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8 ENVIRONMENTAL CONSEQUENCES

8.1 INTRODUCTION

U.S. Customs and Border Protection (CBP) prepared this Programmatic Environmental Impact Statement (PEIS) to address the potential impacts from proposed enhancements to the combination of security resources it employs to respond to existing and evolving cross-border threats. CBP would seek to modify its deployment of facilities, technologies, and land-based security infrastructure as necessary to enable its agents, officers, specialists, and supporting personnel to pursue effective control of air, land and sea borders between the United States and Canada. The time span considered for the proposed action and program alternatives is the next five to seven years.

The discussion of affected environment within this PEIS is organized by four regions in four previous chapters: West of the Rockies (Chapter 4); East of the Rockies (Chapter 5); Great Lakes (Chapter 6); and New England (Chapter 7). This structure was intended to allow impact analysis to focus on important issues within more ecologically similar border environments. For example, maritime issues are important in portions of the West of the Rockies and New England Regions, preeminent in the Great Lakes Region, and virtually absent in the East of the Rockies Region. Similarly, issues relating to forest ecosystems are of great importance in the New England, Great Lakes, and West of the Rockies Regions, while issues relating to grassland ecosystems predominate in the East of the Rockies Region.

However, in another respect the Northern Border and the 100-mile study area south of the Northern Border are one contiguous entity with a number of common elements. CBP's proposed program alternatives largely standardize the type and intensity of activities across the four regions of the Northern Border. The operating presumption is that threats could emerge anywhere along the border. Therefore, standardizing the number and type of activities proposed within each region provides flexibility to respond to future threats with the optimal mix of resources wherever needed along the border. The development, maintenance, and operation of ports of entry (POEs), Border Patrol stations (BPSs), Forward Operating Bases (FOBs), and other supporting facilities and roads would largely be planned and executed in accordance with similar design standards and best management protocols regardless of the region. Many of the actions and operational activities analyzed in this PEIS would occur in previously disturbed or developed lands, including urbanizing areas. None of the activities currently in place or projected in the listed alternatives are anticipated to result in excess development of previously undisturbed properties or building activity in excess of 50 acres. However, site-specific considerations would dictate particular distinctions and impacts that cannot be effectively detailed in this document due to the large variety of site-specific conditions and the lack of current knowledge of where CBP will need to execute specific future projects.

This chapter presents a program-level discussion of environmental impacts likely to occur if CBP implemented any of its proposed program alternatives. Chapter 3 provides the context for making impact determinations and Chapters 4 through 7 discuss the affected environment for the four regions covered by this PEIS. This chapter addresses area-wide consequences and individual activity impact considerations to provide context for future project and site-specific analysis. The discussion of impacts includes direct, indirect and cumulative effects associated

with CBP activities. In many cases, the description and determination of the level of impacts to resource areas is the same regardless of region. However, where CBP's decisions at the programmatic level are better informed about potential or ongoing impacts to a particular region or resource, the environmental effects discussion will provide greater detail.

The following sections present an analysis of the environmental and socioeconomic impacts that would likely result if any of the proposed program alternatives were implemented. The analysis is divided into the sixteen resource areas outlined in Chapter 3. For each of the resource areas, the analysis discusses general impacts that would occur anywhere along the entire Northern Border. Where appropriate, this chapter provides region-specific environmental impacts based on discussion of affected environments found in Chapters 4 through 7. These overall impact determinations are further summarized by alternative in Table 8.1-1.

Table 8.1-1. Summary of Potential Environmental Impacts across the Northern Border as a Whole by Alternative

Resource Area	Alternatives				
	No Action	**Facilities Development and Improvement**	**Detection, Inspection, Surveillance, and Communications Technology Expansion**	**Tactical Security Infrastructure Deployment**	**Flexible Direction**
Air quality	minor	minor	minor	minor	minor
Biological resources	minor, moderate	minor, moderate	minor,	minor, moderate	minor, moderate
Geology, topography, and soils	negligible, minor, moderate	minor, moderate	minor, moderate	minor, moderate	minor, moderate
Water resources	minor	minor	minor	minor	minor
Noise	minor	minor, moderate	minor	minor	minor, moderate
Climate change	beneficial, negligible, minor	beneficial, minor,	beneficial, minor,	beneficial, minor,	beneficial, minor,
Land use	moderate	moderate	minor	moderate	moderate
Aesthetic and visual resources	minor	minor	negligible	minor	minor
Socioeconomic resources	moderate	moderate	moderate	moderate	moderate
Cultural, historic, archaeological, and paleontological resources	beneficial, minor, moderate, major	beneficial, minor, moderate, major	beneficial, minor, moderate, major	beneficial, minor, moderate, major	beneficial, minor, moderate, major

Resource Area	Alternatives				
	No Action	**Facilities Development and Improvement**	**Detection, Inspection, Surveillance, and Communications Technology Expansion**	**Tactical Security Infrastructure Deployment**	**Flexible Direction**
Environmental justice and protection of children	negligible, minor	negligible, minor	minor	negligible, minor	minor
Human health and safety	beneficial, minor, moderate	beneficial, minor, moderate	beneficial, minor, moderate	beneficial, minor, moderate	beneficial, minor, moderate
Hazardous materials	beneficial, minor	negligible, minor	negligible, minor	negligible	negligible, minor
Utilities and infrastructure	negligible	negligible	negligible	negligible	negligible
Roadways and traffic	minor, major	minor, major	minor	minor, major	minor, major
Recreation	negligible, minor	minor, moderate	moderate	minor	moderate

8.2 ENVIRONMENTAL CONSEQUENCES TO AIR QUALITY

This section considers the potential adverse and beneficial impacts of U.S. Customs and Border Protection's (CBP) alternative actions on air quality. Effects would be considered minor unless the activity would exceed the applicability threshold for a nonattainment area or contribute to a violation of any Federal, state, or local air regulation.

The entire Northern Border study area contains many air quality control regions (AQCR) and Class I areas that could experience impacts due to implementation of any of the proposed alternatives. For descriptions of the regional affected environments for air quality see Sections 4.2.2 (West of the Rockies), 5.2.2 (East of the Rockies), 6.2.2 (Great Lakes), and 7.2.2 (New England). All of the alternatives would have short- and long-term minor adverse effects to air quality. These effects would be primarily due to emissions from construction activities; the routine operation of ports of entry (POEs), United States Border Patrol (USBP) stations, and forward operating bases (FOBs); and Border Patrol activities using marine vessels, all-terrain vehicles (ATVs), and snowmobiles. All new sources of air emissions would be located within 100 miles of the Northern Border and, in general, would not generate emissions above de minimis thresholds or contribute to a violation of any Federal, state, or local air regulation.

The mere presence of a sensitive area such as a nonattainment, maintenance, or Class I area does not guarantee that it would be impacted by CBP's activities. Effects would be considered minor unless they exceeded the applicability threshold for a Clean Air Act (CAA) nonattainment area or contributed to a violation of any Federal, state, or local air regulation. While there are scattered areas of air quality nonattainment in Montana and Idaho and in urban areas of the Great Lakes and New England Regions, air quality over the majority of the Northern Border is in attainment with the relevant air quality standards. All CBP actions could conform to each State Implementation Plan (SIP). Several CBP activities that do not generate any direct or indirect emissions for which CBP maintains an ongoing program of control would have either no effect or a beneficial effect on air quality, and have not been carried forward for detailed analysis. These activities include nonmotorized ground operations, operation of nonintrusive inspection (NII) systems, and operation of sensor and other technologies. In addition, some of the activities analysis may have minor beneficial effects in addition to those outlined in the section. For example, constructing new CBP facilities closer to the border would reduce travel time for employees and associated air emissions.

General Conformity

Two independent legal requirements address air quality management in the preplanning stages: (1) NEPA and (2) the general conformity provision of CAA §176(c). Under the CAA section, federal agencies are prohibited from engaging in, supporting, providing assistance for, or approving activities (e.g., issuing a license or permit) that are inconsistent with SIP requirements. This section is known as the General Conformity Rule (GCR). Depending on the action and the attainment status of the county, a CBP activity might have to complete a separate conformity analysis in addition to the NEPA analysis. Exemption from one requirement does not automatically exempt the action from the other requirement, nor does fulfillment of one

requirement constitute fulfillment of the other. The GCR, however, was written with NEPA in mind, and CBP integrates the two requirements to save time and resources.

According to CAA §176(c), activities must conform to an implementation plan's purpose of "eliminating or reducing the severity and number of violations" of NAAQS and achieving "expeditious attainment" of such standards. Such activities must not cause or contribute to a new violation; increase the frequency or severity of an existing violation; or delay timely attainment of any standard, required interim emission reduction, or other milestone. Pursuant to that rule, conformity determinations are required to ensure that state air quality standards would not be exceeded and that an action would comply fully with the SIP.

The GCR divides the air conformity process into two distinct areas: applicability analysis and conformity determination. The GCR requires Federal agencies to determine whether their actions would increase emissions of criteria pollutants above preset threshold levels (40 CFR 93.153(b)). These de minimis rates vary depending on the severity of the nonattainment and geographic location. De minimis emissions are total direct and indirect emissions of a criteria pollutant caused by a Federal action in a nonattainment or maintenance area at rates less than the specified applicability thresholds. These rates vary by the type of pollutant and the level of nonattainment (Table 4.2-2).

Table 8.2-1. Applicability Thresholds for Nonattainment Areas (NAAs)

Criteria Pollutants (tons per year)	Threshold
O_3 (VOCs or NO_x)	
Serious NAAs	50
Severe NAAs	25
Extreme NAAs	10
Other O_3 NAAs outside an O_3 transport region	100
Marginal and moderate NAAs inside an O_3 transport region	
VOC	50
NO_x	100
CO	
All NAAs	100
SO_2 or NO_x	
PM_{10}	
Moderate NAAs	100
Serious NAAs	70
Pb	
All NAAs	25

Source: 40 CFR 93.153.

