Executive Summary

EXECUTIVE SUMMARY

ES.1.1 INTRODUCTION

This environmental impact statement (EIS) examines the potential for impacts to the environment as a result of the potential deployment of a land-based National Missile Defense (NMD) system.

The NMD Joint Program Office of the Ballistic Missile Defense Organization is responsible for developing and deploying the NMD system. In the year 2000, there will be a Department of Defense (DOD) Deployment Readiness Review to review the technical readiness of NMD elements. Thereafter, the United States Government will determine whether the threat, developed capability, and other pertinent factors justify deploying an operational NMD system.

The NMD system would be a fixed, land-based, non-nuclear missile defense system with a land- and space-based detection system capable of responding to limited strategic ballistic missile threats to the United States. The NMD system would consist of five elements:

- Battle Management, Command, Control, and Communications, which includes the Battle Management, Command and Control (BMC2), the communication lines, and the In-Flight Interceptor Communications System (IFICS) Data Terminal as subelements
- Ground-Based Interceptor (GBI)
- X-Band Radar (XBR)
- Upgraded Early Warning Radar (UEWR)
- Satellite detection systems

This EIS analyzes the land-based NMD elements. The satellite detection system, Defense Support Program Satellites, is an existing system that is being replaced by the Air Force independent of an NMD decision.

ES.1.2 PURPOSE AND NEED FOR THE PROPOSED ACTION

The proliferation of weapons of mass destruction and technology of long-range missiles is increasing the threat to our national security. The purpose of the NMD program is defense of the United States against a threat of a limited strategic ballistic missile attack.

ES.1.3 NO-ACTION ALTERNATIVE AND PROPOSED ACTION

This section describes the Proposed Action and the No-action Alternative. The No-action Alternative is not to deploy the NMD system. If the initial decision made is not to deploy, the NMD program would use the time to enhance the existing technologies of the various system elements. The NMD program would also have the option to add new elements if and as they are developed. For the potential sites being considered for NMD deployment, the No-action Alternative would be a continuation of activities currently occurring or planned at those locations.

With the Proposed Action, NMD elements and element locations would be selected from the range of locations studied in the EIS. The potential NMD element deployment locations would make maximum use of existing DOD land. The following paragraphs detail potential regions and locations that the United States Government would consider as possible sites for each NMD element (figure ES-1).

All of the sites analyzed in this EIS meet the siting criteria for the respective NMD elements. However, some sites may be determined to be preferable to others for operational, environmental, and other reasons. Mission conflicts have been identified at two sites, Cavalier Air Force Station (AFS) and the Yukon Training Area, making it less likely that either of these sites would be selected. However, if either of these sites is selected, then the mission conflict would be resolved at that time. All of the identified sites are fully analyzed in this EIS to ensure maximum flexibility in the decision process.

The main NMD elements considered for deployment include the GBI, BMC2, IFICS Data Terminal, XBR, UEWRs, and the fiber optic cable line required to link some of the NMD elements. A brief description of each element is provided below. Figure ES-2 shows how the NMD elements would work together to intercept an incoming ballistic missile.

The Preferred Alternative would be Deployment of an NMD system at one GBI site with up to 100 silos. If this alternative is selected, the preferred site location for the GBI and BMC2 would be Fort Greely, Alaska. Under this configuration the XBR would be at Eareckson Air Station (AS) (Shemya Island), Alaska. Under the preferred alternative, the NMD system would make use of the existing Early Warning Radars upgraded for NMD and the existing satellite detection systems that would be in place at the time of deployment. Since the IFICS Data Terminals locations have not been identified, no preferred location has been selected. Table ES-1 provides an overview of the site locations for the preferred alternative analyzed in this EIS.

Ground-Based Interceptor (GBI)

- Clear AFS, Alaska
- Fort Greely, Alaska
- Yukon Training Area (Fort Wainwright)/Eielson AFB, Alaska
- Grand Forks AFB, North Dakota
- Stanley R. Mickelsen Safeguard Complex, North Dakota
  - Missile Site Radar (MSR)

Battle Management, Command and Control (BMC2)

- Clear AFS, Alaska
- Fort Greely, Alaska
- Yukon Training Area (Fort Wainwright)/Eielson AFB, Alaska
- Grand Forks AFB, North Dakota
- Stanley R. Mickelsen Safeguard Complex, North Dakota
  - Missile Site Radar (MSR)

X-Band Radar (XBR)

- Eareckson AS, Alaska
- Stanley R. Mickelsen Safeguard Complex, North Dakota
  - Cavalier AFS
  - Missile Site Radar (MSR)
  - Remote Sprint Launch Site (RSL) 1
  - Remote Sprint Launch Site (RSL) 2
  - Remote Sprint Launch Site (RSL) 4

In-Flight Interceptor Communications System (IFICS)*

- Alaska
- North Dakota

Upgraded Early Warning Radar (UEWR)**

- Clear AFS, Alaska
- Beale AFB, California
- Cape Cod AFS, Massachusetts

EXPLANATION

*Note: Identification of potential IFICS locations is still in progress. Locations depicted are those regions under consideration. Other regions may be identified depending on system requirements.

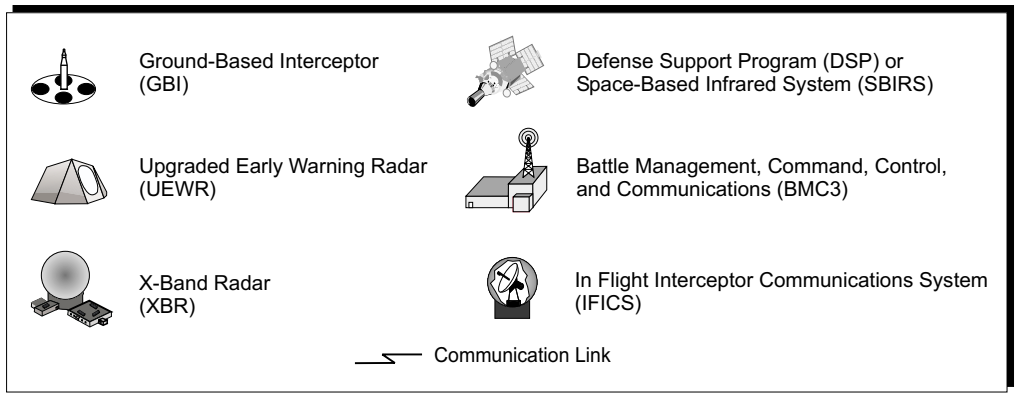
**Note: Identification of other potential locations outside of the United States is still in progress.

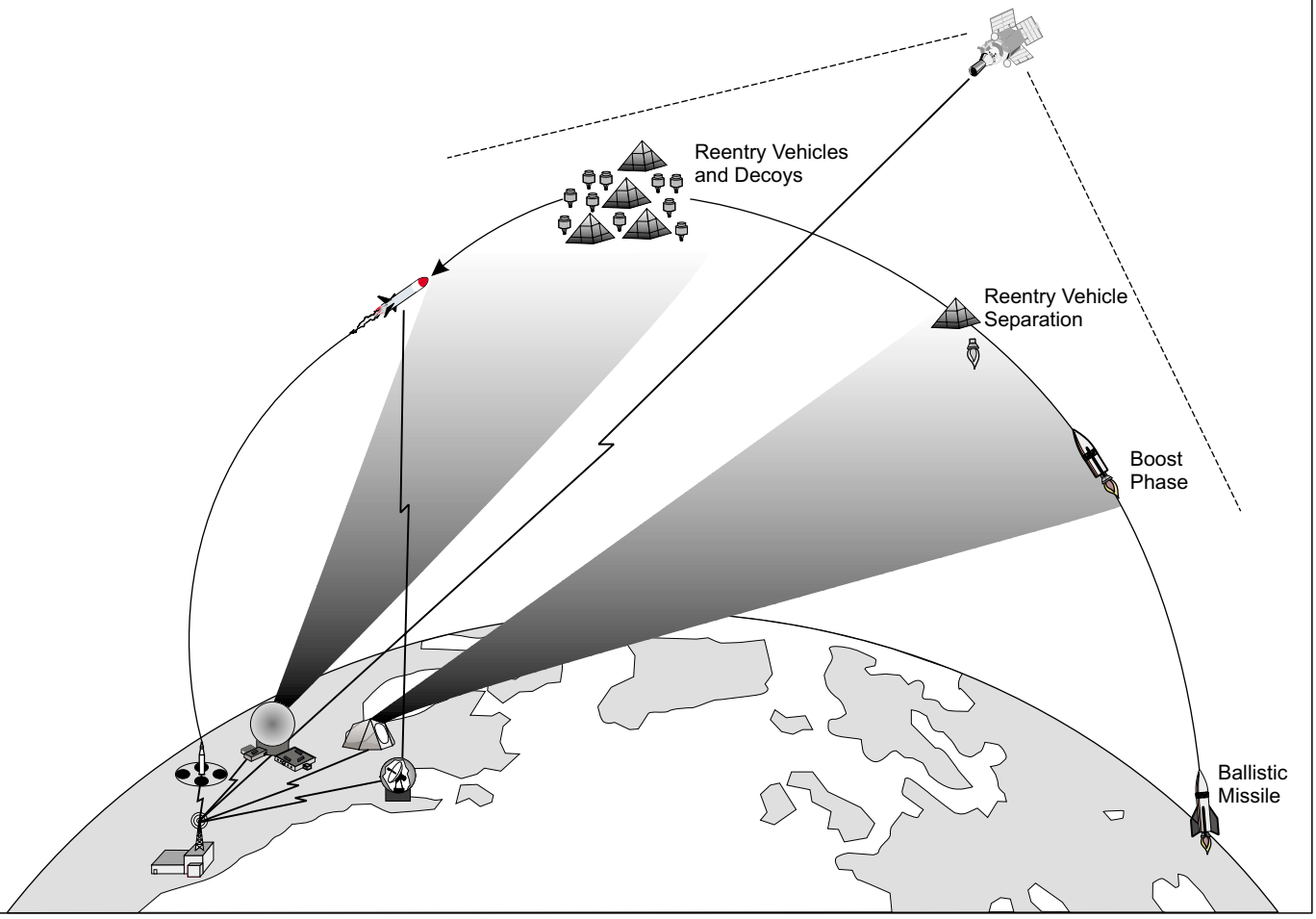
Not to Scale

NORTH

NMD Element Deployment Options

Figure ES-1





EXPLANATION

Land

Water

Note: Locations in this figure are for illustrative purposes only and are notional.

The NMD Concept of Operations

Figure ES-2

Table ES-1: NMD Deployment Preferred Alternative

GBI	BMC2	IFICS Data Terminal	XBR	UEWR	Space-Based Detection System
Preferred Alternative—1 GBI Site with up to 100 Silos					
Fort Greely, Alaska	Fort Greely, Alaska	Not Identified	Eareckson AS, Alaska	Beale AFB, California Cape Cod AFS, Massachusetts Clear AFS, Alaska	Defense Support Program/Space-Based Infrared System Satellites

Ground-Based Interceptor (GBI)

The GBI would remain in the underground launch silo until launch. Launches would occur only in defense of the United States from a ballistic missile attack. There would be no flight testing of the missiles at the NMD deployment site. The GBI site would contain launch silos and related support facilities. Under the Proposed Action, up to 100 GBI silos could be located at one of the locations shown in figure ES-1, or up to 100 silos could be deployed at both one site in Alaska and one site in North Dakota. When the GBI site becomes fully operational, the total site-related employment would be 250 to 360 direct jobs.

Battle Management Command and Control (BMC2)

The BMC2 is the "brains" of the NMD system. In the event of a launch against the United States, the NMD system would be controlled through the BMC2. The site location BMC2 subelement would be located with the NMD GBI element. BMC2 sites would require a total of approximately 30 personnel. A BMC2 site could be located at the locations shown in figure ES-1. Also, additional BMC2 facilities would be combined into the existing United States Space Command Communication and Control facilities at the Cheyenne Mountain AFS and Peterson Air Force Base (AFB), Colorado and Vandenberg AFB, California.

In-Flight Interceptor Communications System (IFICS) Data Terminal

The IFICS Data Terminal would be ground stations that provide communications links between the in-flight GBI and the BMC2. An IFICS Data Terminal would consist of a radio transmitter/receiver enclosed in a radome with an equipment shelter located adjacent to the transmitter and would require approximately 2 hectares (6 acres) of land or up to 7 hectares (17 acres) if two data terminals are required at one site. Approximately 14 IFICS Data Terminal sites could be required for the

NMD program. The operational requirements for the IFICS Data Terminal are still being identified. As such, the specific locations where the IFICS Data Terminal could be deployed have not yet been determined. Regions under study include Alaska and North Dakota. In addition, as the operational requirements are refined other regions may be identified. When possible, the IFICS Data Terminal would be located on or near existing DOD installations.

