation actions, as required by federal and state regulations, would be required prior to disturbing any soils located within an area of environmental concern for the area of proposed disturbance. Upon completion of the remedial actions, adverse impacts associated with human health and safety would not be considered significant.

No Action Alternative

No impacts to land use are expected under the No Action Alternative. The modifications to the perimeter fence would not be implemented; therefore, beneficial impacts associated with the improvement of security for Area B would not occur.

5.13 CUMULATIVE IMPACTS

A cumulative impact is defined as “the impact on the environment which results from the incremental impact of the action when added to other past, present, or reasonably foreseeable future action regardless of what agency (federal or non-federal) or person undertakes such other actions” (40 CFR 1508.7). This section goes on to note “such impacts can result from individually minor but collectively significant actions taking place over a period of time.” Cumulative impacts associated with implementation of the six proposed projects would include any impacts from other “actions” that would be incremental to the impacts from the implementation of the six proposed projects. Such impacts would include additional traffic, air emissions, vegetation removal, and soil disturbance for construction and operation of the proposed project.

In addition to the six proposed projects on Area B, numerous construction activities are planned on the installation over the next several years. Also, Frederick County, particularly the City of Frederick, is one of the fastest growing areas in Maryland. In the past five years, many residential communities have been constructed adjacent to Area B along Shookstown Road along

the southern boundary of Area B. Additionally, a new residential community is currently being constructed to the northeast of Area B along Rocky Springs Road. It is also reasonably foreseeable that residential development could occur on other land adjacent to Area B in the future.

Short-term, intermittent minor adverse cumulative impacts on air quality, noise, and traffic at Fort Detrick and the surrounding communities would occur if the construction were to occur simultaneously with the six proposed projects for Area B and other ongoing and planned projects on Area A and adjacent private properties. For instance, such activity could lead to a temporary increase in construction vehicles within Fort Detrick and surrounding areas.

As additional projects on Fort Detrick and adjacent private properties (i.e., residential development) occur, long-term minor adverse cumulative impacts could develop due to increased impervious surfaces, such as parking lots, roads, roofs, and sidewalks. Increased impervious surfaces lead to potential impacts associated with discharge of nonpoint source pollution into waterways. Examples of nonpoint source pollution include sedimentation, oil and grease, metals, nutrients, and bacteria. Also, increases in impervious surfaces can lead to rapid discharge of stormwater into waterways causing stream bank erosion and discharge of sediments.

To combat cumulative impacts associated with increased impervious surfaces, erosion, sedimentation, and stormwater controls would be used in accordance with FD REG 415-10 – Stormwater Management; Maryland Standards and Specifications for Soil Erosion and Sediment Control.; Maryland Soil Erosion and Sediment Control Regulations (COMAR 26.17.01); Maryland Stormwater Management Guidelines for State and Federal Projects; Maryland Stormwater Management Regulations (COMAR 26.17.02); and Maryland Stormwater Design Manual, Volumes I and II (COMAR 26.17.02.01-1). In addition, all clearing, grading and earth disturbance at Fort Detrick, as required under FD REG 415-10, have to implement properly designed, installed, and maintained erosion and sediment control practices (i.e., Best Management Practices (BMPs)) in accordance with the above guidelines and regulations.

Additionally, developments disturbing more than 5,000 SF are required to have, as an integral component of the design, a Stormwater Management Plan and Report developed and implemented consistent with the above guidelines and regulations. Examples of BMPs for stormwater management include ponds, wetlands, infiltration, filtration, open channels, or a combination thereof, could be used. Due to certain ecologic and climatic conditions and the Karst geology associated with Area B the most feasible options for stormwater management on Area B would include detention ponds, sand filtration and open vegetated channels.

The proposed change from agrifield land use to recreational land use on Area B would be consistent with the surrounding residential communities. The additional seven high frequency antennas in Area B do conflict with adjacent residential development; however, the existing tree buffers and the land on Area B planned for forestation would ensure aesthetic qualities for off-post residents. Furthermore, the existing forested lands and forestation areas would also reduce noise levels from the proposed recreational activities on Area B.

Long-term minor adverse cumulative impacts could be expected with regards to increase in utility service demand. Operations of the proposed projects would require water, wastewater,

and electrical services. The Fort Detrick potable water and wastewater collection systems may be used to provide potable water and to collect wastewater; however, an onsite sewage system (i.e., State permitted holding tank and septic system) could serve as an alternative for the disposal and treatment of wastewater. Table 5-3 compares the projected utility demand for Fort Detrick, which is based on installation-wide existing and projected use, and the utility requirements resulting from the operations of the proposed projects on Area B. The 1.5 million kWh per year that is required for the proposed projects would increase the installation's electricity requirements by 1.0 percent. The annual water consumption (4.1 mgy) and wastewater generation (5.3 mgy) would increase installation utility use by 0.8 percent for potable water and 1.8 percent for wastewater.

TABLE 5-3 – PROJECTED ANNUAL UTILITY REQUIREMENTS.