8.2.1 NO ACTION ALTERNATIVE

The No Action Alternative would have short- and long-term minor adverse effects on air quality. These effects would be primarily due to emissions from planned construction projects, and motorized ground, aircraft, and vessel patrols. All new sources of air emissions would be located within 100 miles of the Northern Border and, in general, would not contribute to a violation of any Federal, state, or local air regulation. CBP would (1) continue the current level of operations, and (2) continue maintaining and repairing existing facilities, technology, and infrastructure. Both maintenance activities and ongoing operations are specifically exempt from the general conformity regulations (40 CFR 93.153(b)). General conformity regulations for all currently planned construction projects have already been addressed or are being addressed in other NEPA documents. Estimated emissions from current activities are outlined below as a comparative baseline for the other alternatives in this PEIS (Table 8.2-2). Air emissions for each region were calculated based on the operational levels outlined in Chapter 2 under the No Action Alternative. A detailed breakdown of emissions is located in Appendix J.

Table 8.2-2. Baseline Emissions from U.S. Customs and Border Protection Activities

U.S. Customs and Border Protection Activity	West of the Rockies Region Total Emissions (tons per year)					
	CO	NOx	PM10	PM2.5	SOx	VOC
Small construction projects1 - construction emissions	3.4	7.0	0.4	0.4	< 0.1	1.0
Small construction projects1- operational emissions	1.6	1.5	0.1	0.1	0.4	0.2
Large construction projects1- construction emissions	6.0	11.8	0.7	0.7	< 0.1	1.8
Large construction projects1- operational emissions	2.8	1.7	0.1	0.1	0.4	0.3
Ground operations—motorized2	48.5	5.1	0.4	0.2	< 0.1	5.0
Aircraft operations2	10.4	0.5	0.1	0.1	0.2	5.8
Vessel operations2	7.1	0.2	< 0.1	< 0.1	< 0.1	0.3
U.S. Customs and Border Protection Activity	**East of the Rockies Region Total Emissions (tons per year)**					
	CO	**NO_x**	**PM_{10}**	**$PM_{2.5}$**	**SO_x**	**VOC**
Small construction projects[1] - construction emissions	3.4	7.0	0.4	0.4	< 0.1	1.0
Small construction projects[1]- operational emissions	1.6	1.5	0.1	0.1	0.4	0.2
Large construction projects[1]- construction emissions	6.0	11.8	0.7	0.7	< 0.1	1.8
Large construction projects[1]- operational emissions	2.8	1.7	0.1	0.1	0.4	0.3

Ground operations—motorized[2]	48.5	5.1	0.4	0.2	< 0.1	5.0
Aircraft operations[2]	10.4	0.5	0.1	0.1	0.2	5.8
Vessel operations[2]	2.5	0.1	< 0.1	< 0.1	< 0.1	0.1

U.S. Customs and Border Protection Activity	Great Lakes Total Emissions (tons per year)					
	CO	NO_x	PM_{10}	$PM_{2.5}$	SO_x	VOC
Small construction projects[1] - construction emissions	3.4	7.0	0.4	0.4	< 0.1	1.0
Small construction projects[1]- operational emissions	1.6	1.5	0.1	0.1	0.4	0.2
Large construction projects[1]- construction emissions	6.0	11.8	0.7	0.7	< 0.1	1.8
Large construction projects[1]- operational emissions	2.8	1.7	0.1	0.1	0.4	0.3
Small construction projects[1]	3.4	7.0	0.4	0.4	< 0.1	1.0
Large construction projects[1]	6.0	11.8	0.7	0.7	< 0.1	1.8
Ground operations—motorized[2]	48.5	5.1	0.4	0.2	< 0.1	5.0
Aircraft operations[2]	7.8	0.4	0.1	0.1	0.1	4.4
Vessel operations[2]	12.2	0.4	< 0.1	< 0.1	< 0.1	0.5
CBP Activity	**New England Total Emissions (tons per year)**					
	CO	**NO_x**	**PM_{10}**	**$PM_{2.5}$**	**SO_x**	**VOC**
Small construction projects[1] - construction emissions	3.4	7.0	0.4	0.4	< 0.1	1.0
Small construction projects[1]- operational emissions	1.6	1.5	0.1	0.1	0.4	0.2
Large construction projects[1]- construction emissions	6.0	11.8	0.7	0.7	< 0.1	1.8
Large construction projects[1]- operational emissions	2.8	1.7	0.1	0.1	0.4	0.3
Ground operations—motorized[2]	48.5	5.1	0.4	0.2	< 0.1	5.0
Aircraft operations[2]	7.8	0.4	0.1	0.1	0.1	7.8
Vessel operations[2]	8.1	0.3	<0.1	< 0.1	< 0.1	0.3

[1] Outlines emissions for a single construction project and assumes that the projects either (1) are technologically and economically independent of each other or (2) do not occur concurrently in the same nonattainment region.

[2] Accounts for all operations within the entire region as a reasonable upper bound of emissions.

8.2.2 FACILITIES DEVELOPMENT AND IMPROVEMENT ALTERNATIVE

The Facilities Development and Improvement Alternative would have short- and long-term minor adverse effects on air quality. In addition to activities outlined in the No Action Alternative, these effects would be primarily due to emissions from both small and large construction projects. All new sources of air emissions would be located within 100 miles of the Northern Border and, in general, would not generate emissions above the de minimis thresholds or contribute to a violation of any Federal, state, or local air regulation. All sites require a conformity analysis when working in a non-attainment area under the CAA. Discussion of impacts analysis for this alternative follows.

Construction Projects

Both small and large construction projects would have short-term minor adverse effects to air quality. Increases in emissions would not exceed de minimis thresholds nor contribute to a violation of any Federal, state, or local air regulation.

The exact locations of construction projects are unknown at this time; such projects could take place anywhere within 100 miles of the Northern Border. For purposes of analysis, all direct and indirect emissions of criteria pollutants were estimated and compared to the most restrictive applicability threshold levels to determine whether the GCR may apply. Table 8.2-3 shows the net emissions from the Facilities Development and Improvement Alternative for a single region and for all four regions combined. The total annual emissions were estimated for heavy construction equipment, construction worker commutes, paving, architectural coatings, and fugitive dust for both large and small construction projects. The GCR does not apply to any of the activities because either (1) the activity would be located in an attainment area or (2) the projected emission would be below the applicability thresholds for any nonattainment area. This is true regardless of the type of activity, location of CBP activity, pollutants of interest, or the severity of nonattainment. It is understood that activities this small and of this type are too small or too widespread to interfere with a region's ability to attain the NAAQS. Any additional support activities other than those described herein would require site-specific analysis under NEPA and the GCR. This may require additional emissions estimations to ensure the total direct and indirect emissions from the action would not exceed the applicability thresholds, and that the GCR still would not apply. Air emissions for each region were calculated based on the operational levels outlined in Chapter 2 under the Facilities Development and Improvement Alternative. Detailed emissions calculations are located in Appendix J.

Table 8.2-3. Net Emissions from the Facilities Development and Improvement Alternative

U.S. Customs and Border Protection Activity	Net Emissions per Northern Border Region (tons per year)					
	CO	NO_x	PM_{10}	$PM_{2.5}$	SO_x	VOC
Small construction projects[1] -construction emissions	3.4	7.0	0.4	0.4	< 0.1	1.0
Small construction projects[1]-operational emissions	1.6	1.5	0.1	0.1	0.4	0.2
Large construction projects[1]-construction emissions	6.0	11.8	0.7	0.7	< 0.1	1.8
Large construction projects[1]-operational emissions	2.8	1.7	0.1	0.1	0.4	0.3
De minimis thresholds (tons per year)[3]	100	25	100	100	100	25

U.S. Customs and Border Protection Activity	Net Emissions per Northern Border Region (tons per year)					
	CO	NO_x	PM_{10}	$PM_{2.5}$	SO_x	VOC
Would emissions exceed de minimis thresholds?	No	No	No	No	No	No

[1] Outlines emissions for a single project and assumes that the projects are either (1) technologically and economically independent of each other or (2) do not occur concurrently in the same nonattainment region.

[2] Accounts for all operations within the entire region as a reasonable upper bound of emissions.

[3] There are no areas within 100 miles of the Northern Border designated extreme nonattainment for the 8-hour ozone or nonattainment for the lead.

For analysis purposes, it was assumed that for large projects, all construction would be compressed into a single 12-month period, and for small projects, all construction would be compressed into a single 6-month period. Therefore, regardless of the ultimate implementation schedule, these effects would be considered a reasonable worst case. It was also assumed that the projects would be approximately 25,000 sf and a 750-kW back-up generator would be used either initially or in the future. Moderate changes in the size of the facility or type of equipment ultimately selected would not substantially change the total direct or indirect emissions, the applicability of the GCR, or the level of effects under NEPA.

The determined effects of air quality from construction activities can normally be referenced in subsequent or tiered NEPA documents on a case-by-case basis. Additional analysis would be performed in the specific situations where site-specific information is required to make a more detailed analysis of an activity and to determine the level of its effect under NEPA. This would be necessary for actions that include new buildings with a total gross square footage greater than 100,000.

Establishing both small and large facilities would have long-term minor adverse effects to air quality. Increases in emissions would not exceed de minimis thresholds nor contribute to a violation of any Federal, state, or local air regulation.

Facilities may be located at any existing border crossing along the Northern Border. For purposes of analysis, all direct and indirect emissions of criteria pollutants were estimated and compared to the most restrictive applicability threshold levels to determine whether the GCR may apply (Table 3.2-2). The total annual emissions were estimated for heating the facilities, worker commutes, and use of emergency generators. It was assumed that a large facility would be approximately 25,000 sf, a small facility would be approximately 10,000 sf, and a 750-kW back-up generator would be used either initially or in the future. The GCR does not apply to any of the activities because either (1) the activity would be located in an attainment area or (2) the projected emission would be below the applicability thresholds for any nonattainment area. This is true regardless of the location of CBP activity, pollutants of interest, or the severity of nonattainment. It is understood that activities this small and of this type are too small or too widespread to interfere with a region's ability to attain the NAAQS. Any additional support activities other than those described herein would require site-specific analysis under NEPA and the GCR. This may require additional emissions estimations to ensure the total direct and indirect emissions from the action would not exceed the applicability thresholds, and that the GCR still would not apply. Detailed emissions calculations are located in Appendix J.