X-Band Radar (XBR)

The XBR would be a ground-based, multi-function radar. For NMD, it would perform tracking, discrimination, and kill assessments of incoming ballistic missile warheads. The XBR site would include a radar and associated support facilities. When the XBR site becomes fully operational, the total site-related employment would be approximately 105 direct jobs. Only one XBR would be deployed, and locations under consideration are shown in figure ES-1.

Upgraded Early Warning Radar (UEWR)

As part of the NMD system, there would be a requirement to upgrade the existing early warning radars at Clear AFS, Alaska, Beale AFB, California, and Cape Cod AFS, Massachusetts. These early warning radars, also referred to as "PAVE PAWS," are phased-array surveillance radars that are currently used to detect, track, and provide early warning of sea-launched ballistic missiles. They are also used to track satellites and space debris. Hardware and software modifications are planned for these existing radars in conjunction with the NMD system. For NMD, the upgrades would allow the acquisition, tracking, and classification of small objects near the horizon and provide data to other NMD elements using improved communications.

Fiber Optic Cable Lines/Utilities

Any deployment may require elements of the system to utilize existing fiber optic lines, power lines, and other utilities. Some existing lines and facilities used to support the deployed system may require modifications. Deployment of elements to some locations may require the acquisition of new rights-of-way and installation of new utility and fiber optic cable. Potential new land fiber optic cable line locations include North Dakota and Alaska and an oceanic fiber optic cable line along the Aleutian Islands, Alaska to Eareckson AS (Shemya Island), Alaska. In addition, redundant fiber optic cable lines may be required in some locations for security purposes.

ES.1.4 DECISION TO BE MADE

The decision to be made is whether to deploy an NMD system. A decision to deploy an NMD system would include the selection of deployment sites from among the alternatives considered in this EIS. This decision will be based on the analysis of the ballistic missile threat to the United States, technical maturity of the NMD system for deployment, operational effectiveness, affordability, strategic arms reduction objectives, and other factors including potential environmental impacts of deploying and operating the NMD system from the potential locations analyzed in this EIS. The EIS will provide the United States Government with the information necessary to properly account for the environmental impacts. At this time, a decision to commit to a program leading to deployment is not anticipated before mid-2000.

ES.1.5 SCOPE OF THE STUDY

This EIS analyzes the potential impacts of deployment and operation of the land-based NMD system. Under the Proposed Action, potential sites for each NMD element are evaluated as deployment options to be considered by the decisionmaker.

This EIS analyzes all of the deployment locations for the proposed GBI, BMC2, XBR, and UEWRs that have currently been identified in the United States. The operational requirements for the IFICS Data Terminal are still being identified. As such, the specific locations where the IFICS Data Terminal could be deployed have not yet been determined. Regions under study include Alaska and North Dakota. In addition, as the operational requirements are refined, other regions may be identified. Since specific sites have not been identified, a general programmatic description of the types of impacts that could be expected from deployment are included within this EIS. Once specific sites are identified, supplemental site-specific environmental analysis, as required, would be performed based on the initial analysis in this EIS. In addition, since not all of the sites have been finalized, the exact location of the fiber optic cable line is not known, but would be required around many of the NMD elements. Since the exact ground alignment of the fiber optic cable line has not been identified, a general programmatic description of the types of impacts that could be expected from the fiber optic cable line is included within this EIS. Once specific fiber optic cable line alignments are identified, supplemental site-specific environmental analysis, as required, would be performed based on the initial analysis in this EIS.

Operational (wartime) launches from the GBI site are not evaluated in this EIS. Missiles would not be test launched from the GBI deployment site.

Public Participation

The Notice of Intent to prepare an EIS for the deployment of the NMD program was published in the *Federal Register* on November 17, 1998. Notification of public scoping was also made through the local media as well as through letters to Federal, state, and local agencies and officials, interested groups and individuals, and American Indian Tribes and Alaska Native Organizations. A total of seven public scoping meetings in December 1998 were held in communities perceived to be affected by the NMD program. A total of 660 people attended these meetings. The main issues identified during the scoping process included:

- Airspace restrictions from XBR operation
- Construction and operation impacts on vegetation, wildlife, threatened and endangered species, wetlands, and fisheries
- Potential safety risks to the public from the transportation and operation of the GBI
- Electromagnetic radiation impacts to wildlife and the public
- Socioeconomic impacts and benefits from NMD deployment
- Construction and operation impacts on local water quality
- Increases in hazardous waste generation
- Increases in restricted public use around NMD deployment sites

The NMD Deployment Draft EIS public review and comment period began on October 1, 1999 with publication of the Notice of Availability in the *Federal Register*. This initiated the review period during which the public and interested agencies or organizations had the opportunity to review the Draft EIS and submit their comments. Copies of the Draft EIS were made available for review in local libraries in the areas affected and were provided to those who requested copies. Additionally, copies of the Draft EIS were provided to the appropriate Federal, state, and local agencies, and American Indian Tribes and Alaska Native Organizations. Comments on the Draft EIS were considered in the preparation of the Final EIS. Chapter 9 of the EIS contains a reproduction of all comments and responses to those comments. In addition to the Draft EIS review process, seven public hearings were held from October 26 through November 9, 1999 in the same locations as the public scoping meetings. A total of 679 people attended the public hearings.

ES.1.6 SUMMARY OF ENVIRONMENTAL IMPACTS

This section describes the potential environmental effects from implementing the No-action Alternative and the Proposed Action. The environment is analyzed in terms of 15 resource areas: air quality, airspace, biological resources, cultural resources, geology and soils,

hazardous materials and hazardous waste, health and safety, land use and aesthetics, noise, socioeconomics, transportation, utilities, water resources, environmental justice, and subsistence. Each resource area was addressed in the EIS at each location unless the No-action Alternative and Proposed Action activities at that location would not result in a foreseeable impact. The data presented in the EIS was commensurate with the importance of the potential impacts in order to provide the proper context for evaluating impacts. For some environmental resources, it was determined through initial evaluation that no impacts would occur at certain sites and these resources were only summarized within the EIS. Identified below by location are those resources areas from the 15 listed above where a potential environmental impact could occur from NMD deployment alternatives. If a resource from the 15 discussed above is not listed below, no environmental impacts would be anticipated from deployment. Tables ES-2 through ES-8 at the end of this executive summary provide an overview of the potential impacts from the NMD program for all locations and environmental resource areas for both the No-action Alternative and the Proposed Action.

ES.1.6.1 NO-ACTION ALTERNATIVE

Under the No-action Alternative, only the locations and environmental resources listed below were anticipated to have environmental impacts from continued ongoing operations. No impacts would be expected to the remaining locations and environmental resources.

Eielson AFB, Alaska—No-action Alternative

Land Use. There are currently no zoning conflicts with the adjoining areas of Eielson AFB; however, residential units in the community of Moose Creek are within the Clear and Approach Zones at the end of the runway, which is considered an incompatible land use.

Noise. The 1996 Air Installation Compatible Use Zone for Eielson AFB indicates that the community of Moose Creek, which has low density housing, falls within the day-night level equals 65 decibels A-weighted noise contour. Air Force land use recommendations suggest residential areas be located outside of the day-night level equals 65 decibels A-weighted contour. The local government, Eielson AFB, and the community of Moose Creek would be expected to use the Eielson AFB Air Installation Compatible Use Zone to assist in the land use planning and control process, and thus minimize future noise impacts.

Fort Greely, Alaska—No-action Alternative

Geology and Soils. Potential impacts of continued operations under the No-action Alternative were addressed in the *Alaska Army Lands Withdrawal Renewal Final Legislative Environmental Impact Statement*.

This EIS concluded that some soil damage from vehicles, weapons, and fires would occur. In addition, some soil erosion with net soil loss and water impacts would occur near training activities. Localized long-term damage to permafrost could occur as a result of ground training and fire damage from training. It was also determined that long-term training would result in potential cumulative impacts to soils.

Potential mitigation measures include conducting detailed soil surveys, refilling and leveling of foxholes, trench systems, tanks traps, hull-down positions, or explosive excavations; conducting vehicular stream crossings in designated areas only; and limiting cross-country vehicular travel. For permafrost protection, the Army would continue to follow existing management programs that identify and monitor permafrost areas so they can be restored when feasible.

Socioeconomics. Under the No-action Alternative, Fort Greely is being realigned. The reuse of the realigned portions of the base by the local community would represent the most important activity in terms of socioeconomic impacts. The preferred base reuse plan, characterized as Mixed Use Industrial with a correctional institution, is forecast to produce between 490 and 600 jobs. Clearly, the reuse plan proposes a positive future for Fort Greely. Assuming that the plan is fulfilled, a net loss of up to 150 jobs in the local community may still occur. The impact of this loss would likely lead to a fall in the local population and a decline in its wealth, as well as a fiscal loss for the community. If the reuse plan is not fulfilled, there would be a significant impact to the local population and economy.

Water Resources. Potential impacts to water resources were addressed in the *Alaska Army Lands Withdrawal Renewal Final Legislative Environmental Impact Statement*. That EIS concluded that off-road maneuvering, conducted in an area over a length of time, would result in increased runoff reaching the stream system in a shorter amount of time. The quantity of groundwater would not be impacted by ongoing activities; however, groundwater quality could be impacted by pollutant spills. The ongoing training maneuvers, if conducted repeatedly in the same area, could result in cumulative impacts to water resources.

Existing mitigation measures identified in the *Alaska Army Lands Withdrawal Renewal Final Legislative Environmental Impact Statement* require that certain environmental considerations be taken in planning, requesting, and operating ranges and training areas. The Integrated Training Area Management program would continue to be used to monitor and help to correct erosion and sedimentation problems. The Spill Prevention Control and Countermeasure Plan for Fort Greely documents methods used to prevent spills from reaching navigable waters and/or groundwater.

Yukon Training Area (Fort Wainwright), Alaska—No-action Alternative

Geology and Soils. Potential geology and soil impacts would be the same as described for Fort Greely.

Water Resources. Potential water resources impacts would be the same as described for Fort Greely.

ES.1.6.2 PROPOSED ACTION

Under the Proposed Action, only the locations and environmental resources listed below were anticipated to have environmental impacts from deployment of the NMD system. No impacts would be expected to the remaining locations and environmental resources. As noted in section 1.4, the Preferred Alternative would be for the GBI and BMC2 to be located at Fort Greely Alaska and the XBR at Eareckson AS, Alaska. The NMD system would make use of the existing early warning radars.

ES.1.6.2.1 Ground-Based Interceptor (GBI)

Clear AFS, Alaska—Ground-Based Interceptor

Biological Resources. Under the Proposed Action, no impacts would be expected to threatened or endangered species on Clear AFS. Construction activities could cause impacts to approximately 2.7 hectares (6.6 acres) of wetlands under the GBI Alternative Site A or 55 hectares (135 acres) under the Alternative B Site. These wetlands could potentially be affected by the project through filling, draining, trenching, and other general construction activities. Because wetlands generally provide wildlife habitat, any significant changes to these wetlands would likely result in subsequent impacts on wildlife of the area. Wetlands would be avoided to the extent practicable. Best Management Practices such as stabilizing fill slopes from erosion and the use of hay bales to filter sediment from storm water runoff would be implemented. Section 404 permits would be obtained if actual siting of the GBI field determines that wetlands would be affected and before any discharge of fill material. Compliance with the required wetland permits would also work to minimize impacts. Maintenance of wetland quality and value would be coordinated with applicable agencies. The permitting process would entail review of proposed activities and possible mitigations by all interested parties and applicable agencies.

Geology and Soils. Because of the well drained nature of the area soils, the presence of thaw unstable permafrost is not anticipated to be a problem. However, before design and construction, a comprehensive geotechnical investigation would be conducted to determine the exact nature of the soils in the area. In the unlikely event that thaw unstable permafrost were encountered during these investigations, the site layout

would be adjusted to minimize any impacts to these areas. These investigations would also determine the depth to groundwater. Depending on the depth, missile silos may be slightly elevated to avoid dewatering during construction and operations.