SERVICE	INSTALLATION FUTURE BASELINE	PROJECTED AREA B PROJECTS	INSTALLATION UTILITY INCREASE
Utility			
Electricity Consumption (kWh)	145,084,078	1,054,000	0.7%
Water Consumption (gallons [gal])	513,751,704	4,105,000	0.8%
Natural Gas Consumption (ccf)	5,783,745	N/A	N/A
Steam Consumption (lb)	560,378,000	N/A	N/A
Wastewater			
Sanitary (Processed gal)	295,528,367	5,336,000	1.8%
Potentially Contaminated (Processed gal)	12,829,200	N/A	N/A

Cumulative transportation adverse impacts associated with the operations of the proposed projects for Area B are expected to be long-term and minor due to the increased traffic associated with use of the proposed recreation activities. Intersections on Rosemont Avenue currently have traffic backups during peak traffic periods. The use of the recreation activities on Area B would be expected to increase vehicle use at the intersection of Rosemont Avenue and Shookstown Road. Improvements to Rosemont Avenue are currently being executed by the City of Frederick; however, and should improve the LOS at the intersection of Rosemont Avenue and Shookstown Road. Additionally, peak use of the recreation activities in Area B are likely to occur during the weekends, which would alleviate potential impacts during weekday peak traffic periods.

5.14 MITIGATION SUMMARY

Mitigation measures for the six proposed projects for Area B would be implemented to reduce, avoid, or compensate for most adverse impacts. Table 5-4 provides a summary of the proposed mitigation measures for each of the affected resources as discussed in this Section.

TABLE 5-4 – SUMMARY OF MITIGATION MEASURES

Affected Resource	Mitigation Measures
<i>Geology, Topography, and Soils</i>	<ul style="list-style-type: none"> • Implement soil and erosion and sediment control measures consistent with Fort Detrick and state regulations (e.g., appropriate BMPs). • Perform proper geotechnical and subsurface characterization to determine the location or potential development of sinkholes and/or depressions.
<i>Water Resources</i>	<ul style="list-style-type: none"> • Prepare and implement a stormwater management plan consistent with Fort Detrick and state regulations. • Implement soil and erosion and sediment control measures consistent with Fort Detrick and state regulations (e.g., appropriate BMPs). • Develop a Golf Course Management Plan that specifies proper application of turf management chemicals. • If needed, the design and operation of an onsite sewage disposal system should conform to state regulations.
<i>Biological Resources</i>	<ul style="list-style-type: none"> • If needed, a Forest Management Plan should be developed according to regulations required by the Maryland Forest Conservation Act. • Disturbed undeveloped areas following construction should be replanted using native vegetation. • Limit the removal of existing trees and shrubs.
<i>Cultural Resources</i>	<ul style="list-style-type: none"> • Avoid the historic lime kiln site and protect area during construction with a buffer.

Affected Resource	Mitigation Measures
<i>Hazardous Materials and Waste</i>	<ul style="list-style-type: none"> • Add the proposed projects to the ICP and the IPMP. • Store, use, and dispose of hazardous materials and wastes in accordance with applicable regulations (i.e., Fort Detrick 200-3 and 200-3a). • Develop an IPMP simultaneously with the Golf Course Management Plan. • Complete RIs for the areas of environmental concerns located in the proposed golf course area prior to golf course construction. Upon completion of RIs determine and implement appropriate remedial actions. Insure appropriate land restrictions according to remedial actions are taken. • The construction of the all six projects would require soil disturbance for earth shaping, building foundations, roads, sidewalks, parking lots, and trenching for utility lines. Completion of RI investigations and remediation actions, as required by federal and state regulations, would be required prior to disturbing any soils located within an area of environmental concern for the area of proposed disturbance. • Implement a management program for the collection and disposal of lead shot/particulates, clay pigeons, and brass casings at the proposed Indoor Shooting Range.
<i>Infrastructure</i>	<ul style="list-style-type: none"> • Install water-efficient control devices, such as low-flow showerheads, faucets, and toilets, in all new facilities • Install energy-efficient interior and exterior lighting fixtures and controls in all new facilities. Use EnergyStar energy efficiency devices in buildings. • Complete further studies to determine weather the replacement of the existing 100 ampere transmission line from Area A to Area B to meet projected electrical demands is necessary.
<i>Environmental Justice and Protection of Children</i>	<ul style="list-style-type: none"> • Secure construction vehicles and equipment when not in use. • Place barriers and “No Trespassing” signs around construction site.

Affected Resource	Mitigation Measures
<p><i>Noise</i></p>	<ul style="list-style-type: none"> • Fully enclose structure for small arms shooting inside the tent. • Place skeet shooting area inside the tent and enclose it on three sides and the top with heavy canvas material to attenuate noise and to prevent shotgun shot from leaving the designated area. Final design of skeet shooting area may consist of another material such as concrete blocks, wood, etc. • Surround tent by a 4- to 6-foot high berm planted with at least three rows of evergreen trees to reduce noise levels. • Use 3-dram equivalent powder load to reduce noise levels. • Complete noise analysis during facility feasibility studies to determine further design requirements to mitigate potential noise impacts.