Air permits to construct or operate any new stationary sources of air emissions such as boilers or generators may be required before construction could begin. Similarly, air permits may be required for the construction of a new facility. This issue is outlined in Table 8.2-4. All new stationary sources of air emissions would be subject to Federal, state, and local air permitting regulations, including prevention of significant deterioration (PSD), new source review (NSR), New Source Performance Standards (NSPS), and National Emission Standards for Hazardous Air Pollutants (NESHAP). Permitting requirements for individual activities are outlined below.

Table 8.2-4. Air Permitting Review for a Constructed or Modified Facility

Regulation	Applicability
NSR	The potential to emit (PTE) would not exceed NSR threshold and would be exempt from NSR permitting requirements. It is possible that a state operating permit would be required for boilers, emergency back-up generators, and any other stationary source of air emissions.
PSD	Potential emissions would not exceed the 250-ton per year PSD threshold; therefore, the project would not be subject to PSD review. Depending on location, new stationary sources would have to meet PSD requirements for Class I areas.
Title V permitting requirements	The facilities potential to emit would be below the Title V major source threshold and would not require a Title V permit.
NESHAP	Potential hazardous air pollutant (HAP) emissions would not exceed NESHAP thresholds. Therefore, the use of Maximum Available Control Technology (MACT) would not be required.
NSPS	Both emergency generators and boilers would be subject to NSPS.

Other non-permitting requirements may be required through the use of compliant practices or products. These requirements appear in each individual state's air quality regulations. Regulations usually include restrictions to open burning, incineration, fugitive-particle emissions, use of architectural coatings, and the storage of fuel. Non-permitting requirements that may apply to construction for individual states are outlined in Appendix J. In addition to these non-permitting requirements, CBP and its contractors would not handle, transport, or store any material in a manner that may allow unnecessary amounts of air contaminants to become airborne.

Precautions may include:

- Using water for control of dust during construction operations;
- Paving roadways and maintaining them in a clean condition;
- Covering open equipment for conveying or transporting material likely to create objectionable air pollution when airborne; and
- Promptly removing spilled or tracked dirt or other materials from paved streets.

The determined effects on air quality from operating new facilities can normally be referenced in subsequent or tiered NEPA documents on a case-by-case basis. Additional analysis would be performed in the specific situations where site-specific information is required to make a more

detailed analysis of an activity and to determine the level of its effect under NEPA. This would be necessary for actions that include:

- Any new stationary source of air emissions that would exceed the PSD major source thresholds in an attainment area or the NNSR major source threshold in a nonattainment area;
- Proposed stationary sources that failed to meet the PSD requirements for Class I areas; or
- Any activities that included stationary sources of air emissions that would exceed the Title V major source thresholds.

8.2.3 DETECTION, INSPECTION, SURVEILLANCE, AND COMMUNICATIONS TECHNOLOGY EXPANSION ALTERNATIVE

The Detection, Inspection, Surveillance, and Communications Technology Expansion Alternative would have short- and long-term minor adverse effects on air quality. In addition to activities outlined in the No Action Alternative, these effects would be primarily due to emissions from small construction projects, and additional aircraft and vessel operations. All new sources of air emissions would be located within 100 miles of the Northern Border and, in general, would not generate emissions above the de minimis thresholds or contribute to a violation of any Federal, state, or local air regulation. Discussion of impacts analysis for this alternative follows. Air emissions for each region were calculated based on the operational levels outlined in Chapter 2 under the Detection, Inspection, Surveillance, and Communications Technology Expansion Alternative. Detailed emissions calculations are located in Appendix J.

Construction Projects

Similar to the Facilities Development and Improvement Alternative and for the same reasons, both small and large construction projects under this alternative would have short-term minor adverse effects. Even with an increase in the total number of projects, under this alternative, increases in emissions (Table 8.2-5) would not exceed de minimis thresholds nor contribute to a violation of any Federal, state, or local air regulation. The GCR would not apply because either (1) the activity would be located in an attainment area or (2) the projected emissions would be below the applicability thresholds for any nonattainment area.

Subsequent NEPA analysis would be conducted, where necessary, to determine the specific impacts if:

- The infrastructure being constructed had a footprint with a total gross square footage greater than 100,000;
- The activity proposed any stationary source of air emissions that would exceed the PSD major source thresholds in an attainment area or the nonattainment new source review (NNSR) major source threshold in a nonattainment area; or
- Proposed stationary sources failed to meet the PSD requirements for Class I areas.

Table 8.2-5. Net Emissions from the Detection, Inspection, Surveillance, and Communications Technology Expansion Alternative

U.S. Customs and Border Protection Activity	West of the Rockies Region Total Emissions (tons per year)					
	CO	NO_x	PM_{10}	$PM_{2.5}$	SO_x	VOC
Small construction projects[1] - construction emissions	3.4	7.0	0.4	0.4	< 0.1	1.0
Small construction projects[1]- operational emissions	1.6	1.5	0.1	0.1	0.4	0.2
Ground operations—motorized[2]	30.3	3.2	0.2	0.2	< 0.1	3.1
Aircraft operation[2]	12.0	0.6	0.1	0.1	0.2	6.6
Vessel operations[2]	10.7	0.4	< 0.1	< 0.1	< 0.1	1.0
De minimis thresholds (tons per year) [3]	100	25	100	100	100	25
Would emissions exceed de minimis thresholds?	No	No	No	No	No	No
U.S. Customs and Border Protection Activity	**East of the Rockies Region Total Emissions (tons per year)**					
	CO	**NO_x**	**PM_{10}**	**$PM_{2.5}$**	**SO_x**	**VOC**
Small construction projects[1] - construction emissions	3.4	7.0	0.4	0.4	< 0.1	1.0
Small construction projects[1]- operational emissions	1.6	1.5	0.1	0.1	0.4	0.2
Ground operations—motorized[2]	30.3	3.2	0.2	0.2	< 0.1	3.1
Aircraft operation[2]	15.6	0.7	0.2	0.2	0.3	8.5
Vessel operations[2]	5.1	0.2	< 0.1	< 0.1	< 0.1	0.2
De minimis thresholds (tons per year) [3]	100	25	100	100	100	25
Would emissions exceed de minimis thresholds?	No	No	No	No	No	No

U.S. Customs and Border Protection Activity	Great Lakes Total Emissions (tons per year)					
	CO	NO_x	PM_{10}	$PM_{2.5}$	SO_x	VOC
Small construction projects[1] - construction emissions	3.4	7.0	0.4	0.4	< 0.1	1.0
Small construction projects[1]- operational emissions	1.6	1.5	0.1	0.1	0.4	0.2
Ground operations—motorized[2]	30.3	3.2	0.2	0.2	< 0.1	3.1
Aircraft operation[2]	12.0	0.6	0.1	0.1	0.2	6.5
Vessel operations[2]	12.2	0.4	< 0.1	< 0.1	< 0.1	0.5
De minimis thresholds (tons per year) [3]	100	25	100	100	100	25
Would emissions exceed de minimis thresholds?	No	No	No	No	No	No
CBP Activity	**New England Total Emissions (tons per year)**					
	CO	NO_x	PM_{10}	$PM_{2.5}$	SO_x	VOC
Small construction projects[1] - construction emissions	3.4	7.0	0.4	0.4	< 0.1	1.0
Small construction projects[1]- operational emissions	1.6	1.5	0.1	0.1	0.4	0.2
Ground Operations—Motorized[2]	30.3	3.2	0.2	0.2	< 0.1	3.1
Aircraft operation[2]	12.0	0.6	0.1	0.1	0.2	12.0
Vessel operations[2]	25.4	0.9	< 0.1	< 0.1	< 0.1	0.5
De minimis thresholds (tons per year) [3]	100	25	100	100	100	25
Would emissions exceed de minimis thresholds?	No	No	No	No	No	No

[1] These numbers outlines emissions for a single construction project and assume that the projects either (1) are technologically and economically independent of each other or (2) do not occur concurrently in the same nonattainment region.

[2] These numbers account for all operations within the entire region as a reasonable upper bound of emissions.

[3] There are no areas within 100 miles of the Northern Border designated extreme nonattainment for the 8-hour ozone standard or nonattainment for the lead standard.

Ground Operations—Motorized

Conducting motorized ground operations would have long-term minor adverse effects to air quality. Increases in emissions would not exceed de minimis thresholds or contribute to a violation of any Federal, state, or local air regulation. Notably, conducting motorized ground patrols would not include any new stationary sources of air emissions, and no air permitting would be required.

The total annual emissions were estimated for motorized ground patrols. The total direct and indirect emissions associated with this activity would not exceed applicability threshold levels (Table 8.2-5). The GCR does not apply because either (1) the activity would be located in an attainment area or (2) the projected emissions would be below the applicability thresholds for any nonattainment area. This is true regardless of the location of the activity, pollutants of interest, or severity of nonattainment. Therefore, to operate all of them within a single AQCR was considered a reasonable upper bound for effects. Moderate changes in the number of operations would not substantially change the total direct or indirect emissions, the applicability of the GCR, or the level of effects under NEPA. A detailed breakdown of emissions is located in Appendix J.

Aircraft Operations

Conducting aircraft patrols along the Northern Border would have long-term minor adverse effects to air quality. Increases in emissions would not exceed de minimis thresholds or contribute to a violation of any Federal, state, or local air regulation. Notably, conducting aircraft operations would not include any new stationary sources of air emissions, and no air permitting would be required.

The total annual emissions were estimated for aerial surveillance patrols. The total additional direct and indirect emissions associated with this activity (Table 8.2-5) would not exceed applicability threshold levels. The GCR does not apply because either (1) the activity would be located in an attainment area or (2) the projected emissions would be below the applicability thresholds for any nonattainment area. This is true regardless of the location of the activity, pollutants of interest, or the severity of nonattainment. For analysis purposes, it was assumed that an air fleet consisting of 92 percent Cessna Citations, and 8 percent UH-60 helicopters would be used. This was considered a reasonable upper bound for effects. Moderate changes in number of operations or aircraft used would not substantially change the total direct or indirect emissions, the applicability of the GCR, or the level of effects under NEPA. A detailed breakdown of emissions is located in Appendix J.