Health and Safety. Overall, there would be a minimal increase in health and safety risk from the deployment of the GBI at Clear AFS. With the safety procedures in place, the potential for a mishap during handling of the GBI is unlikely. In addition, there would be an emergency response team onsite, and the system has multiple safety systems built into the design such that multiple failures would be required for a liquid propellant leak to occur. However, in the unlikely event of a liquid propellant leak, there is the potential for health hazard from the gases to extend beyond the base boundary if the GBI Alternative Site B is selected for deployment at Clear AFS. Under the GBI Alternative A site the hazardous extent of the cloud would not exceed the base boundary or impact occupied areas on base. The hazardous extent of the cloud at Site B could exceed the Occupational Safety and Health Administration (OSHA) Permissible Exposure Limit up to 760 meters (2,493 feet) from the leak for nitrogen tetroxide. Exposure at these levels, given that most exposure would occur in open air conditions, would be mildly irritating to the eyes and nose and could include coughing. The most likely areas for this to occur would be within the GBI missile field and related facilities. The hazardous emission at Clear AFS would affect less than 122 hectares (302 acres) of land outside of the base boundary. This area is undeveloped, and there are no public structures or public roads. On-base this would include the administrative and housing areas. Overall, there would be minimal public health and safety risk.

Socioeconomics. It is anticipated that construction and operation of the GBI element at Clear AFS would provide an economic benefit to the surrounding regions. An average of 400 construction workers would be employed over a 5-year period, and operation of the system could employ as many as 255 workers.

The GBI construction program would generate additional income in the local economy in two ways. The first way is in the form of wages earned by the construction workers. A proportion of these wages would be spent locally on lodging, food, and transportation. Second, the construction program would include a proportion of locally purchased materials. These purchases, at local stores and from local suppliers, would generate additional income and jobs within the local economy. The construction cost of the GBI and its support facilities at this location would be approximately $611 million over a 5-year period, or an average of $122 million per year. It is expected that the construction would result in indirect local expenditures of $60 million per year for 5 years and would support an annual average of 600 non-contract jobs per year. While some of these jobs might be created in the communities of Denali

Borough, the majority would be in the main urban centers where much of the expenditure would be made, such as Fairbanks and Anchorage.

The 255 personnel required to carry out the operational phase would generate at least $7.0 million of direct income per year. Although not all of this would be spent locally, it would be expected that the benefit of this income in the local community would have a multiplied effect. Using current economic impact data for Clear AFS, it is estimated that approximately 77 jobs would be generated indirectly by the operational phase of the action. The majority of these jobs would be created in Fairbanks, the region's service center and only significant outlet for retail spending.

Fort Greely, Alaska—Ground-Based Interceptor

Health and Safety. As discussed above for Clear AFS, the potential for a GBI mishap is remote. However, in the unlikely event of a liquid propellant leak, there is the potential for health hazard from the gases to extend beyond the base boundary. The hazardous extent of the cloud could exceed the OSHA Permissible Exposure Limit up to 760 meters (2,493 feet) from the leak for nitrogen tetroxide. Exposure at these levels, given that most public exposure would occur in open air conditions, would be mildly irritating to the eyes and nose and could include coughing. The most likely areas for this to occur would be within the GBI missile field and related facilities. The hazardous emission at Fort Greely would only affect less than 14 hectares (35 acres) of land outside of the base boundary. This area is undeveloped, and there are no public structures or public roads. The hazardous emissions would not affect the Fort Greely cantonment area. Overall, there would be minimal public health and safety risk.

Socioeconomics. It is anticipated that construction and operation of the GBI element at Fort Greely would provide an economic benefit to the surrounding regions. An average of 400 construction workers would be employed over a 5-year period, and operation of the system could employ as many as 360 workers.

The GBI construction program would generate additional income in the local economy in two ways. The first way is in the form of wages earned by the construction workers. A proportion of these wages would be spent locally on lodging, food, and transportation. Second, the construction program would include a proportion of locally purchased materials. These purchases, at local stores and from local suppliers, would generate additional income and jobs within the local economy. The construction cost of the GBI and its support facilities at this location would be approximately $626 million over a 5-year period, or an average of $125 million per year. It is expected that the construction would result in indirect local expenditures of $62 million per year for 5 years

and would support an annual average of 620 non-contract jobs per year. While some of these jobs might be created in the communities surrounding Fort Greely, the majority would be in the main urban centers where much of the expenditure would be made, such as Fairbanks and Anchorage.

The 360 personnel required to carry out the operational phase would generate at least $9.7 million of direct income per year. Although not all of this would be spent locally, it would be expected that the benefit of this income in the local community would have a multiplied effect. Using current economic impact data for Fort Greely, it is estimated that approximately 108 jobs would be generated indirectly by the operational phase of the action. The majority of these jobs would be created in Fairbanks, the region's service center and only significant outlet for retail spending. However, this economic gain at Fort Greely would only offset the loss of jobs at the base as a result of the 1995 Base Realignment and Closure program. A base reuse plan was published in October 1998. The GBI at this site would be compatible with the plan and would, in fact, provide more jobs at Fort Greely than the plan forecasts for its military component. While not replacing all the jobs lost to Fort Greely as a result of the realignment, the GBI would be a considerable catalyst for the plan and would contribute substantially to its chances of success.

Yukon Training Area (Fort Wainwright)/Eielson AFB, Alaska—Ground-Based Interceptor

Biological Resources. Under the Proposed Action, no impacts would be expected to threatened or endangered species on the Yukon Training Area/Eielson AFB. Construction activities could cause impacts to approximately 46 hectares (113 acres) of wetlands on the Yukon Training Area considered as having low-value in a recent Alaska Corps of Engineers survey. Potential impacts to these wetlands and mitigation measures would be the same as described above for Clear AFS.

Cultural Resources. Site FAI 157 is located approximately 262 meters (860 feet) west of the westernmost boundary of the NMD GBI deployment site. Previous recommendations regarding this site indicate that if future activities in the area pose a potential threat to the site, additional studies should be undertaken. If avoidance of this site is not feasible during the conduct of NMD activities, adverse effects can be reduced to non-adverse levels through mitigation measures such as data recovery using appropriate archaeological practices.

Building 3425 (a warehouse) may be potentially eligible for listing in the National Register of Historic Places and could be affected by modifications from the NMD program. Appropriate mitigation measures would be developed in consultation with the Alaska SHPO and would be conducted in accordance with 36 Code of Federal Regulations 800.

Standard mitigation measures for adverse effects on historic buildings and structures include recordation. Recordation can be accomplished in a number of ways, among them documentation using the guidance provided by the Historic American Buildings Survey/Historic American Engineering Record division of the National Park Service.

Geology and Soils. Moderate impact is anticipated to the geology and soils at Yukon Training Area as a result of the Proposed Action. Construction of the GBI and support facilities would require disturbing approximately 243 hectares (600 acres) at the GBI site for grubbing and grading preparation. The relatively thick mantle of silt at the site is characterized as having moderate to very severe susceptibility to erosion, especially on steeper slopes. Best Management Practices would be used to reduce the potential for soil erosion at the GBI site. Once construction is complete and vegetation is replaced, there should be little soil erosion from operation of the site. Geotechnical investigations at the proposed site indicate the presence of permafrost on north facing slopes, which is typical for areas of discontinuous permafrost. Thawing of permafrost areas could result in subsidence, erosion, and gully formation. The thawing process could also affect water quality by increasing suspended sediment values if there is soil movement from the thawed area to a water body. To minimize impacts to permafrost during site design, permafrost areas would be avoided if possible.

Socioeconomics. Potential economic benefits from GBI deployment in the communities around the Yukon Training Area/Eielson AFB would be similar to those described for Clear AFS above.

Grand Forks AFB, North Dakota—Ground-Based Interceptor

Biological Resources. Under the Proposed Action, no impacts would be expected to threatened or endangered species on Grand Forks AFB. Construction activities associated with the Ordnance Training - 5 (OT-5) area alternative could cause impacts to approximately 5 hectares (12 acres) of wetlands. Potential impacts to these wetlands and mitigation measures would be the same as described above for Clear AFS.

Geology and Soils. The primary soil management issue is short-term wind erosion during ground-disturbing activities. Over the 2-year ground-disturbing period, Best Management Practices to minimize fugitive dust would be implemented. Once construction is complete and vegetation is replaced, there should be little soil erosion from operation of the site.

Health and Safety. As discussed above for Clear AFS, the potential for a GBI mishap is remote. However, in the unlikely event of a liquid propellant leak there is the potential for health hazard from the gases to extend beyond the base boundary from the only two areas on the base that can support GBI deployment. The hazardous emission at the Grand

Forks Weapons Storage Area GBI deployment alternative could exceed the OSHA Permissible Exposure Limit up to 107 hectares (264 acres) off-base. Exposure at these levels, given that most exposure would occur in open air conditions, would be mildly irritating to the eyes and nose and could include coughing. This area includes open land, three commercial buildings, two churches, one residential unit, and portions of U.S. Highway 2. A spill of the liquid propellant could affect these public facilities. If a spill were to occur, all potential hazard areas would be evacuated by emergency response personnel. On-base, the hazardous emission area from a spill of liquid propellant could include the family housing, administrative, and flightline areas.

For the OT-5 GBI deployment alternative at Grand Forks AFB, up to 306 hectares (757 acres) could be affected off-base from a liquid propellant spill. This area has one residential unit with the remainder of the area open farm land; any spill would require a search of the area so any persons present could be evacuated from the open farm land and the one residential unit. On-base the hazardous emission area from a spill of liquid propellant would include the alert apron area, which would also be evacuated if a spill occurs. Overall, given the limited buffer to occupied areas from both on-base and off-base areas, there is a greater health risk to the public from GBI operations at Grand Forks AFB than other GBI deployment sites.

Socioeconomics. It is anticipated that construction and operation of the GBI element at Grand Forks AFB would provide an economic benefit to the surrounding regions. For construction, an average of 250 construction workers would be employed over a 5-year period, and operation of the system could employ as many as 255 workers.

The GBI construction program would generate additional income in the local economy in two ways. The first way is in the form of wages earned by the construction workers. A proportion of these wages would be spent locally on lodging, food, and transportation. Second, the construction program would include a proportion of locally purchased materials. These purchases, at local stores and from local suppliers, would generate additional income and jobs within the local economy. The construction cost of the GBI and its support facilities at this location would be approximately $312 million over a 5-year period, or an average of $62 million per year. It is expected that the construction could result in indirect local expenditures of $30 million per year for 5 years and would support 300 indirect related jobs in the surrounding community per year.

The 255 personnel required to carry out the operational phase would generate at least $6.7 million of direct income per year. Although not all of this would be spent locally, it would be expected that the benefit of this income in the local community would have a multiplied effect. Using current economic impact data for Grand Forks AFB, it is estimated

that approximately 72 jobs would be generated indirectly by the operational phase of the action.

Missile Site Radar, North Dakota—Ground-Based Interceptor

Biological Resources. Under the Proposed Action, no impacts would be expected to vegetation, wildlife, or threatened or endangered species on the Missile Site Radar. Construction activities could cause impacts to Roaring Nancy Creek, which is considered a wetland, through project-related surface runoff. Appropriate storm water permitting would minimize potential soil erosion impacts to this area. If required, the wetland permitting process would recommend potential mitigation measures.

Cultural Resources. Deployment of the GBI at this location would require the demolition of some facilities eligible for listing on the National Register of Historic Places, which would constitute an adverse impact. However, any potential impact to these facilities has been mitigated through the preparation of a Historic American Engineering Record that was approved and accepted by the National Park Service and reviewed by the North Dakota SHPO.

Geology and Soils. Potential impacts would be similar to those described above for Grand Forks AFB.

Health and Safety. As discussed above for Clear AFS, the potential for a GBI mishap is remote. However, in the unlikely event of a liquid propellant leak, there is the potential for health hazard from the gases to extend beyond the base boundary. The hazardous emission at the Missile Site Radar could exceed the OSHA Permissible Exposure Limit for a distance of up to 225 hectares (557 acres) off-base. Exposure at these levels, given that most public exposure would occur in open air conditions, would be mildly irritating to the eyes and nose and could include coughing. Most of this area is open or farmland; however, there is a commercial and an unoccupied farm building within this area. A spill of the liquid propellant could affect these public facilities. If a spill were to occur, this area would be evacuated by emergency response personnel.

Socioeconomics. It is anticipated that construction and operation of the GBI element at the Missile Site Radar would provide an economic benefit to the surrounding regions. For construction, an average of 350 construction workers would be employed over a 5-year period, and operation of the system could employ as many as 360 workers.

The GBI construction program would generate additional income in the local economy in two ways. The first way is in the form of wages earned by the construction workers. A proportion of these wages would be spent locally on lodging, food, and transportation. Second, the construction program would include a proportion of locally purchased materials. These purchases, at local stores and from local suppliers, would generate

additional income and jobs within the local economy. The construction cost of the GBI and its support facilities at this location would be approximately $364 million over a 5-year period, or an average of $73 million per year. It is expected that the construction could result in indirect local expenditures of $36 million per year for 5 years and would support 360 indirect related jobs in the surrounding community per year.

The operational phase of the GBI deployment could employ as many as 360 personnel. The reason for the additional personnel at this location is to provide the support base function that already exists at Grand Forks AFB. These personnel would generate at least $9.1 million of direct income per year. It is estimated that approximately 100 jobs would be generated indirectly by the operational phase of the action that would provide an economic benefit to the local communities.

ES.1.6.2.2 Battle Management Command and Control (BMC2)

Clear AFS, Alaska—Battle Management Command and Control

Deployment of the BMC2 at Clear AFS would likely occur within the GBI deployment area, and construction would occur during the same timeframe. Potential impacts and mitigation measures for BMC2 deployment for biological resources and geology and soils would be similar to those described above for GBI deployment. No other impacts from BMC2 deployment would be anticipated.

Fort Greely, Alaska—Battle Management Command and Control

Deployment of the BMC2 at Fort Greely would likely occur within the GBI deployment area, and construction would occur during the same timeframe. Potential impacts and mitigation measures for BMC2 deployment would be similar to those described above for GBI deployment. No other impacts from BMC2 deployment would be anticipated.

Yukon Training Area (Fort Wainwright)/Eielson AFB, Alaska—Battle Management Command and Control

Deployment of the BMC2 at the Yukon Training Area/Eielson AFB would likely occur within the GBI deployment area, and construction would occur during the same timeframe. Potential impacts and mitigation measures for BMC2 deployment for biological resources, cultural resources, and geology and soils would be similar to those described above for GBI deployment. No other impacts from BMC2 deployment would be anticipated.

Grand Forks AFB, North Dakota—Battle Management Command and Control

Geology and Soils. Potential impacts to geology and soils from BMC2 deployment would be similar to those described above for GBI

deployment at Grand Forks AFB. No other impacts from BMC2 deployment would be anticipated.

Missile Site Radar, North Dakota—Battle Management Command and Control

Deployment of the BMC2 at the Missile Site Radar would likely occur within the GBI deployment area, and construction would occur during the same timeframe. Potential impacts and mitigation measures for BMC2 deployment for biological resources, cultural resources, and geology and soils would be similar to those described above for GBI deployment. No other impacts from BMC2 deployment would be anticipated.

ES.1.6.2.3 In-Flight Interceptor Communications System (IFICS) Data Terminal

It is expected that approximately 14 IFICS Data Terminal sites could be required for NMD deployment. The operational requirements for the IFICS Data Terminal are still being identified. As such, the specific locations where the IFICS Data Terminal could be deployed have not yet been determined. Regions under study include Alaska and North Dakota. In addition, as the operational requirements are refined, other regions may be identified. It is anticipated that DOD installations would be used to deploy IFICS Data Terminals because of the security and maintenance infrastructure they could provide; however, if no DOD installations are within the potential performance region required for an IFICS Data Terminal to operate, then other land would be investigated. Since specific sites have not been identified, provided below is a general description of the types of impacts that could be expected from deployment of an IFICS Data Terminal. Once specific sites are identified, supplemental site-specific environmental analysis, as required, would be performed based on the initial analysis in this EIS.

Overall, it is not expected that deployment of an IFICS Data Terminal would result in impacts to airspace, socioeconomics, transportation, or utilities. Construction and operation of the site would result in increased air emissions, but given the small amounts of emissions, no impact to air quality would be expected. During the siting process, sensitive biological and cultural resource areas would be avoided if possible, thus resulting in no adverse impacts to these resources. Given the limited amount of disturbance required for this site (7 hectares [17 acres]), minimal impacts to geology and soils, land use, and water resources would be expected. The site would require the use of minimal hazardous materials and would generate minimal hazardous waste, all of which would be handled in accordance with appropriate regulations. There are no health and safety issues related to the operation of the IFICS Data Terminal.

The new IFICS Data Terminal facility would be approximately 7 meters (20 feet) tall. Visual impacts could occur if the facilities were within

views of medium to high sensitivity public use areas and travel routes. Since the electrical generator required for the site would be enclosed within a shelter, minimal noise impacts would be expected. Because no adverse human health and environmental impacts would be expected from construction and operation, no environmental justice concerns have been identified. Given the small area required for deployment, it is not expected that construction or operation would affect subsistence resources in the State of Alaska if the IFICS Data Terminal is deployed in this state.

ES.1.6.2.4 X-Band Radar (XBR)

Eareckson AS, Alaska—X-Band Radar

Airspace. As a result of the deployment of the XBR at Eareckson AS, a radio frequency radiation area notice would be published on the appropriate aeronautical charts, notifying aircraft of 6.7-kilometer (3.6-nautical-mile) radius high energy radiation area around the proposed XBR radar site. The establishment of the high energy radiation area would not impose any flight restriction requirements; consequently, there would be no impacts to controlled and uncontrolled airspace, special use airspace, military training routes, en route airways and jet routes, airfields and airports, and air navigation and communications equipment in the region of influence.

In addition to charting the high energy radiation area notice on aeronautical charts, information of the high energy radiation area would be published in the Airport Facility section of *Supplement Alaska*, and local Notices to Airmen would be issued. Additionally, flight service personnel would brief pilots flying through the area about the high energy radiation area.

Other possible mitigation measures for further reducing the potential for airspace use conflicts include installation of a new airport surveillance radar to be used jointly with the Federal Aviation Administration's ATC radar system, or an embedded tracker that would provide a secondary function within the XBR to detect and locate aircraft within the high energy radiation area. Either system would trigger software modifications that would inhibit XBR radar transmissions from illuminating the aircraft.

Biological Resources. An initial study on the location of the threatened Aleutian Canada goose feeding areas was conducted as part of a Management Action Plan for Eareckson AS. This study identified the location of feeding and resting areas on the island. In 1999, the Air Force began a 3-year study to further determine the goose population during spring (mid April through mid June) and fall migrations (mid August through mid October) when the species is found on the island. Additional vegetation surveys to be conducted in 2000 will further refine

island populations and prime feeding areas. The studies are being conducted by the Air Force along with the U.S. Fish and Wildlife Service (USFWS) to assist in a bird aircraft strike hazard assessment. The purpose of the assessment is to minimize the potential safety hazard to aircraft from a bird strike during flight operations on Eareckson AS. The USFWS is allowing the Air Force to maintain vegetation on the island to minimize use by the Aleutian Canada goose. NMD related construction activities including equipment noise and limited blasting of quarry material and resulting new facilities could affect feeding and resting areas on the island. However, in discussions with the USFWS Alaska Maritime National Wildlife Refuge, it was concluded that NMD activities would not impact areas considered as critical habitat for the Aleutian Canada goose. Shemya Island is not considered critical habitat because of the need to minimize the bird strike hazard to aircraft and the existence of the Artic fox on the island. Additionally, the goose is in the final steps of being delisted, which is expected by the end of July 2000, prior to the start of NMD construction activities. If the Aleutian Canada goose is not delisted, additional consultation with the USFWS would be conducted (Boone, 2000—Personal communication with David Hasley, USASMDC, regarding the Aleutian Canada goose.)

Construction activities could cause impacts to approximately 12 hectares (30 acres) of wetlands. These wetlands could potentially be affected by the project through filling, draining, trenching, and other general construction activities. Because wetlands generally provide wildlife habitat, any significant changes to these wetlands would likely result in subsequent impacts on wildlife of the area. Wetlands would be avoided to the extent practicable. Best Management Practices such as stabilizing fill slopes from erosion and the use of sand bags to filter sediment from storm water runoff would be implemented. Section 404 permits will be obtained if actual siting determines that wetlands would be affected and before any discharge of fill material. Compliance with the required wetland permits would also work to minimize impacts. Maintenance of wetland quality and value would be coordinated with applicable agencies. The permitting process would entail review of proposed activities and possible mitigations by all interested parties and applicable agencies. Initial discussions with the USFWS, the land owner on Shemya, have indicated that there is no appropriate area on Shemya to mitigate potential impacts to wetlands. Therefore, the USFWS has initially proposed mitigation measures on other Aleutian Islands as follows: reintroduce the Everman's Rock Ptarmigan to Agattu from Attu, and study population and distribution of cormorants in the Near Islands.

Geology and Soils. Minor to moderate impacts are anticipated to the geology and soils at Eareckson AS as a result of the Proposed Action. Site excavations would expose underlying loam soils to potential erosion and would also create spoils of organic rich materials, which would have to be designed for alternative uses. Best Management Practices would

be used to reduce the potential for short-term soil erosion during construction. Various measures may be recommended to reduce water erosion of slopes, partially graded streets, and pads. Alternative recommendations may include minimizing the amount of area exposed during grubbing; using soil stabilizers to reduce fugitive dust; use of sandbags for diverting flow; creating sediment basins to control flow; and revegetating slopes and open areas as soon as possible to enhance long-term stability.

Health and Safety. Deployment of the XBR would not result in any risk to human health. Electromagnetic radiation levels would be below prescribed health based standards at the 150-meter (492-foot) controlled area boundary for the site. There is the potential safety risk to aircraft airborne systems and fly-by-wire aircraft out to 6.7 kilometers (3.6 nautical miles) from the deployment site. However, potential safety risks would be minimized through the establishment of a high energy radiation area warning on the appropriate aeronautical charts to inform pilots of the potential electromagnetic interference hazard to certain aircraft. In addition, there would be coordination with Federal Aviation Administration air traffic controllers.

Cavalier AFS, North Dakota—X-Band Radar

Airspace. As a result of the deployment of the XBR at Cavalier AFS, a radio frequency radiation area notice would be published on the appropriate aeronautical charts, notifying aircraft of 6.7-kilometer (3.6-nautical-mile) radius high energy radiation area around the proposed XBR radar site. The establishment of the high energy radiation area would not impose any flight restriction requirements; consequently, there would be no impacts to controlled and uncontrolled airspace, special use airspace, military training routes, en route airways and jet routes, airfields and airports, and air navigation and communications equipment in the region of influence.

In addition to charting the high energy radiation area notice on aeronautical charts, information of the high energy radiation area would be published in the Airport Facilities Directory and local Notices to Airmen would be issued. Additionally, flight service personnel would brief pilots flying through the area about the high energy radiation area.

Other possible mitigation measures for further reducing the potential for airspace use conflicts include the installation of a Federal Aviation Administration airport surveillance radar and its associated beacon, or the use of an embedded tracker that would provide a secondary function within the XBR, to detect and locate aircraft within the high energy radiation area. Either system would trigger software modifications that would inhibit XBR radar transmissions from illuminating the aircraft.

Cultural Resources. Deployment of the XBR at this location would require the demolition of the Perimeter Acquisition Radar, which is eligible for listing on the National Register of Historic Places, and would constitute an adverse impact. However, any potential impact to this facility has been mitigated through the preparation of a Historic American Engineering Record that was approved and accepted by the National Park Service and reviewed by the North Dakota SHPO.

Geology and Soils. The primary soil management issue is short-term wind erosion during ground-disturbing activities. Over the 2-year ground-disturbing period, Best Management Practices to minimize fugitive dust would be implemented. Once construction is complete and vegetation is replaced, there should be little soil erosion from operation of the site.

Health and Safety. Potential health and safety impacts for an XBR deployment at Cavalier AFS would be the same as described above for an XBR deployment at Eareckson AS.

Socioeconomics. It is anticipated that construction of the XBR element at Cavalier AFS would provide an economic benefit to the surrounding region. For construction, an average of 230 construction workers would be employed over a 3-year period, and operation of the system could employ as many as 105 workers.

The XBR construction program would generate additional income in the local economy in two ways. The first way is in the form of wages earned by the construction workers. A proportion of these wages would be spent locally on lodging, food, and transportation. Second, the construction program would include a proportion of locally purchased materials. These purchases, at local stores and from local suppliers, would generate additional income and jobs within the local economy. The construction cost of the XBR and its support facilities would be approximately $50 million over a 3-year period, or an average of $17 million per year. It is expected that the construction could result in indirect local expenditures of $8 million per year for 3 years and would support 80 indirect related jobs in the surrounding community per year.

The economic benefit from the operational phase of the XBR at Cavalier AFS would be offset by the closure of the existing Air Force mission at this site if NMD is implemented; therefore, the economic impacts on the surrounding area would be similar to current conditions, thus resulting in no change in the regional economic condition.

Missile Site Radar, North Dakota—X-Band Radar

Airspace. Potential airspace impacts would be the same as described above for an XBR deployment at Cavalier AFS.

Biological Resources. Under the Proposed Action, no adverse impacts would be expected to vegetation, wildlife, or threatened or endangered species on the Missile Site Radar. Construction activities could cause impacts to Roaring Nancy Creek, which is considered a wetland through project related surface runoff. Appropriate storm water permitting would minimize potential soil erosion impacts to this area. If required, the wetland permitting process would recommend potential mitigation measures.