Vessel Operations

Conducting waterborne patrols would have long-term minor adverse effects to air quality. Increases in emissions would not exceed de minimis thresholds or contribute to a violation of any Federal, state, or local air regulation. Notably, conducting waterborne patrols would not include any new stationary sources of air emissions, and no air permitting would be required.

The total annual emissions were estimated for waterborne patrols. The total direct and indirect emissions associated with this activity would not exceed applicability threshold levels (Table 8.2-5). The GCR does not apply because either (1) the activity would be located in an attainment area or (2) the projected emissions would be below the applicability thresholds for any nonattainment area. This is true regardless of the location of the activity, pollutants of interest, or the severity of nonattainment. Moderate changes in number of operations would not substantially change the total direct or indirect emissions, the applicability of the GCR or the level of effects under NEPA. A detailed breakdown of emissions is located in Appendix J.

8.2.4 TACTICAL SECURITY INFRASTRUCTURE DEPLOYMENT ALTERNATIVE

The Tactical Security Infrastructure Deployment Alternative would have short- and long-term minor adverse effects on air quality. In addition to activities outlined in the No Action Alternative, these effects would be primarily due to emissions from both small and large construction projects. All new sources of air emissions would be located within 100 miles of the Northern Border and, in general, would not generate emissions above the de minimis thresholds or contribute to a violation of any Federal, state, or local air regulation. Discussion of impacts analysis for this alternative follows.

Construction Projects

For reasons outlined under the Facilities Development and Improvement Alternative, both small and large construction projects would have short-term minor adverse effects to air quality. Even with an increase in the total number of operations over the current program, under this alternative, increases in emissions would not exceed de minimis thresholds or contribute to a violation of any Federal, state, or local air regulation (Table 8.2-5). The GCR would not apply because either (1) the activity would be located in an attainment area or (2) the projected emissions would be below the applicability thresholds for any nonattainment area. The applicability of both permitting and non-permitting regulations would be the same as outlined for the Facilities Development and Improvement Alternative. Notably, under this alternative, the construction of roadways, trails, fencing, barriers, and trench cuts is unlikely to have any ongoing operational sources of air emissions. No additional generators or boilers are anticipated.

Table 8.2-6. Net Emissions from the Tactical Security Infrastructure Deployment Alternative

U.S. Customs and Border Protection Activity	Net Emissions (tons per year)					
	CO	NOx	PM10	PM2.5	SOx	VOC
Small construction projects[1] -construction emissions	3.4	7.0	0.4	0.4	< 0.1	1.0
Small construction projects[1]-operational emissions	1.6	1.5	0.1	0.1	0.4	0.2
Large construction projects[1]-construction emissions	6.0	11.8	0.7	0.7	< 0.1	1.8
Large construction projects[1]-operational emissions	2.8	1.7	0.1	0.1	0.4	0.3
De minimis thresholds (tons per year) [3]	100	25	100	100	100	25
Would emissions exceed de minimis thresholds?	No	No	No	No	No	No

[1] These numbers outline emissions for a single construction project and assumes that the projects are either (1) technologically and economically independent of each other or (2) do not occur concurrently in the same nonattainment region.

[2] These numbers account for all operations within the entire region as a reasonable upper bound of emissions.

[3] There are no areas within 100 miles of the Northern Border designated extreme nonattainment for the 8-hour ozone or nonattainment for the lead.

Subsequent NEPA analysis would be conducted, where necessary, to determine the specific impacts if the infrastructure being constructed had a footprint with a total gross square footage greater than 100,000.

8.2.5 FLEXIBLE DIRECTION ALTERNATIVE

The Flexible Direction Alternative would have short- and long-term minor adverse effects on air quality. In addition to activities outlined in the No Action Alternative, these effects would be primarily due to emissions from both small and large construction projects, and from additional ground, air, and vessel operations. All new sources of air emissions would be located within 100 miles of the Northern Border and, in general, would not generate emissions above the de minimis thresholds or contribute to a violation of any Federal, state, or local air regulation. Discussion of impacts analysis for this alternative follows.

Construction Projects

Similar to the Facilities Development and Improvement Alternative and for the same reasons, both small and large construction projects under this alternative would have short-term minor adverse effects. Even with an increase in the total number of projects, under this alternative, increases in emissions would not exceed de minimis thresholds nor contribute to a violation of any Federal, state, or local air regulation (Table 8.2-7). The GCR would not apply because either (1) the activity would be located in an attainment area or (2) the projected emissions would be below the applicability thresholds for any nonattainment area. Air emissions for each region were calculated based on the operational levels outlined in Chapter 2 under the Flexible Direction Alternative. Detailed emissions calculations are located in Appendix J.

Subsequent NEPA analysis would be conducted, where necessary, to determine the specific impacts of the construction of a upgrade to a POE if:

- The buildings associated with the new facilities had a total gross square footage greater than 100,000.
- The activity proposed any stationary source of air emissions that would exceed the PSD major source thresholds in an attainment area or the NNSR major source threshold in a nonattainment area; or
- Proposed stationary sources failed to meet the PSD requirements for Class I areas.

Table 8.2-7. Net Emissions from the Flexible Direction Alternative

U.S. Customs and Border Protection Activity	West of the Rockies Region Net Emissions (tons per year)					
	CO	NO_x	PM_{10}	$PM_{2.5}$	SO_x	VOC
Small construction projects[1] - construction emissions	3.4	7	0.4	0.4	< 0.1	1
Small construction projects[1]-operational emissions	1.6	1.5	0.1	0.1	0.4	0.2
Large construction projects[1]-construction emissions	6	11.8	0.7	0.7	< 0.1	1.8
Large construction projects[1]-operational emissions	2.8	1.7	0.1	0.1	0.4	0.3
Small construction projects[1]	3.4	7	0.4	0.4	< 0.1	1
Small construction projects[1]	6	11.8	0.7	0.7	< 0.1	1.8
Ground operations—motorized[2]	30.3	3.2	0.2	0.2	< 0.1	3.1
Aircraft operation[2]	36.4	1.6	0.4	0.3	0.7	4.3
Vessel operations[2]	10.7	0.4	< 0.1	< 0.1	< 0.1	0.4
De minimis thresholds (tons per year)[3]	100	25	100	100	100	25
Would emissions exceed de minimis thresholds?	No	No	No	No	No	No
U.S. Customs and Border Protection Activity	**East of the Rockies Region Net Emissions (tons per year)**					
	CO	**NO_x**	**PM_{10}**	**$PM_{2.5}$**	**SO_x**	**VOC**
Small construction projects[1] - construction emissions	3.4	7	0.4	0.4	< 0.1	1
Small construction projects[1]-operational emissions	1.6	1.5	0.1	0.1	0.4	0.2
Large construction projects[1]-construction emissions	6	11.8	0.7	0.7	< 0.1	1.8
Large construction projects[1]-operational emissions	2.8	1.7	0.1	0.1	0.4	0.3
Small construction projects[1]	3.4	7	0.4	0.4	< 0.1	1
Small construction projects[1]	6	11.8	0.7	0.7	< 0.1	1.8
Ground operations—motorized[2]	30.3	3.2	0.2	0.2	< 0.1	3.1
Aircraft operation[2]	15.6	0.7	0.2	0.2	0.3	8.5
Vessel operations[2]	5.1	0.2	< 0.1	< 0.1	< 0.1	0.2
De minimis thresholds (tons per year)[3]	100	25	100	100	100	25
Would emissions exceed de minimis thresholds?	No	No	No	No	No	No

U.S. Customs and Border Protection Activity	Great Lakes Net Emissions (tons per year)					
	CO	NO_x	PM_{10}	$PM_{2.5}$	SO_x	VOC
Small construction projects[1] - construction emissions	7	0.4	0.4	< 0.1	1	1
Small construction projects[1]-operational emissions	1.5	0.1	0.1	0.4	0.2	0.2
Large construction projects[1]-construction emissions	11.8	0.7	0.7	< 0.1	1.8	1.8
Large construction projects[1]-operational emissions	1.7	0.1	0.1	0.4	0.3	0.3
Small construction projects[1]		7	0.4	0.4	< 0.1	1
Small construction projects[1]	6	11.8	0.7	0.7	< 0.1	1.8
Ground operations—motorized[2]	30.3	3.2	0.2	0.2	< 0.1	3.1
Aircraft operation[2]	36.4	1.6	0.4	0.3	0.7	4.3
Vessel operations[2]	25.4	0.9	< 0.1	< 0.1	< 0.1	0.5
De minimis thresholds (tons per year)[3]	100	25	100	100	100	25
Would emissions exceed de minimis thresholds?	No	No	No	No	No	No
U.S. Customs and Border Protection Activity	**New England Net Emissions (tons per year)**					
	CO	**NO_x**	**PM_{10}**	**$PM_{2.5}$**	**SO_x**	**VOC**
Small construction projects[1] - construction emissions	7	0.4	0.4	< 0.1	1	1
Small construction projects[1]-operational emissions	1.5	0.1	0.1	0.4	0.2	0.2
Large construction projects[1]-construction emissions	11.8	0.7	0.7	< 0.1	1.8	1.8
Large construction projects[1]-operational emissions	1.7	0.1	0.1	0.4	0.3	0.3
Small construction projects[1]	3.4	7	0.4	0.4	< 0.1	1
Small construction projects[1]	6	11.8	0.7	0.7	< 0.1	1.8
Ground operations—motorized[2]	30.3	3.2	0.2	0.2	< 0.1	3.1
Aircraft operation[2]	12	0.6	0.1	0.1	0.2	12
Vessel operations[2]	25.4	0.9	< 0.1	< 0.1	< 0.1	0.5
De minimis thresholds (tons per year)[3]	100	25	100	100	100	25
Would emissions exceed de minimis thresholds?	No	No	No	No	No	No

[1] Outlines emissions for a single project and assumes that the projects are either (1) technologically and economically independent of each other or (2) do not occur concurrently in the same nonattainment region.

[2] Accounts for all operations within the entire region as a reasonable upper bound of emissions.

[3] There are no areas within 100 miles of the Northern Border designated extreme nonattainment for the 8-hour ozone or nonattainment for the lead.

Ground Operations—Motorized

For reasons outlined under the Detection, Inspection, Surveillance, and Communications Technology Expansion Alternative, conducting motorized ground operations would have long-term minor adverse effects to air quality. Even with an increase in the total number of patrols, under this alternative, increases in emissions would not exceed de minimis thresholds or contribute to a violation of any Federal, state, or local air regulation. Therefore, to operate all such activities within a single AQCR was considered a reasonable upper bound for effects. Moderate changes in number of operations would not substantially change the total direct or indirect emissions, the applicability of the GCR or the level of effects under NEPA. A detailed breakdown of emissions is located in Appendix J.

Aircraft Operations

For reasons outlined under the Detection, Inspection, Surveillance, and Communications Technology Expansion Alternative, conducting aerial surveillance patrols along the Northern Border would have long-term minor adverse effects to air quality. Even with an increase in the total number of operations, under this alternative, when compared to the No Action Alternative, increases in emissions would not exceed de minimis thresholds or contribute to a violation of any Federal, state, or local air regulation. For analysis purposes, it was assumed that an air fleet consisting of 92 percent Cessna Citations, and 8 percent UH-60 helicopters would be used .Notably, conducting aircraft operations would not include any new stationary sources of air emissions, and no air permitting would be required.

Vessel Operations

For reasons outlined under the Detection, Inspection, Surveillance, and Communications Technology Expansion Alternative, conducting waterborne patrols along the Northern Border would have long-term minor adverse effects to air quality. Even with an increase in the total number of operations, under this alternative, increases in emissions would not exceed de minimis thresholds or contribute to a violation of any Federal, state, or local air regulation. Notably, conducting vessel operations would not include any new stationary sources of air emissions, and no air permitting would be required.

8.2.6 BEST MANAGEMENT, MINIMIZATION, AND MITIGATION

No mitigation measures would be required for air quality. CBP would comply fully with all Federal, state, and local air regulations where applicable.

Minor short- and long-term cumulative effects would be expected. Impacts on air quality would be primarily due to the construction and operation of CBP's facilities, as well as field activities. A wide range of other activities along the Northern Border that produce some amounts of air pollutants would, of course, occur within each region across the Northern Border as a whole. Every state takes into account the effects of all past, present, and reasonably foreseeable projects, activities, and associated emissions during the development of its SIP under the CAA. As noted above, estimated emissions generated by CBP's activities for all alternatives would be de minimis—so limited that they would not interfere with timely attainment of the NAAQS. Therefore, implementation of any of the proposed alternatives would not contribute appreciably to any adverse cumulative air quality impacts. Thus, impacts across the Northern Border as a

whole would not be significant, and no air quality mitigation measures would be required (see Section 9.2).

8.2.7 SUMMARY OF POTENTIAL IMPACTS

Table 8.2-8 summarizes the comparison of impacts to air quality stemming from the various alternatives.

Table 8.2-8. Summary of Potential Air Quality Impacts

Impact-Producing Activity	Level of Impact				
	Negligible Adverse	Minor adverse	Moderate Adverse	Major Adverse	Beneficial
NO ACTION ALTERNATIVE					
Small construction projects (< 1 acre and < 1/4 mile: e.g., minor repairs to facilities, parking lot repairs, access road repairs)		X			
Large construction projects (> 1 acre and > 1/4 mile: e.g., repairs to facilities, parking lot repairs, access road repairs)		X			
Checkpoint operations	X				
Ground operations—motorized		X			
Ground operations—nonmotorized	X				
Aircraft operations		X			
Vessel operations		X			
Operation of NII systems	X				
Operation of sensor and other technologies	X				
OVERALL IMPACT		**X**			
FACILITIES DEVELOPMENT AND IMPROVEMENT ALTERNATIVE					
Small construction projects		X			
Large construction		X			
OVERALL IMPACT		**X**			
DETECTION, INSPECTION, SURVEILLANCE, AND COMMUNICATIONS TECHNOLOGY EXPANSION ALTERNATIVE					
Small construction projects (e.g., towers and other infrastructure to mount antennas)		X			
Ground operations—motorized		X			
Ground operations—nonmotorized	X				
Aircraft operations		X			

Impact-Producing Activity	Level of Impact				
	Negligible Adverse	Minor adverse	Moderate Adverse	Major Adverse	Beneficial
Vessel operations		X			
Operation of NII systems	X				
Operation of Sensor and other technologies	X				
OVERALL IMPACT		**X**			
TACTICAL SECURITY INFRASTRUCTURE DEPLOYMENT ALTERNATIVE					
Small construction projects (trench cuts, towers, minor access roads and fences)		X			
Large construction projects (access roads and fences)		X			
OVERALL IMPACT		**X**			
FLEXIBLE DIRECTION ALTERNATIVE					
Small construction projects		X			
Large construction projects		X			
Checkpoint operations	X				
Ground operations—motorized		X			
Ground operations—no motorized	X				
Aircraft operations		X			
Vessel operations		X			
Operation of NII systems	X				
Operation of sensor and other technologies	X				
OVERALL IMPACT		**X**			

8.3 ENVIRONMENTAL CONSEQUENCES TO BIOLOGICAL RESOURCES

This section considers the potential adverse and beneficial impacts of CBP's program alternatives on biological resources within the Northern Border area of study. For descriptions of the biological resources within the regional affected environments see sections 4.3.2 (West of the Rockies), 5.3.2 (East of the Rockies), 6.3.2 (Great Lakes), and 7.3.2 (New England). Each alternative may affect terrestrial and/or aquatic resources in regard to changing physical conditions or affect behaviors, or both. This Environmental Consequences section will identify/analyze the potential for such physical and behavioral impacts.

Within the 12 ecoregions identified for the Northern Border there are substantial blocks of relatively intact habitat and sensitive environmental areas that are under protection by various Federal, state, and local authorities. Some of the activities proposed within the alternatives could cause minor to moderate adverse direct or indirect impacts in undisturbed sensitive habitats. The biological resource impacts of the listed alternatives would be expected to have minimal to moderate direct effect on threatened and endangered species, wildlife, vegetative habitat, and aquatic resources. Also, the potential exists for some habitat fragmentation, breeding interruption to sensitive species, and increased opportunity for the spread of invasive species.

Overall direct and indirect biological impacts in the 12 ecoregions that comprise the Northern Border study area would be minor to moderately adverse regardless of the alternative chosen (see Table 8.3-1).

CBP's Air Unit Citation Jet Patrol

Source: (Tourtellotte, 2010).

With CBP's environmental protocols, including environmental education and agent training, use of biological monitoring, and restoration initiatives, major adverse impacts of future and ongoing projects would be avoided or minimized. The possibility exists, however, that reasonably foreseeable proposed projects could result in cumulative impacts when combined with other ongoing CBP activities and past, present and future activities from other non-CBP sources. Small actions can produce additive effects on biological resources, especially when combined with the cumulative effects of similar actions. In addition, the ongoing, planned, or proposed activities identified in this PEIS are subject to Federal, state, and local requirements and

regulations that would help minimize direct and indirect impacts of each individual activity or action.

The activities associated with these impacts can generally be categorized as follows:

- Impacts to general wildlife and habitat (8.3.6.1);
- Impacts to wetlands and aquatic resources (8.3.6.2); and
- Impacts to threatened and endangered species (8.3.6.3).

Mitigation actions could reduce these real and potential impacts. CBP's policy is to reduce impacts to biological resources by planning and consulting with resources and land managers to implement avoidance and impact minimization measures where feasible and appropriate given law enforcement and agent and officer safety imperatives. When necessary, CBP will plan for, coordinate, and execute mitigation and compensation measures to protect, recover, or replace adversely impacted biological resources. Many standard mitigation measures have been incorporated as standard operating procedures by CBP on past projects. In some cases, particularly in the previously mentioned areas of relatively intact habitat and various sensitive environments, mitigation solutions would be required by law. These measures would be negotiated and coordinated with applicable Federal, state, and local agencies. However, the regional analyses conclude that CBP's contributions to cumulative impacts across the Northern Border as a whole would be negligible.

Actions with no impact on biological resources under any of the alternatives may include: operation of radio frequency identification devices (RFID), Trusted Traveler programs, and intelligence coordination.

8.3.1 NO ACTION ALTERNATIVE

The No Action Alternative scenario, or "status quo," calls for continued use of facilities, technology, infrastructure, and approximate numbers of personnel in use, deployed, or currently planned by CBP.

Marine Patrol with a CBP Midnight Express

Source: (USDHS, No Date[a]).

8.3.1.1 Construction Projects

Planned and current small construction projects include pedestrian or vehicle fences and other physical barriers, roads, bridges, culverts and low water crossings. Large construction projects include the construction or modernization of existing buildings (such as FOBs, LPOEs, and Border Patrol stations), permanent traffic checkpoints, and monopole towers. Currently there are about 15 large construction projects planned or occurring along the Northern Border in the West of the Rockies region.

Impacts to Terrestrial Resources

Impacts to terrestrial resources from construction projects currently under way are expected to be minor to moderate depending on the location and size of the construction activities. There are a number of techniques available to assist in mitigating/reducing impacts; these are discussed more fully in section 8.3.6—Best Management, Minimization, and Mitigation.

Excessive noise levels caused by construction (Table 8.1-1), especially in previously undisturbed areas, can have short-term and long-term impacts on wildlife. Impacts would generally be localized to the general vicinity of the project site, but, as discussed in sections 3.6 and 8.6, the spatial extent of noise impacts would depend on the level of background noise and the amount of physical structure around the construction site that could dampen sound. Forest areas would restrict sound from traveling as far as grassland or open areas. Excessive noise can lead to stress-related physiological impacts, altered behavior, or injuries that could lead to mortality. Excessive noise can disrupt natural dispersal of some animal species, reducing local population size by reducing survivorship and reproductive productivity (Ouren et al., 2007). As an example, grizzly bears are a threatened species that require a large undisturbed range. Construction noise in an area utilized by grizzlies could lead to avoidance of that localized area during the construction period. This avoidance behavior can result in decreased or fragmented home ranges and migration, which can impact the population by isolating individuals. Most planned and occurring construction projects are located on or near existing roads and developed areas. The major exception is Forward Operating Bases. In areas already adjacent to roads and development many species would be accustomed to noise related to human activity and those species that are sensitive to noise, such as the grizzly bear, would have already vacated, or be currently avoiding, the area. Noise would be minimized as discussed in section 8.6. Best management practices (described in section 8.3.6) would be applied as appropriate to minimize impacts.