Cultural Resources. Deployment of the XBR at this location would require the demolition of some facilities eligible for listing on the National Register of Historic Places which would constitute an adverse impact. However, any potential impact to these facilities has been mitigated through the preparation of a Historic American Engineering Record that was approved and accepted by the National Park Service and reviewed by the North Dakota SHPO.

Geology and Soils. Potential impacts to and mitigation measures for geology and soils at the Missile Site Radar for XBR deployment would be the same as described above for Cavalier AFS for XBR deployment.

Health and Safety. Potential health and safety impacts for an XBR deployment at the Missile Site Radar would be the same as described above for an XBR deployment at Eareckson AS.

Socioeconomics. It is anticipated that construction and operation of the XBR element at the Missile Site Radar would provide an economic benefit to the surrounding region. For construction, an average of 230 construction workers would be employed over a 3-year period, and operation of the system could employ as many as 105 workers.

The XBR construction program would generate additional income in the local economy in two ways. The first way is in the form of wages earned by the construction workers. A proportion of these wages would be spent locally on lodging, food, and transportation. Second, the construction program would include a proportion of locally purchased materials. These purchases, at local stores and from local suppliers, would generate additional income and jobs within the local economy. The construction cost of the XBR and its support facilities would be approximately $71 million over a 3-year period, or an average of $24 million per year. It is expected that the construction could result in indirect local expenditures of $12 million per year for 3 years and would support 120 indirect related jobs in the surrounding community per year.

The 105 personnel required to carry out the operational phase would generate at least $2.7 million of direct income per year. Although not all of this would be spent locally, it would be expected that the benefit of this income in the local community would have a multiplied effect. Using

current economic impact data, it is estimated that approximately 30 jobs would be generated indirectly by the operational phase of the action.

Remote Sprint Launch Site 1, North Dakota—X-Band Radar

Airspace. Potential airspace impacts would be the same as described above for an XBR deployment at Cavalier AFS.

Cultural Resources. Potential impacts to and mitigation measures for cultural resources at Remote Sprint Launch Site 1 for XBR deployment would be the same as described above for the Missile Site Radar for XBR deployment.

Geology and Soils. Potential impacts to and mitigation measures for geology and soils at Remote Sprint Launch Site 1 for XBR deployment would be the same as described above for Cavalier AFS for XBR deployment.

Health and Safety. Potential health and safety impacts for an XBR deployment at Remote Sprint Launch Site 1 would be the same as described above for an XBR deployment at Eareckson AS.

Socioeconomics. Potential economic benefits from XBR deployment in the communities around the Remote Sprint Launch Site 1 would be similar to those described for the Missile Site Radar.

Remote Sprint Launch Site 2, North Dakota—X-Band Radar

Potential impacts for XBR deployment at Remote Sprint Launch Site 2 would be similar to that described above for Remote Sprint Launch 1.

Remote Sprint Launch Site 4, North Dakota—X-Band Radar

Potential impacts for XBR deployment at Remote Sprint Launch Site 4 would be similar to that described above for Remote Sprint Launch 1.

ES.1.6.2.5 Upgraded Early Warning Radar (UEWR)

Human exposure to radio frequency emissions was estimated by calculations of the highest possible radio frequency power density that could be produced at ground level by the radar in publicly accessible areas. These calculations included assumptions about the operation of the radar to determine the maximum exposure potential. The results of these calculations were compared to the most applicable criteria, the American National Standards Institute/Institute of Electrical and Electronic Engineers Standard. The proposed upgrades would not change the radio frequency levels in the surrounding human environment from existing levels. The proposed upgrades also do not involve changes to the physical facilities that could increase the power or the proportion

of time that the radar is operating in each duty cycle. The public exposure to radio frequency radiation from the UEWRs over a 30-minute averaging period would be similar to that from the existing early warning radars. The radio frequency levels would still be below the recommended exposure limits. The Air Force is in the process of preparing an EIS to address modernization, maintenance, and sustainment of operations of the early warning radars.

ES.1.6.2.6 Fiber Optic Cable Line

Alaska—Fiber Optic Cable Line

Biological Resources. Because the project primarily involves laying the cable, with little activity later, there are not expected to be any long-term impacts to the marine biota, fishes, or marine birds.

Both short-term and long-term effects could occur to fisheries. The short-term effects would result from direct interference between the cable laying operation and fishing activities in the immediate vicinity. The locations of the ship, cable, and plow may all conflict with fishing activities, such as long line fishing gear and traps. These interference effects are likely to be of short duration, and in a very limited area compared to the vast areas nearby that would not be affected. Long-term impacts to fisheries are expected to be minimal. The fiber optic cable line would be buried beneath the seabed at depths where fishing equipment would be likely to come in contact with it, thereby reducing the potential for equipment to be snagged. The impacts to the terrestrial environment are expected to be short-term. Construction would affect terrestrial environments during trenching. Long-term impacts, however, are not expected. Efforts to protect stream and wetland environments would prevent adverse impacts. There are expected to be no impacts from the project to marine mammals, as there are no activities planned within the immediate vicinity of any rookery or haulout areas.

Potential impacts are possible, but not likely, for several threatened or endangered species or groups discussed. Activities too close to rookeries or feeding grounds could force sea lions to move away, lowering their potential for success. This is not likely, as the cable laying activities should remain outside of the area designated to protect them. Overall, there are not expected to be any cumulative impacts to endangered or threatened species or species of concern.

Potential mitigation to fisheries could include discussions with fishermen to minimize the length of cable crossing valuable fishing areas. Timing construction activities to avoid nesting and breeding periods would eliminate many impacts to the terrestrial environment. Trenching and other construction activities near streams could cause damage to spawning habitat due to excessive erosion, siltation, alteration of natural

drainage patterns, and water quality deterioration. These impacts can be minimized through mitigation measures, such as the use of filter fabric silt fences along construction areas and boring under the stream. Impacts on anadromous fish streams are only expected if trenching and/or construction occurs near the streams. Timing construction activities to avoid major spawning runs would eliminate most impacts.

To reduce potential disturbance to hauled out Steller sea lions, the cable-laying vessel would not operate within 5.6 kilometers (3 nautical miles) of the Steller sea lion rookeries or the major haulouts identified in the Gulf of Alaska or Bering Sea.

Subsistence. The most likely manner in which the project could impact community harvesters is if the project coincides with a community harvesting activity in time and area. Potential and perceived impacts to commercial and subsistence harvesters may be caused by resource damage or resource displacement or disturbance during harvesting times. Contact between fishing gear and the cable, although unlikely, may occur where the cable crosses undersea canyons or rocky substrates and cannot be buried. This would primarily occur with crabbers and longliners. If the project interferes with harvester efforts in traditional areas at normal times, harvesters may be required to increase their effort by spending longer time to harvest and traveling to other areas. Spending additional time and traveling further to harvest target species may increase the risk to harvesters as they go further into areas with which they are less familiar. Additional time and further distances traveled would increase the cost to the harvester. Meetings in the communities would facilitate discussions between project personnel and community harvesters related to key harvest areas, times of harvests, and proposed cable corridors and cable laying schedules.

North Dakota—Fiber Optic Cable Line

Biological Resources. Short-term impacts to vegetation, wildlife, and threatened and endangered species could occur from fiber optic cable line deployment in North Dakota. Some wildlife habitat, wetlands, and prairie potholes can be found along some of the roadways in North Dakota where the cable may be placed. This area provides important nesting habitat for migrating waterfowl, shorebirds, and animals. Wetlands could potentially be affected by the project through filling, draining, trenching, and other general construction activities. Because wetlands generally constitute valuable wildlife habitat, any significant changes to these wetlands would likely result in subsequent impacts on wildlife of the area. Potential mitigation measures to minimize wetland impacts once the fiber optic cable line alignment is defined would be developed through the permitting and consultation process.

Table ES-2: Summary of Environmental Impacts for the No-action Alternative

Resource Category	ALASKA SITES					NORTH DAKOTA SITES			
	Clear AFS	Eareckson AS	Eielson AFB	Fort Greely	Yukon Training Area	Cavalier AFS	Grand Forks AFB	Missile Site Radar	Remote Sprint Launch Sites 1, 2, and 4
Air Quality	No change to the region's current attainment status	No change to the region's current attainment status	No change to the region's current attainment status	No change to the region's current attainment status	No change to the region's current attainment status	No change to the region's current attainment status	No change to the region's current attainment status	No change to the region's current attainment status	No change to the region's current attainment status
Airspace	No change in airspace status or use	No change in airspace status or use	No change in airspace status or use	No change in airspace status or use	No change in airspace status or use	No change in airspace status or use	No change in airspace status or use	No change in airspace status or use	No change in airspace status or use
Biological Resources	No impacts to biological resources from continued operations	No impacts to biological resources from continued operations	Minimal impacts to wildlife and threatened and endangered species from aircraft activities. Plans are in place to minimize impacts	Minimal impacts to vegetation, wildlife, and threatened and endangered species from training activities. Plans are in place to minimize impacts	Minimal impacts to vegetation, wildlife, and threatened and endangered species from training activities. Plans are in place to minimize impacts	No impacts to biological resources from continued operations	No impacts to biological resources from continued operations	No impacts to biological resources from continued operations	No impacts to biological resources from continued operations
Cultural Resources	No impacts, resources would continue to be managed in accordance with cultural resource regulations	No impacts, resources would continue to be managed in accordance with cultural resource regulations	No impacts, resources would continue to be managed in accordance with cultural resource regulations	No impacts, resources would continue to be managed in accordance with cultural resource regulations	No impacts, resources would continue to be managed in accordance with cultural resource regulations	No impacts, resources would continue to be managed in accordance with cultural resource regulations	No impacts, resources would continue to be managed in accordance with cultural resource regulations	No impacts, resources would continue to be managed in accordance with cultural resource regulations	No impacts, resources would continue to be managed in accordance with cultural resource regulations
Geology and Soils	No impact	No impact	No impact	Potential for short-term and cumulative impact to soil and permafrost from training activities **Mitigation:** Reduce soil and permafrost impacts through best management practices	Potential for short-term and cumulative impact to soil and permafrost from training activities **Mitigation:** Reduce soil and permafrost impacts through best management practices	No impact	No impact	No impact	No impact
Hazardous Materials and Hazardous Waste Management	Continued use of hazardous materials and generation of hazardous waste in accordance with appropriate regulations. Continued remediation of hazardous waste sites	Continued use of hazardous materials and generation of hazardous waste in accordance with appropriate regulations. Continued remediation of hazardous waste sites	Continued use of hazardous materials and generation of hazardous waste in accordance with appropriate regulations. Continued remediation of hazardous waste sites	Continued use of hazardous materials and generation of hazardous waste in accordance with appropriate regulations. Continued remediation of hazardous waste sites	Continued use of hazardous materials and generation of hazardous waste in accordance with appropriate regulations. Continued remediation of hazardous waste sites	Continued use of hazardous materials and generation of hazardous waste in accordance with appropriate regulations. Continued remediation of hazardous waste sites	Continued use of hazardous materials and generation of hazardous waste in accordance with appropriate regulations. Continued remediation of hazardous waste sites	Continued use of hazardous materials and generation of hazardous waste in accordance with appropriate regulations. Continued remediation of hazardous waste sites	Continued use of hazardous materials and generation of hazardous waste in accordance with appropriate regulations. Continued remediation of hazardous waste sites

Table ES-2: Summary of Environmental Impacts for the No-action Alternative (Continued)