No new direct adverse impacts from light pollution are anticipated in urbanized areas. Indirect impacts depend upon the quantity and strength of the lights, the size of the area illuminated, and the habitat types surrounding the lights. As with noise, lights in a heavily forested habitat would affect a much smaller area than those in grasslands or on a ridge top. Most nocturnal wildlife will avoid artificially lit areas. However, these areas may attract insects, potentially providing a new congregation of food for certain wildlife. Construction activities would be conducted during daylight hours to the greatest extent possible, and if nighttime construction would be required, lights would be kept to the minimum wattage necessary for safety, down shielded, and directed into the construction workspace. Best management practices are described in section 8.3.6.

Increased repair and construction activity and human presence could potentially displace and disturb certain wildlife species, forcing them into adjacent habitats either temporarily or

permanently. Minor adverse impacts could occur to some medium-sized and large mammals (such as elk, *Cervus canadensis,* and mule deer, *Odocoileus hemionus*) due to fencing or other barriers, which would restrict movement onto the land for foraging or other activities. In forested habitats within the Great Lakes Region, the Merlin, Kirtland's warbler (found only locally in Michigan and Wisconsin), spruce grouse (*Falcipennis canadensis*), northern goshawk (*Accipiter gentilis*), great gray owl (*Strix nebulosa*), and black-backed woodpecker (*Picoides arcticus*) are some of the sensitive species that could be affected by construction or other human disturbance, especially during the breeding season (generally from March through July) (Borkowski et al., 2006; Wisdom et al., 2004; Wisdom, 2007).

Construction of linear facilities (fencing, roads) could alter migration patterns and thus impact species dispersal. Less-mobile species, such as small mammals, reptiles, and amphibians could experience individual mortalities caused by clearing, grading, compaction, and other construction activities. Injury or mortality of wildlife may also result from collisions with construction vehicles, buildings, windows, towers, and guy wires. These impacts would remain localized and limited to the immediate vicinity of the project site and are not expected to impact the population as a whole.

Increased human activity due to building new roads or facilities can inadvertently lead to habitat degradation through such things as changes in local drainage patterns or the introduction of unwanted plant species. For example, in the WOR Region, a serious long-term impact to oak forests is already occurring due to an invasive plant species, the scotch broom (*Cytisus scoguarius*). Scotch broom, which is planted as an ornamental, currently occurs in more than 700,000 acres in the northwest coastal regions of the western coastal states. It displaces native plant species, posing a serious problem for reforestation. Native to Europe and North Africa, scotch broom is a competitive species with the capacity to dominate a forest shrub community and form dense monotypic stands.

In the EOR Region, the North Dakota Century Code lists at least seven noxious weeds in northern North Dakota counties (including Canada thistle, leafy spurge, Russian knapweed, and spotted knapweed) that have a serious long-term impact to native landscapes. In the New England Region, serious long-term impacts to forests are already occurring from invasive plant species such as garlic mustard (*Alliaria petiolata)* and buckthorn (*Rhamnus spp.)*.

The footprints of anticipated CBP construction projects would be small relative to the habitat available across the Northern Border. Suitability of the existing land use would be considered in selecting sites for new construction, and designs would incorporate features to reduce injury and mortality, such as use of monopole towers without guy wires, so impacts would be minimized to the extent possible. Most impacts could be avoided with proper use of BMPs and once construction is complete impacted species are expected to recover completely. Therefore; depending on the size and location of the construction project, the impacts (in most cases) would be minor and short- term. Additionally, any proposed construction that may impact threatened and endangered species would have specific permitting or monitoring protocols for these types of impacts (section 8.3.6.3 desribes mitigation measures for threatened and endangered species).

Impacts to Aquatic Resources

CBP related construction projects can result in minor impacts to aquatic resources. Damage to fish (such as Atlantic salmon, *Salmo salar*) and other aquatic species can potentially occur if sediments, fuel, or product spills enter a waterway via runoff potentially carries material off-site and contaminating larger areas.

Much of Puget Sound, the Strait of Juan de Fuca, Georgia Basin, and associated streams and rivers in Washington are critical habitat for the Chinook salmon (USDOC, 2007). Avoiding or minimizing habitat disturbance from construction or road building during the spawning season would reduce short-term adverse impacts. In addition, construction projects that exceed 1 acre of disturbance would require that storm water pollution preventions plans and erosion and sedimentation control plans be prepared to minimize the potential for contamination of surface or groundwater resources.

Short-term impacts can potentially occur when material is temporarily placed within wetlands and surface waters to create access and storage areas for construction activities. Vegetation clearing within or adjacent to wetlands, bordering streams, and water bodies can also have temporary to permanent impacts on habitat quality. Waterfowl, herons, and shorebirds are among the important bird species groups inhabiting wetland areas of the Great Plains [EOR Region]. These species are frequently associated with open marshes and "prairie pothole" wetlands, and may be declining due to wetland destruction and degradation, and (Igl and Johnson, 1998). Impacts to wetlands or waters of the United States would be controlled by a wetland permit issued by the U.S. Army Corps of Engineers (USACE) under Section 404 of the Clean Water Act. More mitigation measures for impacts related to wetlands and aquatic resources can be found in section 8.3.6.2.

Construction at or near aquatic areas have the potential to impact species far from the construction site due to the physical characteristics of sound in water. Marine mammals such as sperm whales and pilot whales will change their behavior (such as decreasing vocalizations and avoidance) as a result of certain sounds.

Lights near water may attract fish, disrupting their natural behavior. Artificial lighting could also displace nocturnal wildlife (some are especially sensitive to light), or cause increased exposure to predation. Nocturnal lighting can disturb some marine organisms, particularly sea turtles (e.g., the leatherback turtle, *Dermochelys coriacea*), which navigate primarily by moonlight when close to shore. Construction activities would be conducted during daylight hours to the greatest extent possible, and if nighttime construction would be required, lights would be kept to the minimum wattage necessary for safety, down shielded, and directed into the construction workspace. Attention would be given to minimizing any light in aquatic areas.

Impacts to aquatic ecosystems as a result of CBP activities are expected to localized, minor, and short term. Once construction is complete, any lights, noise, or human activity related to construction would cease and any displaced aquatic species would be able to recolonize the area.

8.3.1.2 Operation of Trade/Travel Processing and Large and Small POEs

This section discusses impacts of on-site trade and travel processing operations, large ports of entry (POEs) with over 10,000 crossings per day, and small POEs with under 10,000 crossings per day.

Impacts to Terrestrial and Aquatic Resources

Trade and travel processing operations can result in minor impacts. Injury or direct mortality of wildlife (especially birds and bats) may result from collisions with vehicles, buildings, windows, towers, and guy wires. Collisions of wildlife with vehicles on roads can injure or kill animals. If traffic increases over time, wildlife collisions with vehicles may rise. Noise from traffic passing could have long-term negative effects on wildlife as it would disturb and displace individuals (more so in quieter rural locations than in urban ones where ambient noise is greater). In rural areas, limited hours of operation would result in fewer hours of noise. Also, urban areas are less likely to harbor wildlife that are sensitive to noise and other human activity.

General human activity, such as those associated with continued CBP operations may disrupt normal behaviors and movements during migration or breeding periods. Upland game birds and cavity nesters are more often influenced by habitat disturbance. Outside of the breeding season, human disturbance may force birds to change their feeding habits, thereby reducing normal food intake (USDA, 2009).

The piping plover (*Charadrius melodus)*, along northern Great Lakes shorelines, is at risk whenever previously undeveloped Northern Border Great Lakes beaches are impacted by development, vehicular traffic on beaches, or unmonitored or unplanned human presence.

The piping plover may also be negatively impacted by habitat disturbance in this region, especially along the shores of lakes Michigan, Erie, and Ontario. Since this species nests on wide, flat, and open sandy beaches, human activities that alter or create disturbance in their habitat may affect populations nesting in the area or migrating through the area. Alterations to landscapes may also increase mortality of their young. Also vulnerable are breeding colonies of Caspian terns (*Sterna caspia*), locally established on rocky Great Lakes islands, and common terns (*Sterna hirundo*), which breed and nest in sand beach zones similar to those used by the piping plover.

Several carnivorous species seek secluded areas for reproduction and rearing of young and have abandoned dens when disturbed (USDA, 2009). In the WOR, EOR, and GL Regions, these include wolves (*Canis lupus*), wolverine (*Gulo gulo*), fisher (*Martes pennanti*), and lynx (*Lynx canadensis*). In New England Region coyotes, (*Canis latrans*) have been known to demonstrate the same behavior.

Noisy activities or visible human activities at sensitive locations (e.g., nest trees) have the potential to disrupt normal behavior patterns. Intrusion-induced behaviors, such as nest abandonment and decreased nest attentiveness, have led to reduced reproduction and survival in species intolerant of intrusion (USDA, 2010). In the EOR Region, the Long-eared myotis (*Myotis evotis)*, long-legged myotis (*Myotis volans)*, northern prairie skink, silver chub (*Macrhybopsis storeriana)*, pearl dace (*Margariscus margarita)*, northern redbelly snake (*Storeria occipitomaculata)*, peregrine falcon, yellow rail (*Coturnicops noveboracenis)*, black-

billed cuckoo (*Coccyzus erythropthalmus)*, and red-headed woodpecker (*Melanerpes erythrocephalus)* are some of the sensitive species that could be affected by human disturbance, especially during the breeding season (generally March through July for these bird species) in this region. Some mussels, invertebrates, and plant species may also be affected (Foreman and Alexander, 1998; Bury, 1980; Appendix M).