Resource Category	ALASKA SITES					NORTH DAKOTA SITES			
	Clear AFS	Eareckson AS	Eielson AFB	Fort Greely	Yukon Training Area	Cavalier AFS	Grand Forks AFB	Missile Site Radar	Remote Sprint Launch Sites 1, 2, and 4
Health and Safety	No impact	No impact	No impact	No impact	No impact	No impact	No impact	No impact	No impact
Land Use and Aesthetics	Current base activities are compatible with regional and local planning/zoning and surrounding on and off-base land uses	Current base activities are compatible with regional and local planning/zoning and surrounding on and off-base land uses	Incompatible residential land uses are within runway clear zone	Current base activities are compatible with regional and local planning/zoning and surrounding on and off-base land uses	Current base activities are compatible with regional and local planning/zoning and surrounding on and off-base land uses	Current base activities are compatible with regional and local planning/zoning and surrounding on and off-base land uses	Current base activities are compatible with regional and local planning/zoning and surrounding on and off-base land uses	Current base activities are compatible with regional and local planning/zoning and surrounding on and off-base land uses	Current base activities are compatible with regional and local planning/zoning and surrounding on and off-base land uses
Noise	No impact	No impact	Residential area of Moose Creek is within day-night level 65 decibels A-weighted noise contour from aircraft noise	No impact	No impact	No impact	No impact	No impact	No impact
Socioeconomics	Base operations would continue to provide economic benefits	No impact	Base operations would continue to provide economic benefits	Economic impact from loss of jobs associated with base realignment	Base operations would continue to provide economic benefits	Base operations would continue to provide economic benefits	Base operations would continue to provide economic benefits	No activities occur at this site; therefore, there are no economic benefits	No activities occur at these sites; therefore, there are no economic benefits
Transportation	No change to current level of service on roadways	No impact	No change to current level of service on roadways	No change to current level of service on roadways	No change to current level of service on roadways	No change to current level of service on roadways	No change to current level of service on roadways	No change to current level of service on roadways	No change to current level of service on roadways
Utilities	Utility systems are adequate to handle demand	Utility systems are adequate to handle demand	Utility systems are adequate to handle demand	Utility systems are adequate to handle demand	Utility systems are adequate to handle demand	Utility systems are adequate to handle demand	Utility systems are adequate to handle demand	Utility systems are adequate to handle demand	Utility systems are adequate to handle demand
Water Resources	No change to water resources in the region	No change to water resources in the region	No change to water resources in the region	Potential for impacts to water resources from military training activities **Mitigation:** Use existing management practices and storm water plans to reduce potential water impacts	Potential for impacts to water resources from military training activities **Mitigation:** Use existing management practices and storm water plans to reduce potential water impacts	No change to water resources in the region	No change to water resources in the region	No change to water resources in the region	No change to water resources in the region

Table ES-2: Summary of Environmental Impacts for the No-action Alternative (Continued)

Resource Category	ALASKA SITES					NORTH DAKOTA SITES			
	Clear AFS	Eareckson AS	Eielson AFB	Fort Greely	Yukon Training Area	Cavalier AFS	Grand Forks AFB	Missile Site Radar	Remote Sprint Launch Sites 1, 2, and 4
Environmental Justice	No low-income or minority populations would be disproportionately affected	No low-income or minority populations would be disproportionately affected	No low-income or minority populations would be disproportionately affected	No low-income or minority populations would be disproportionately affected	No low-income or minority populations would be disproportionately affected	No low-income or minority populations would be disproportionately affected	No low-income or minority populations would be disproportionately affected	No low-income or minority populations would be disproportionately affected	No low-income or minority populations would be disproportionately affected
Subsistence	No impact to subsistence uses in and around Clear AFS	Restricted access on the island precludes subsistence use	No impact to subsistence use in and around Eielson AFB	No impact to subsistence uses in and around Fort Greely	No impact to subsistence use in and around the Yukon Training Area	Not applicable to North Dakota	Not applicable to North Dakota	Not applicable to North Dakota	Not applicable to North Dakota

Table ES-3: Summary of Environmental Impacts for Deployment of the Ground-Based Interceptor

Resource Category	ALASKA SITES			NORTH DAKOTA SITES	
	Clear AFS	Fort Greely	Yukon Training Area/Eielson AFB	Grand Forks AFB	Missile Site Radar
Air Quality	Increase in air emissions from construction and operation would not affect the region's current attainment status. Will not affect Denali National Park visibility	Increase in air emissions from construction and operation would not affect the region's current attainment status	Increase in air emissions from construction and operation would not affect the region's current attainment status	Increase in air emissions from construction and operation would not affect the region's current attainment status	Increase in air emissions from construction and operation would not affect the region's current attainment status
Airspace	No impact	No impact	No impact	No impact	No impact
Biological Resources	Minimal impacts are expected to vegetation, wildlife, and threatened or endangered species. The potential exists to impact between 2.7 hectares (6.6 acres) and 55 hectares (135 acres) of wetlands depending on location selected **Mitigation:** Develop mitigation measures to wetlands through the consultation and permitting process	Minimal impacts are expected to vegetation, wildlife, and threatened or endangered species. No wetlands would be impacted	Minimal impacts are expected to vegetation, wildlife, and threatened or endangered species. The potential exists to impact 46 hectares (113 acres) of low-value wetlands **Mitigation:** Develop mitigation measures to wetlands through the consultation and permitting process	Minimal impacts are expected to vegetation, wildlife, and threatened or endangered species. The potential exists to impact 5 hectares (12 acres) of wetlands from OT-5 deployment alternative **Mitigation:** Develop mitigation measures to wetlands through the consultation and permitting process	Minimal impacts are expected to vegetation, wildlife, and threatened or endangered species. The potential exists for sedimentation to impact Roaring Nancy Creek which is a wetland **Mitigation:** Develop mitigation measures to wetlands through the consultation and permitting process
Cultural Resources	No adverse effects	No adverse effects	Potential effect on archaeological site and possible historic structure **Mitigation:** Consult with the State Historic Preservation Officer to minimize adverse effects. Mitigation could include recovery of data from archaeological site and recordation of possible historic structure	No impact	Adverse impact to historic structures has been mitigated through completed Historic American Engineering Record documentation
Geology and Soils	Minor increase in soil erosion would be localized to the construction site. Potential for deployment to affect some permafrost areas. Site design would minimize impacts by avoidance if possible **Mitigation:** Avoid permafrost areas as much as possible. Conduct detailed permafrost studies of potential deployment site. Design facilities to minimize impacts to permafrost	Minor increase in soil erosion would be localized to the construction site. Minimal impacts to permafrost	Short-term impacts from soil erosion during construction. Long-term impacts to permafrost at the deployment site which could result in subsidence, increase erosion, and gully formation **Mitigation:** Minimize soil erosion by implementation of standard erosion control techniques. Avoid permafrost areas as much as possible. Conduct detailed permafrost studies of potential deployment site. Design facilities to minimize impacts to permafrost	Short-term impacts from soil erosion during construction **Mitigation:** Minimize soil erosion by implementation of standard erosion control techniques	Short-term impacts from soil erosion during construction **Mitigation:** Minimize soil erosion by implementation of standard erosion control techniques

Table ES-3: Summary of Environmental Impacts for Deployment of the Ground-Based Interceptor (Continued)

	ALASKA SITES			NORTH DAKOTA SITES	
Resource Category	**Clear AFS**	**Fort Greely**	**Yukon Training Area/Eielson AFB**	**Grand Forks AFB**	**Missile Site Radar**
Hazardous Materials and Hazardous Waste Management	Increase in hazardous materials use and hazardous waste generation. All hazardous material and waste handled in accordance with appropriate regulations. Storage tanks would be subject to all appropriate regulations	Increase in hazardous materials use and hazardous waste generation. All hazardous material and waste handled in accordance with appropriate regulations. Storage tanks would be subject to all appropriate regulations	Increase in hazardous materials use and hazardous waste generation. All hazardous material and waste handled in accordance with appropriate regulations. Storage tanks would be subject to all appropriate regulations	Increase in hazardous materials use and hazardous waste generation. All hazardous material and waste handled in accordance with appropriate regulations. Storage tanks would be subject to all appropriate regulations	Increase in hazardous materials use and hazardous waste generation. All hazardous material and waste handled in accordance with appropriate regulations. Storage tanks would be subject to all appropriate regulations
Health and Safety	Minimal increase in health and safety risks. Potential for a GBI mishap during handling is unlikely. In the event of an unlikely accidental liquid propellant leak hazardous gases could exceed base boundary under the Alternative B Site affecting up to 122 hectares (302 acres); however, no occupied structures exist within this area. No off-base areas impacted under Alternative A Site **Mitigation:** Update mutual aid agreements with local fire departments to include additional hazards associated with GBI deployment	Minimal increase in health and safety risks. Potential for a GBI mishap during handling is unlikely. In the event of an unlikely accidental liquid propellant leak hazardous gases could exceed base boundary affecting up to 14 hectares (35 acres); however, no occupied structures exist within this area. GBI deployment would require revision to area fire protection status **Mitigation:** Change fire protection status from Full to Critical. Update mutual aid agreements with local fire departments to include additional hazards associated with GBI deployment	Minimal increase in health and safety risks. Potential for a GBI mishap during handling is unlikely. In the event of an unlikely accidental liquid propellant leak hazardous gases would not exceed base boundary. GBI deployment would require revision to area fire protection status **Mitigation:** Change fire protection status from Full to Critical. Update mutual aid agreements with local fire departments to include additional hazards associated with GBI deployment	Minimal increase in health and safety risks. Potential for a GBI mishap during handling is unlikely. In the event of an unlikely accidental liquid propellant leak hazardous gases could exceed base boundary affecting up to 107 hectares (264 acres) for weapon storage alternative (area includes three commercial structures, two churches, and one residential unit) and 306 hectares (757 acres) for OT-5 alternative (area includes one residential unit) **Mitigation:** Update mutual aid agreements with local fire departments to include additional hazards associated with GBI deployment	Minimal increase in health and safety risks. Potential for a GBI mishap during handling is unlikely. In the event of an unlikely accidental liquid propellant leak hazardous gases could exceed base boundary affecting up to 225 hectares (557 acres); this area includes one commercial structure and an unoccupied farm building. In addition, the explosive safety quantity distances associated with the GBI facilities exceed the base boundary which includes open agricultural lands **Mitigation:** Update mutual aid agreements with local fire departments to include additional hazards associated with GBI deployment. Review existing safety lease agreements for the site and determine if any modifications or addition would be required
Land Use and Aesthetics	Deployment of the GBI would be compatible with regional and local planning/zoning and surrounding on and off-base land uses	Deployment of the GBI would be compatible with regional and local planning/zoning and surrounding on and off-base land uses	Deployment of the GBI would be compatible with regional and local planning/zoning and surrounding on and off-base land uses	Deployment of the GBI would be compatible with regional and local planning/zoning and surrounding on and off-base land uses	Deployment of the GBI would be compatible with regional and local planning/zoning. Explosive safety quantity distances would exceed base boundary but would be compatible with the agricultural uses of the land **Mitigation:** To ensure future land use compatibility, review existing lease agreements for the site and determine if any modifications or addition would be required to ensure no structures would be built within the explosive safety quantity distances

Table ES-3: Summary of Environmental Impacts for Deployment of the Ground-Based Interceptor (Continued)

Resource Category	ALASKA SITES			NORTH DAKOTA SITES	
	Clear AFS	Fort Greely	Yukon Training Area/Eielson AFB	Grand Forks AFB	Missile Site Radar
Noise	No impact	No impact	No impact	Potential for short-term construction related noise disturbance to 2 churches and 1 residential unit from Weapon Storage Area alternative and 1 residential unit from the OT-5 alternative; however, no long-term impacts	Potential for short-term construction related noise disturbance to 2 residential units; however, no long-term impacts
Socioeconomics	Construction and operations direct and indirect employment and materials expenditures would provide economic benefit to surrounding communities' retail sales and tax base. No impact on public services	Construction and operations direct and indirect employment and materials expenditures would provide economic benefit to surrounding communities' retail sales and tax base. The economic benefit would help reduce the adverse economic impact as a result of base realignment at Fort Greely. No impact on public services	Construction and operations direct and indirect employment and materials expenditures would provide economic benefit to surrounding communities' retail sales and tax base. No impact on public services	Construction and operations direct and indirect employment and materials expenditures would provide economic benefit to surrounding communities' retail sales and tax base. No impact on public services	Construction and operations direct and indirect employment and materials expenditures would provide economic benefit to surrounding communities' retail sales and tax base. No impact on public services
Transportation	Level of service on the George Parks Highway would change from B to C as a result of temporary construction related impacts. The level of service would change back to B after construction.	Change in level of service from B to C in Delta Junction at intersection of state highways 2 and 4 as a result of potential long-term cumulative operational impacts	Level of service on the Richardson Highway would change from A to B as a result of temporary cumulative construction related impacts. The level of service would change back to A after construction	No change to level of service on roadways	Level of service on North Dakota highways 1 and 5 within Langdon would change from A to B as a result of cumulative temporary construction related impacts. Level of service would change back to A after construction
Utilities	Current utility systems have adequate capacity to support deployment	Current utility systems have adequate capacity to support deployment	Current utility systems have adequate capacity to support deployment	Current utility systems have adequate capacity to support deployment	Current utility systems have adequate capacity to support deployment
Water Resources	Minor potential for short-term increase in sediment in surface water during construction. Appropriate permits and storm water plans would be implemented to minimize impacts to water resources	Minor potential for short-term increase in sediment in surface water during construction. Appropriate permits and storm water plans would be implemented to minimize impacts to water resources	Minor potential for short-term increase in sediment in surface water during construction. Appropriate permits and storm water plans would be implemented to minimize impacts to water resources	Minor potential for short-term increase in sediment in surface water during construction. Appropriate permits and storm water plans would be implemented to minimize impacts to water resources	Minor potential for short-term increase in sediment in surface water during construction. Appropriate permits and storm water plans would be implemented to minimize impacts to water resources
Environmental Justice	No low-income or minority populations would be disproportionately affected	No low-income or minority populations would be disproportionately affected	No low-income or minority populations would be disproportionately affected	No low-income or minority populations would be disproportionately affected	No low-income or minority populations would be disproportionately affected
Subsistence	Decrease in the amount of land available for subsistence uses; however, the area is not a main subsistence use area in region due to limited access to the base	Decrease in the amount of land available for subsistence uses; however, the area is not a main subsistence use area in region	Decrease in the amount of land available for subsistence uses; however, the area is not a main subsistence use area in region	Not applicable to North Dakota	Not applicable to North Dakota

Table ES-4: Summary of Environmental Impacts for Deployment of the Battle Management Command and Control

Resource Category	ALASKA SITES			NORTH DAKOTA SITES	
	Clear AFS	Fort Greely	Yukon Training Area/ Eielson AFB	Grand Forks AFB	Missile Site Radar
Air Quality	Increase in air emissions from construction and operation would not affect the region's current attainment status. Will not affect Denali National Park visibility	Increase in air emissions from construction and operation would not affect the region's current attainment status	Increase in air emissions from construction and operation would not affect the region's current attainment status	Increase in air emissions from construction and operation would not affect the region's current attainment status	Increase in air emissions from construction and operation would not affect the region's current attainment status
Airspace	No impact	No impact	No impact	No impact	No impact
Biological Resources	Minimal impacts are expected to vegetation, wildlife, and threatened or endangered species. The potential exists to impact wetlands **Mitigation:** Develop mitigation measures to wetlands through the consultation and permitting process	Minimal impacts are expected to vegetation, wildlife, and threatened or endangered species. No wetlands would be impacted	Minimal impacts are expected to vegetation, wildlife, and threatened or endangered species. The potential exists to impact low-value wetlands **Mitigation:** Develop mitigation measures to wetlands through the consultation and permitting process	Minimal impacts are expected to vegetation, wildlife, and threatened or endangered species. No wetlands would be impacted	Minimal impacts are expected to vegetation, wildlife, and threatened or endangered species. The potential exists for sedimentation to impact Roaring Nancy Creek which is a wetland **Mitigation:** Develop mitigation measures to wetlands through the consultation and permitting process
Cultural Resources	No adverse effects	No adverse effects	Potential effect on archaeological site **Mitigation:** Consult with the State Historic Preservation Officer to minimize adverse effects. Mitigation could include recovery of data from archaeological site	No impact	Adverse impact to historic structures has been mitigated through completed Historic American Engineering Record documentation
Geology and Soils	Minor increase in soil erosion would be localized to the construction site. Potential for deployment to affect some permafrost areas. Site design would minimize impacts by avoidance if possible **Mitigation:** Avoid permafrost areas as much as possible. Conduct detailed permafrost studies of potential deployment site. Design facilities to minimize impacts to permafrost	Minor increase in soil erosion would be localized to the construction site. Potential for deployment to affect some permafrost areas. Site design would minimize impacts by avoidance if possible **Mitigation:** Avoid permafrost areas as much as possible. Conduct detailed permafrost studies of potential deployment site. Design facilities to minimize impacts to permafrost	Short-term impacts from soil erosion during construction. Long-term impacts to permafrost at the deployment site which could result in subsidence, increase erosion, and gully formation **Mitigation:** Minimize soil erosion by implementation of standard erosion control techniques. Avoid permafrost areas as much as possible. Conduct detailed permafrost studies of potential deployment site. Design facilities to minimize impacts to permafrost	Short-term impacts from soil erosion during construction **Mitigation:** Minimize soil erosion by implementation of standard erosion control techniques	Short-term impacts from soil erosion during construction **Mitigation:** Minimize soil erosion by implementation of standard erosion control techniques

Table ES-4: Summary of Environmental Impacts for Deployment of the Battle Management Command and Control (Continued)

Resource Category	ALASKA SITES			NORTH DAKOTA SITES	
	Clear AFS	Fort Greely	Yukon Training Area/ Eielson AFB	Grand Forks AFB	Missile Site Radar
Hazardous Materials and Hazardous Waste Management	No impact	No impact	No impact	No impact	No impact
Health and Safety	No impact	No impact	No impact	No impact	No impact
Land Use and Aesthetics	Deployment of the BMC2 would be compatible with regional and local planning/zoning and surrounding on and off-base land uses	Deployment of the BMC2 would be compatible with regional and local planning/zoning and surrounding on and off-base land uses	Deployment of the BMC2 would be compatible with regional and local planning/zoning and surrounding on and off-base land uses	Deployment of the BMC2 would be compatible with regional and local planning/zoning and surrounding on and off-base land uses	Deployment of the BMC2 would be compatible with regional and local planning/zoning and surrounding on and off-base land uses
Noise	No impact	No impact	No impact	No impact	No impact
Socioeconomics	Construction and operations direct and indirect employment and materials expenditures would provide economic benefit to surrounding communities' retail sales and tax base. No impact on public services	Construction and operations direct and indirect employment and materials expenditures would provide economic benefit to surrounding communities retail sales and tax base. The economic benefit would help reduce the adverse economic impact as a result of base realignment at Fort Greely. No impact on public services	Construction and operations direct and indirect employment and materials expenditures would provide economic benefit to surrounding communities' retail sales and tax base. No impact on public services	Construction and operations direct and indirect employment and materials expenditures would provide economic benefit to surrounding communities' retail sales and tax base. No impact on public services	Construction and operations direct and indirect employment and materials expenditures would provide economic benefit to surrounding communities' retail sales and tax base. No impact on public services
Transportation	Level of service on the George Parks Highway would change from B to C as a result of temporary construction related impacts. The level of service would change back to B after construction.	Change in level of service from B to C in Delta Junction at intersection of state highways 2 and 4 as a result of potential long-term cumulative operational impacts	Level of service on the Richardson Highway would change from A to B as a result of temporary cumulative construction related impacts. The level of service would change back to A after construction	No change to level of service on roadways	Level of service on North Dakota highways 1 and 5 within Langdon would change from A to B as a result of cumulative temporary construction related impacts. Level of service would change back to A after construction
Utilities	No impact	No impact	No impact	No impact	No impact
Water Resources	Minor potential for short-term increase in sediment in surface water during construction. Appropriate permits and storm water plans would be implemented to minimize impacts to water resources	Minor potential for short-term increase in sediment in surface water during construction. Appropriate permits and storm water plans would be implemented to minimize impacts to water resources	Minor potential for short-term increase in sediment in surface water during construction. Appropriate permits and storm water plans would be implemented to minimize impacts to water resources	Minor potential for short-term increase in sediment in surface water during construction. Appropriate permits and storm water plans would be implemented to minimize impacts to water resources	Minor potential for short-term increase in sediment in surface water during construction. Appropriate permits and storm water plans would be implemented to minimize impacts to water resources
Environmental Justice	No low-income or minority populations would be disproportionately affected	No low-income or minority populations would be disproportionately affected	No low-income or minority populations would be disproportionately affected	No low-income or minority populations would be disproportionately affected	No low-income or minority populations would be disproportionately affected
Subsistence	Decrease in the amount of land available for subsistence uses; however, the area is not a main subsistence use area in region due to limited access to the base	Decrease in the amount of land available for subsistence uses; however, the area is not a main subsistence use area in region	Decrease in the amount of land available for subsistence uses; however, the area is not a main subsistence use area in region	Not applicable to North Dakota	Not applicable to North Dakota

Table ES-5: Summary of Environmental Impacts for Deployment of the In-Flight Interceptor Communications System (IFICS) Data Terminal

Resource Category	Potential Environmental Impact
Air Quality	Increase in air emissions from construction and operation would be minimal. Operations emissions associated with electrical generator would not be expected to change air quality in deployment region
Airspace	Deployment would not require any change in airspace use in the deployment region
Biological Resources	Minimal impacts expected from the construction and operation of an IFICS Data Terminal site to vegetation, wildlife, threatened or endangered species, and wetlands. Sensitive biological areas would be avoided during the siting process. Annual test of system would not impact wildlife
Cultural Resources	Potential for construction to impact archaeological resources; however, sensitive cultural resource areas would be avoided during the siting process, if possible. Overall, no adverse impacts are expected
Geology and Soils	Minimal impacts expected from the construction and operation of an IFICS Data Terminal site. Construction related impacts would be short-term
Hazardous Materials and Hazardous Waste Management	Minimal use of hazardous materials and generation of hazardous waste at the deployment site. All hazardous material and waste handled in accordance with appropriate regulations. Storage tanks would be subject to all appropriate regulations
Health and Safety	During normal NMD operations, the IFICS Data Terminal would not transmit except during annual testing of the equipment. It is expected that a power/calibration test of the transmitter would occur once a year. During this test, electromagnetic radiation would be generated by the IFICS Data Terminal. Electromagnetic radiation levels would not exceed personnel exposure limits during the annual test at the site
Land Use and Aesthetics	This element would affect approximately 7 hectares (17 acres) of land. Due to this project only affecting such a small portion of land it should not drastically affect the land use regardless of where it is located. The NMD program would comply with all applicable Federal and state land use laws. The significance of visual impacts from a deployment site would depend on the sensitivity of the affected views, as well as visual dominance of facilities. Impacts could occur if the facilities were within views of medium to high sensitivity public use areas and travel routes. However, it is anticipated that the IFICS Data Terminal would be located on a DOD installation with similar facilities and limited public access resulting in no visual impacts
Noise	Minimal noise impacts expected from operation of electrical generator inside of a shelter
Socioeconomics	There would be a minimal security personnel force associated with deployment of an IFICS Data Terminal. In addition, construction of the site would create minimal construction related jobs. There would be no impact to local or regional socioeconomic resources
Transportation	There may be a minimal security personnel force associated with deployment of an IFICS Data Terminal; therefore, there would be minimal impact to local or regional transportation resources
Utilities	There may be a minimal site security force associated with operation of the IFICS Data Terminal. The site would require a small amount of electricity to operate. The site may have water connections or use bottled water for the security personnel. Overall, there would be no impact to utilities
Water Resources	Minimal impacts expected from the construction and operation of an IFICS Data Terminal site. Construction related impacts would be short-term
Environmental Justice	No adverse human health and environmental impacts would be expected from construction and operation of the IFICS Data Terminal. No environmental justice concerns have been identified
Subsistence	Given the small area required for deployment it is not expected that construction or operation would affect subsistence resources in the State of Alaska if the IFICS Data Terminal were deployed in this state