No new direct adverse impacts from light pollution are anticipated in urbanized areas. Indirect impacts depend upon the quantity and strength of the lights, the size of the area they illuminate, and the habitat types surrounding them. Lights in a heavily forested habitat would affect a much smaller area than those in grasslands or on a ridge top. Most nocturnal wildlife will avoid artificially lighted areas. However, these areas may attract insects, potentially providing a larger food source for certain wildlife.

8.3.1.3 Air and Marine Operations

Impacts to Terrestrial Resources

Impacts to terrestrial resources from air and marine operations are expected to be minor to moderate and short-term in duration. In the WOR and EOR Regions, low-level flights (helicopter or fixed-wing) may displace some wildlife or disrupt their normal behavior, including elk (*Cervus canadensis*) and bighorn sheep (*Ovis canadensis*). In the Great Lakes and New England Regions, white-tailed deer (*Odocoileus virginianus*) and moose (*Alces alces)* may similarly be disturbed as well as the bobcat (Lynx rufus) in the New England Region as well.

Monitoring flights, generally at or above 800 feet, are infrequent and create temporary, negligible to minor impacts on wildlife (USDOI, 2005). Bird impacts with aircraft can always pose a problem. The Federal Aviation Administration (FAA) wildlife strike database contains over 108,000 records of strikes between 1990 and 2008 (USDOT, 2010). "Pilots report over 5,000 bird strikes every year. The economic damage from bird strikes has been reported to be at least $400 million from impacts with commercial and military aircrafts (Scott, 2009). However, the number of flights conducted by CBP is minimal compared to total number of commercial and private aircraft flights in the area, therefore, impacts to CBP aircraft would be expected to be a small fraction of any annual total.

Blackhawk flying over Northern Border

Source: (USDHS, No Date[b]).

Impacts to Aquatic Resources

Impacts to aquatic resources are expected to be minor based on the small fraction of water based patrols conducted compared to general public and commercial boating activity. Potential short- and long-term impacts from the use of marine patrols and vessels along the Northern Border may include aquatic vegetation disturbance; generalized habitat disturbances; propeller strikes; heightened turbulence and waves eroding aquatic habitat and leading to long-term habitat alteration; exposure to pollutants that degrade water quality (affecting fish reproductive success and decreasing populations); and watercraft activity that may disturb normal nesting, spawning, or feeding behaviors of aquatic species. (Asplund, 2000).

For example, in the WOR Region, leatherbacks frequently swim or feed at the surface, and they are particularly vulnerable to vessel collisions, which frequently prove fatal (USDOC, 201b). Threats to leatherbacks relevant to CBP activity include vessel collisions, ingestion of marina and vessel debris (e.g., plastic bags, tar balls, and plastic pellets), dock construction, underwater noise, and fueling. While the potential impacts noted above are the possible result of the operation and maintenance of marine vessels, the number of watercraft operated by OAM is a small fraction of the number of similar commercial and private vessels operated in the waters along the USA/Canadian border.

Introduction of aquatic invasive species, such as caulerpa seaweed (*Caulerpa taxifolia*), and parrotfeather (*Myriophyllum aquaticum*) [WOR Region]*;* curly leaf pond weed, *Potamogetoncrispus,* and parrotfeather, *Myriophyllumaquaticum)*[EOR Region]; quagga mussel (*Dreissena rostriformis bugensis*), Eurasian watermilfoil (*Myriophyllum spicatum),* and spiny waterflea (*Bythotrephes longimanus)* [Great Lakes Region]*;* curly pondweed (*Potamogeton crispus*), flowering rush (*Butomus umbellatus*), Asian clam (*Nutallia obscurata)*, and northern snakehead (*Channa argus)* [New England Region], can adversely impact native aquatic resources (Asplund, 2000). Zebra mussels (*Dreissena polymorpha)*, another aquatic invasive species in New England Region, can quickly infest lakes and out-compete native mussels altering water quality and habitat.

Lights near or on water at marinas may have an economically beneficial impact for fishermen due to light attraction by fish and shellfish; however, they could also displace and disorient nocturnal wildlife species that are sensitive to light or are exposed to predation by the light.

8.3.1.4 Motorized Ground Operations

Impacts to Terrestrial Resources

Impacts to terrestrial resources from motorized ground operations are expected to be minor to moderate. Off-road vehicles (ORVs) and all-terrain vehicles (ATVs) affect the natural habitats and behaviors of native plants and animals (with emphasis on endangered and threatened species) primarily through habitat degradation and disturbance. Injury or mortality of wildlife may result from direct collisions with vehicles. Tires of these vehicles may erode or compact the soil with each individual trail use. These types of activities could modify the landscape, resulting in a reduced litter layer, decreased soil microbial activity, reduced plant biomass and cover of native species, decreased reproductive success of native plants, changes to the genetic structure of plant populations, altered wildlife habitats, and increased exposure and spread of nonnative species.

The operation of ATVs can allow the transport of non-native plant species into a natural area. Nonnative species can negatively impact natural areas, agriculture, and horticulture (Simberloff, 1996). Indirect effects of noxious weed spread include the degradation of wildlife habitat, as well as declines in natural diversity, water quality, the palatability or abundance of wildlife forage, native plant diversity, and aesthetic value of the landscape. Nonnative species may also encroach on rare plant populations and their habitats, potentially reduce soil stability and subsequently increase erosion, and cause overall decline of ecosystem health (USDOI, 2007).

Large animals are potentially at risk from short- and long-term impacts from motorized ground operations (and equipment) along the Northern Border. Mechanized patrols can cause higher levels of disturbance than foot or horse patrols (Canfield et al., 1999; Cassirer et al., 1992). Regional examples of such animals include the following:

- Mule deer (*Odocoileus hemionus*), moose (*Alces alces*), elk (*Cervus canadensis*), and mountain lion (*Felis concolor*) in the WOR and EOR Regions; and
- Black bear (Ursus americanus), moose (Alces alces), and white-tailed deer (Odocoileus virginianus in the Great Lakes and New England Regions.

Large mammals may use these trails for travel, increasing their possibility of encountering an ORV and being disturbed, injured, or killed (USDOI, 2010b). ORVs are noisy and are likely to disturb large game species in some situations. Changes in behavior can include avoidance, attraction, or habituation (when animals get used to the presence of people). Big game can also experience physiological changes, such as stress due to repeated disturbance interrupting feeding or breeding behavior, reducing vigor and productivity, potentially leading to mortality (USDA, 2009).

Wildlife populations can be adversely affected by excessive noise levels, especially in previously undisturbed areas. Noise from motorized vehicles can be detrimental to wildlife in several ways. Certain species may be unable to successfully communicate with each other and use their own auditory senses; these limitations may have an impact on the long-term survival or behavior of a species (Radle, 2007). Excessive noise can also lead to stress-related physiological impacts and altered behavior, or injuries potentially leading to mortality. Excessive noise may also disrupt natural dispersal of some animal species. These effects can reduce local population size or cause reduced survivorship and reproductive productivity (Ouren et al., 2007).

The grizzly bear offers a good example of the potential conflicts between Federal agencies and their respective responsibilities. As noted in section 4.3.2.3 the grizzly is especially sensitive to habitat disturbance. The grizzly bear requires contiguous, relatively undisturbed, mountainous habitat with associated vegetative and topographic diversity. Grizzly bears have a low reproductive rate and are slow to recover from high mortality rates and as a result, the FWS has identified recovery zones needed for the recovery of the grizzly bear. These recovery zones are in remote areas near the U.S.–Canada border. In order to fulfill its responsibility, CBP must patrol these areas, were CBP to mark these areas as “no-go” areas then that could be seen as a green-light for those wanting to enter the country illegally. In such a case both the responsibility of the FWS and CBP would be negated (illegal entry would be occurring and the habitat the FWS wanted to protect would be disturbed. In such cases coordination between these Federal

agencies is needed to assure that both mandates are upheld while protecting an endangered species.

Impacts to Aquatic Resources

Impacts to aquatic resources are expected to be minor to moderate. ORV use in wetlands has the potential to destroy vegetation, alter wetland functions, increase sediment loads, reduce plant growth or vigor, alter biodiversity and community composition, reduce vegetative cover, and increase the potential for increased exotic species invasion. Most wetlands are highly sensitive to ORV disturbances (especially in spring and summer), and even limited use in most wetlands can cause substantial and permanent impacts (Ouren et al., 2007). Stream crossings by ORVs or ATVs can increase turbidity, likely resulting in short- and long-term, minor adverse effects on aquatic vegetation and invertebrates, and affecting waterfowl foraging and nesting habitat. Stream crossings in areas with salmon would also have short-term, minor adverse effects by disturbing and displacing mammalian carnivores that forage on spawned-out adults, as well as exposing wildlife to hunting and trapping (USDOI, 2010b).

Lights from conducting motorized ground operations near water may attract fish, and could displace nocturnal wildlife sensitive to light or exposed to predation by it.

8.3.1.5 Nonmotorized Ground Operations

Impacts to Terrestrial Resources

Impacts to terrestrial resources are expected to be minor to moderate. Foot or non-mechanized patrols pose a low risk of disturbance to sensitive wildlife species.

Canine and horse patrols may affect wildlife in adjacent habitats. These operations are not expected to affect wildlife beyond a minor level. Indirect impacts may include introduction of pathogens and parasites, such as parvovirus and worms. Kennels create noise on a regular basis, and may displace some wildlife species from the immediate area. Wolves and coyotes would investigate feces from CBP dogs in remote areas, making them potentially susceptible to disease and parasite transmission. Canine and/or horse patrols also have a greater possibility to disturb natural areas through the introduction of invasive plant species through seed attached to hooves/fur. This can negatively impact natural areas, agriculture, and horticulture (Simberloff, 1996). Indirect effects of noxious weed spread include degradation of wildlife habitat, declines in natural diversity, decreased water quality, reduced aesthetic value of the landscape, encroachment upon rare plant populations and their habitats, potential reductions in soil stability and subsequent increases in erosion, and overall decline of ecosystem health (USDOI, 2007).