Table ES-6: Summary of Environmental Impacts for Deployment of the X-Band Radar

Resource Category	ALASKA SITE	NORTH DAKOTA SITES				
	Eareckson AS	**Cavalier AFS**	**Missile Site Radar**	**Remote Sprint Launch Site 1**	**Remote Sprint Launch Site 2**	**Remote Sprint Launch Site 4**
Air Quality	Increase in air emissions from construction and operation would not affect the region's current attainment status	Increase in air emissions from construction and operation would not affect the region's current attainment status	Increase in air emissions from construction and operation would not affect the region's current attainment status	Increase in air emissions from construction and operation would not affect the region's current attainment status	Increase in air emissions from construction and operation would not affect the region's current attainment status	Increase in air emissions from construction and operation would not affect the region's current attainment status
Airspace	Establishment of a high energy radiation area warning on aeronautical charts would not pose any flight restriction requirements; therefore, there would be no impacts to airspace	Establishment of a high energy radiation area warning on aeronautical charts would not pose any flight restriction requirements; therefore, there would be no impacts to airspace	Establishment of a high energy radiation area warning on aeronautical charts would not pose any flight restriction requirements; therefore, there would be no impacts to airspace	Establishment of a high energy radiation area warning on aeronautical charts would not pose any flight restriction requirements; therefore, there would be no impacts to airspace	Establishment of a high energy radiation area warning on aeronautical charts would not pose any flight restriction requirements; therefore, there would be no impacts to airspace.	Establishment of a high energy radiation area warning on aeronautical charts would not pose any flight restriction requirements; therefore, there would be no impacts to airspace
Biological Resources	No impacts from electromagnetic radiation. Approximately 12 hectares (30 acres) of wetlands impacted **Mitigation:** Develop mitigation measures to minimize impacts to wetlands through the consultation and permitting process	Minimal impacts are expected to vegetation, wildlife, and threatened or endangered species from construction or electromagnetic radiation. No wetlands would be impacted **Mitigation:** Clear vegetation within 15 meters (49 feet) of radar to reduce likelihood of wildlife using the area	Minimal impacts are expected to vegetation, wildlife, and threatened or endangered species from construction or electromagnetic radiation. The potential exists for sedimentation to impact Roaring Nancy Creek which is a wetland **Mitigation:** Clear vegetation within 15 meters (49 feet) of radar to reduce likelihood of wildlife using the area. Develop mitigation measures to wetlands through the consultation and permitting process	Minimal impacts are expected to vegetation, wildlife, and threatened or endangered species from construction or electromagnetic radiation. No wetlands would be impacted **Mitigation:** Clear vegetation within 15 meters (49 feet) of radar to reduce likelihood of wildlife using the area	Minimal impacts are expected to vegetation, wildlife, and threatened or endangered species from construction or electromagnetic radiation. No wetlands would be impacted **Mitigation:** Clear vegetation within 15 meters (49 feet) of radar to reduce likelihood of wildlife using the area	Minimal impacts are expected to vegetation, wildlife, and threatened or endangered species from construction or electromagnetic radiation. No wetlands would be impacted **Mitigation:** Clear vegetation within 15 meters (49 feet) of radar to reduce likelihood of wildlife using the area
Cultural Resources	No adverse effects	Adverse impact to historic structures has been mitigated through completed Historic American Engineering Record documentation	Adverse impact to historic structures has been mitigated through completed Historic American Engineering Record documentation	Adverse impact to historic structures has been mitigated through completed Historic American Engineering Record documentation	Adverse impact to historic structures has been mitigated through completed Historic American Engineering Record documentation	Adverse impact to historic structures has been mitigated through completed Historic American Engineering Record documentation
Geology and Soils	Short-term impacts from soil erosion during construction **Mitigation:** Minimize soil erosion by implementation of standard erosion control techniques	Short-term impacts from soil erosion during construction **Mitigation:** Minimize soil erosion by implementation of standard erosion control techniques	Short-term impacts from soil erosion during construction **Mitigation:** Minimize soil erosion by implementation of standard erosion control techniques	Short-term impacts from soil erosion during construction **Mitigation:** Minimize soil erosion by implementation of standard erosion control techniques	Short-term impacts from soil erosion during construction **Mitigation:** Minimize soil erosion by implementation of standard erosion control techniques	Short-term impacts from soil erosion during construction **Mitigation:** Minimize soil erosion by implementation of standard erosion control techniques

Table ES-6: Summary of Environmental Impacts for Deployment of the X-Band Radar (Continued)

Resource Category	ALASKA SITE Eareckson AS	NORTH DAKOTA SITES Cavalier AFS	Missile Site Radar	Remote Sprint Launch Site 1	Remote Sprint Launch Site 2	Remote Sprint Launch Site 4
Hazardous Materials and Hazardous Waste Management	Increase in hazardous materials use and hazardous waste generation. All hazardous material and waste handled in accordance with appropriate regulations. Storage tanks would be subject to all appropriate regulations	Increase in hazardous materials use and hazardous waste generation. All hazardous material and waste handled in accordance with appropriate regulations. Storage tanks would be subject to all appropriate regulations	Increase in hazardous materials use and hazardous waste generation. All hazardous material and waste handled in accordance with appropriate regulations. Storage tanks would be subject to all appropriate regulations	Increase in hazardous materials use and hazardous waste generation. All hazardous material and waste handled in accordance with appropriate regulations. Storage tanks would be subject to all appropriate regulations	Increase in hazardous materials use and hazardous waste generation. All hazardous material and waste handled in accordance with appropriate regulations. Storage tanks would be subject to all appropriate regulations	Increase in hazardous materials use and hazardous waste generation. All hazardous material and waste handled in accordance with appropriate regulations. Storage tanks would be subject to all appropriate regulations
Health and Safety	No risk to human health from electromagnetic radiation. Potential risk to aircraft airborne systems and fly-by-wire aircraft minimized through establishment of a high energy radiation area warning on aeronautical charts	No risk to human health from electromagnetic radiation. Potential risk to aircraft airborne systems and fly-by-wire aircraft minimized through establishment of a high energy radiation area warning on aeronautical charts	No risk to human health from electromagnetic radiation. Potential risk to aircraft airborne systems and fly-by-wire aircraft minimized through establishment of a high energy radiation area warning on aeronautical charts	No risk to human health from electromagnetic radiation. Potential risk to aircraft airborne systems and fly-by-wire aircraft minimized through establishment of a high energy radiation area warning on aeronautical charts	No risk to human health from electromagnetic radiation. Potential risk to aircraft airborne systems and fly-by-wire aircraft minimized through establishment of a high energy radiation area warning on aeronautical charts	No risk to human health from electromagnetic radiation. Potential risk to aircraft airborne systems and fly-by-wire aircraft minimized through establishment of a high energy radiation area warning on aeronautical charts
Land Use and Aesthetics	Deployment of the XBR would be compatible with regional and local planning/zoning and surrounding on and off-base land uses. Deployment would be consistent with the Alaska Coastal Management Program	Deployment of the XBR would be compatible with regional and local planning/zoning	Deployment of the XBR would be compatible with regional and local planning/zoning	Deployment of the XBR would be compatible with regional and local planning/zoning	Deployment of the XBR would be compatible with regional and local planning/zoning	Deployment of the XBR would be compatible with regional and local planning/zoning
Noise	No impact	No impact	Potential for short-term construction related noise disturbance to 2 residential units; however, no long-term impacts	No impact	No impact	No impact
Socioeconomics	Eareckson AS is a military installation on an island with no surrounding support services. No socioeconomic impacts would occur	Construction direct and indirect employment and materials expenditures would provide economic benefit to surrounding communities' retail sales and tax base. No impact on public services. Operation of the XBR would replace the current Air Force mission resulting in no net change to the regional economy	Construction and operations direct and indirect employment and materials expenditures would provide economic benefit to surrounding communities' retail sales and tax base. No impact on public services	Construction and operations direct and indirect employment and materials expenditures would provide economic benefit to surrounding communities' retail sales and tax base. No impact on public services	Construction and operations direct and indirect employment and materials expenditures would provide economic benefit to surrounding communities' retail sales and tax base. No impact on public services	Construction and operations direct and indirect employment and materials expenditures would provide economic benefit to surrounding communities' retail sales and tax base. No impact on public services

Table ES-6: Summary of Environmental Impacts for Deployment of the X-Band Radar (Continued)

Resource Category	ALASKA SITE Eareckson AS	NORTH DAKOTA SITES Cavalier AFS	Missile Site Radar	Remote Sprint Launch Site 1	Remote Sprint Launch Site 2	Remote Sprint Launch Site 4
Transportation	No impact	Level of service on North Dakota highways 1 and 5 within Langdon would change from A to B as a result of cumulative temporary construction related impacts. Level of service would change back to A after construction	Level of service on North Dakota highways 1 and 5 within Langdon would change from A to B as a result of cumulative temporary construction related impacts. Level of service would change back to A after construction	Level of service on North Dakota highways 1 and 5 within Langdon would change from A to B as a result of cumulative temporary construction related impacts. Level of service would change back to A after construction	Level of service on North Dakota highways 1 and 5 within Langdon would change from A to B as a result of cumulative temporary construction related impacts. Level of service would change back to A after construction	Level of service on North Dakota highways 1 and 5 within Langdon would change from A to B as a result of cumulative temporary construction related impacts. Level of service would change back to A after construction
Utilities	Current utility systems have adequate capacity to support deployment	Current utility systems have adequate capacity to support deployment	Current utility systems have adequate capacity to support deployment	Current utility systems have adequate capacity to support deployment	Current utility systems have adequate capacity to support deployment	Current utility systems have adequate capacity to support deployment
Water Resources	Minor potential for short-term increase in sediment in surface water during construction. Appropriate permits and storm water plans would be implemented to minimize impacts to water resources	Minor potential for short-term increase in sediment in surface water during construction. Appropriate permits and storm water plans would be implemented to minimize impacts to water resources	Minor potential for short-term increase in sediment in surface water during construction. Appropriate permits and storm water plans would be implemented to minimize impacts to water resources	Minor potential for short-term increase in sediment in surface water during construction. Appropriate permits and storm water plans would be implemented to minimize impacts to water resources	Minor potential for short-term increase in sediment in surface water during construction. Appropriate permits and storm water plans would be implemented to minimize impacts to water resources	Minor potential for short-term increase in sediment in surface water during construction. Appropriate permits and storm water plans would be implemented to minimize impacts to water resources
Environmental Justice	No low-income or minority populations would be disproportionately affected	No low-income or minority populations would be disproportionately affected	No low-income or minority populations would be disproportionately affected	No low-income or minority populations would be disproportionately affected	No low-income or minority populations would be disproportionately affected	No low-income or minority populations would be disproportionately affected
Subsistence	Restricted access on the island precludes subsistence use	Not applicable to North Dakota	Not applicable to North Dakota	Not applicable to North Dakota	Not applicable to North Dakota	Not applicable to North Dakota

Table ES-7: Summary of Environmental Impacts for Deployment of the Fiber Optic Cable Line

Resource Category	Alaska	North Dakota
Air Quality	No impact	No impact
Airspace	No impact	No impact
Biological Resources	Short-term impact to invertebrates and fishes, no long-term impacts expected. Short-term disturbance of terrestrial animals and/or aquatic organisms and terrestrial and/or aquatic habitat, no-long term impacts expected. No direct adverse short or long-term impacts expected to marine mammals or birds. No expected consequences on threatened or endangered species **Mitigation:** Time construction activities to avoid nesting and breeding periods in the terrestrial environment. Use silt fences to minimize soil erosion impacts to streams (spawning habitat) on land crossings or avoid spawning season. Direct bore fiber optic lines under streams where possible. Avoid Steller sea lion rookeries or haul out areas by 5.6 kilometers (3 nautical miles)	Short-term impacts could occur to vegetation, wildlife, and threatened or endangered species. The potential exists for short-term impacts to wetlands along existing road and utility corridors **Mitigation:** Develop mitigation measures to wetlands through the consultation and permitting process. Avoid construction during nesting season.
Cultural Resources	Additional studies required to determine if historic properties may be affected **Mitigation:** Consult with the State Historic Preservation Officer to determine the requirement for additional studies	Additional studies required to determine if historic properties may be affected **Mitigation:** Consult with the State Historic Preservation Officer to determine the requirement for additional studies
Geology and Soils	Short-term disturbance to ocean floor and ground soils, no long-term impacts expected	Short-term disturbance to soils, no long-term impacts expected
Hazardous Materials and Hazardous Waste Management	No impact	No impact
Health and Safety	No impact	No impact
Land Use and Aesthetics	No impact	No impact
Noise	No impact	No impact
Socioeconomics	No impacts. See subsistence resources for potential impacts to fishermen	No impact
Transportation	No impact	No impact
Utilities	No impact	No impact
Water Resources	Short-term increase in sedimentation and degradation of ocean water quality, no long-term impacts expected	Short-term increase in sedimentation and degradation of surface water quality near fiber optic cable line, no long-term impacts expected
Environmental Justice	No impact	No impact
Subsistence	Short-term potential to displace subsistence resources resulting in diminished activities. Short-term change in fishermen's fishing activities **Mitigation:** Hold meetings in the affected communities to minimize impacts to harvesting time and harvesting areas	Not applicable

Table ES-8: Summary of Environmental Impacts for the Upgraded Early Warning Radars

Resource Category	ALASKA SITE Clear AFS	CALIFORNIA SITE Beale AFB	MASSACHUSETTS SITE Cape Cod AFS
Cultural Resources	**No-action Alternative**: No adverse effects **Proposed Action**: No adverse effects	**No-action Alternative**: No adverse effects **Proposed Action**: No adverse effects	**No-action Alternative**: No adverse effects **Proposed Action**: No adverse effects
Health and Safety	**No-action Alternative**: Public radio-frequency exposure levels would be below recommended exposure limits. No adverse effects from long-term exposure **Proposed Action**: Public radio-frequency exposure levels would be below recommended exposure limits. No adverse effects from long-term exposure	**No-action Alternative**: Public radio-frequency exposure levels would be below recommended exposure limits. No adverse effects from long-term exposure **Proposed Action**: Public radio-frequency exposure levels would be below recommended exposure limits. No adverse effects from long-term exposure	**No-action Alternative**: Public radio-frequency exposure levels would be below recommended exposure limits. No adverse effects from long-term exposure **Proposed Action**: Public radio-frequency exposure levels would be below recommended exposure limits. No adverse effects from long-term exposure

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