8.3.1.6 Operation of Sensors and Other Technologies

This section describes the impacts of the operation of sensors and other technologies (including surveillance/communication towers)

Impacts to Terrestrial Resources

Impacts to terrestrial resources would be minor from the operation of sensors and other technology. Adverse impacts from regular maintenance of ground sensors are expected to be short term and range from negligible to minor. CBP activities and deployment of sensors and

other technologies in rural areas may have a greater potential to affect species adversely than do activities in urban regions.

Access roads to towers potentially provide hunters, poachers, mineral hunters, and other resource users access to previously unreachable areas. This access and associated increase in human activity can increase erosion and invasion of noxious weeds, affecting sensitive plant habitats. Habitat fragmentation can increase intrusion of nonnative species, introduce disease, or provide predators with access to once-sheltered prey species.

Impacts to threatened and endangered species include effects from mortality to negative impacts on reproduction. Determining potential impacts to the cougar (*Puma concolor*, a listed species in New York and Vermont) is important when contemplating CBP construction or surveillance activities in habitat frequented by cougar. A recovery plan for the cougar was developed in 1982; currently a 5-year review is under way, with an open-comment period for this species' planning process (USDOI, 2008c). (Section 8.3.6.3 discusses mitigation measures for threatened and endangered species).

The presence and operation of communication towers can cause long-term impacts to avian habitat, mortality, and behavior from tower collisions and/or tower avoidance. Lights on towers may, under some circumstances, attract avian species.

8.3.2 FACILITIES DEVELOPMENT AND IMPROVEMENT ALTERNATIVE

Adverse impacts from this alternative are expected to be minor to moderate, and adverse. There are a number of techniques available to assist in mitigating/reducing impacts; these are discussed more fully in section 8.3.6—Best Management, Minimization, and Mitigation. The Facilities Development and Improvement Alternative would focus on providing new permanent facilities, such as Border Patrol stations, POEs, housing and other facilities, to allow CBP agents and officers to operate more efficiently and respond to situations more quickly. United States Border Patrol (USBP) agents in some locations are currently operating out of leased space—Federal, state, or county government buildings or other law enforcement agency buildings—or from spaces that are over capacity. Many of the POE inspection facilities along the Northern Border operate in high traffic volume, 24 hours per day, 365 days per year, in extreme climates, and they undergo considerable wear and tear. These facilities, built for a different era of operations, are poorly configured to support CBP's evolving trade facilitation and antiterrorism mission. A number of POEs need to be replaced or extensively upgraded, involving major construction. (At this time, no new POE operations are planned, i.e., no totally new ports are planned on roads crossing the border that have not previously had a POE. If the need for a totally new trade and travel processing operation arises, CBP would complete a separate analysis to meet the NEPA requirements of that project.)

Included also in this alternative is the construction of semi-permanent and temporary facilities, such as forward operating bases, temporary housing (where local housing stock may not be readily available), and checkpoints, and other facilities necessary to support CBP law enforcement agents and officers as they carry out operational duties.

The list of activities noted below is a generalization of CBP activities that could be undertaken if CBP chose to follow this alternative.

- Modernize/upgrade existing POE;
- Construct a Border Patrol station;
- Construct small facilities or modify facilities that support Offices of Air and Marine (OAM) operations;
- Construct communications towers;
- Set up permanent traffic checkpoints; and
- Construct a new forward operating base (FOB).

8.3.2.1 Construction and Maintenance

Construction of any of the fixed-point facilities above could incur ecological consequences, especially in rural and relatively undisturbed habitat. Habitat disturbance can be a catalyst of ecological change (Turner, 2010). The potential for impact would depend on the location and footprint of the proposed construction; however, appropriate siting and implementation of construction mitigation practices would minimize impacts.

Impacts to Terrestrial Resources

Impacts to terrestrial resources from implementation of the facilities development and improvement alternative are expected to be minor to moderate. Land-use alteration for new facilities, and associated human activities, may disrupt wildlife movement or behavior, especially during important migration or breeding periods.

Construction activities may cause soil erosion or compaction, leading to a reduction in the litter layer, decreased soil microbial activity, reduced plant biomass and cover of native species, decreased reproductive success of native plants, changes in the genetic structure of plant populations, and alteration of wildlife habitats.

Habitat modification of relatively undisturbed areas could have a number of effects on wildlife (especially threatened and endangered species). Such activities could reduce cover, foraging, and nesting habitat for some species in the immediate area of the facility. Newly constructed road and trail networks could fragment the landscape, increasing isolation and decreasing patch sizes of suitable habitat potentially causing loss and fragmentation of habitat, increased competition, and movement barriers. The sandhill crane (*Grus canadensis*), for example, is a species that inhabits the EOR Region. Sandhill cranes inhabit open marshes and wetlands during the breeding season, as well as grain fields, shallow lakes, and meadows during the winter and on migration routes. Sandhill cranes feed on mollusks, crustaceans, small vertebrates, and waste grain. Building new facilities in fallow fields or cropland causes a loss of breeding or migratory stopover habitat and directly impacts the crane population in the local area. The whooping crane (*Grus americanus*) is an example of an endangered and highly monitored species in both Montana and North Dakota. It inhabits open marshes and wetlands during breeding season as well as grain fields, shallow lakes, and meadows during the winter and on migration routes, feeding on mollusks, crustaceans, small vertebrates, and waste grain. Any disturbance that causes a loss of breeding or migratory stopover habitat can directly impact the populations of this species.

An example of a state threatened or endangered species within the Great Lakes region that may be disturbed by human activity is the peregrine falcon (*Falco peregrinus)*, which is listed as state-endangered in Minnesota and Ohio and threatened in Michigan and New York. These falcons prefer open habitats around water, with tall cliffs where they nest on ledges on bare and steep rock walls. Since young are completely dependent on their parents, any disturbance during their breeding season may cause a decrease in nesting sites and local populations.

Land alterations have greatly affected oak trees in the East Coast. Changes due to climate, land use, and natural area disturbance have all contributed to the decline of white oak trees (Abrams, 2003). Red and chestnut oaks have been replacing white oaks in these areas; however, red oaks are more susceptible to a pathogen known as sudden oak death, *Phytophothora ramorum* (McShea et al., 2007). Any construction activities may further the decline of oak species in this region.

Many species are associated with large continguous habitats; for example, the northern spotted owl (*Strix occidentalis*) [WOR Region] and American marten (*Martes americana*) [WOR and EOR Regions], the Northern Goshawk (*Accipiter gentilis)* [Great Lakes and New England Regions] depend upon large old growth forests (USDA, 2010). Creation of permanent structures in these old growth forests and increased development would convert the area in the immediate vicinity (USDOI, 2010c) and eliminate the impacted area as suitable habitat for these endangered species. Clearing for trails or temporary structures also impacts old growth forests as the vegetation in the cleared area would be converted to early successional stages, reducing the overall coverage of old growth and potentially fragmenting the forest.

Disturbance of natural areas caused by construction or maintenance activities may lead to the introduction of invasive plant species that could be brought in, as an example, as seed in the tire treads of construction vehicles. This can negatively impact natural areas, agriculture, and horticulture (Simberloff, 1996). Indirect effects of noxious weed spread include degradation of wildlife habitat, declines in natural diversity, decreased water quality, reduced aesthetic value of the landscape, encroachment upon rare plant populations and their habitats, potential reductions in soil stability and subsequent increases in erosion, and overall decline of ecosystem health (USDOI, 2007).

Increased construction activity and human presence could potentially displace and disturb certain wildlife species, forcing them into adjacent habitats either temporarily or permanently. Less-mobile species, such as small mammals, reptiles, and amphibians within a construction zone, could be destroyed by clearing, grading, compaction, and other construction activities. These impacts would remain localized and limited to the immediate vicinity of the project site. Threatened and endangered species may have specific permitting or monitoring protocols when addressing these types of impacts.

Minor and temporary adverse impacts could occur to some medium and large mammals (such as elk, *Cervus canadensis*, or mule deer, *Odocoileus hemionus*) with extensive home ranges due to fencing, which would restrict their movement onto the land for foraging or other activities.

The presence and operation of communication towers can cause long-term impacts to avian habitat through mortality due to tower collisions, and avoidance behaviors. Under some

circumstances, however, lights on towers may provide food for avian species by attracting flying insects.

Wildlife populations can be adversely impacted by excessive noise levels caused by construction or maintenance activities, especially in previously undisturbed areas. Noise can be detrimental to wildlife in several ways. Certain species may be able neither to successfully communicate with each other nor to use their own auditory senses (Radle, 2007). Excessive noise can also lead to stress-related physiological impacts and altered behavior, or injuries potentially leading to mortality. Excessive noise may also disrupt natural dispersal of some animal species. These effects can reduce local population size or cause reduced survivorship and reproductive productivity (Ouren et al., 2007). Generally, those species that are sensitive to noise as describe above would avoid the area.

No new direct adverse impacts from light pollution are anticipated in urbanized areas. Indirect impacts depend upon the quantity and strength of the lights, the size of the area they illuminate, and the habitat types surrounding them. Lights in a heavily forested habitat would affect a much smaller area than those in grasslands or on a ridge top. Most nocturnal wildlife will avoid artificially lighted areas. However, these areas may attract insects, potentially providing a larger food source for certain wildlife.

Impacts to Aquatic Resources

Land-use alteration for new facilities and associated human activities may impact aquatic wildlife and resources to a minor degree. Alpine lakes, streams, and rivers of the northwestern Rocky Mountains are especially susceptible to disturbance from construction. Sedimentation and impaired water quality can affect the abundance of invertebrates and reduce fish and other aquatic populations. Carrying capacities for juvenile salmon and trout declined when road construction without adequate protections caused low dissolved-oxygen concentrations, and adverse sedimentation (Eaglin and Hubert, 1993). (Carrying capacity is the maximum population that an area will support without undergoing deterioration.)

Piers and boat ramps can indirectly lead to pollution of waters due to spills, intentional littering or waste disposal, fuel leaks, anti-fouling treatments of piles, or introduction of nonnative organisms (on boat hulls or discharged from boats). Damage to fish and other aquatic species can potentially occur if sediments, fuel, or product spills enter a waterway. Near-surface water and runoff can carry material off-site, contaminating larger areas. Siltation and runoff can degrade or modify aquatic habitat, affecting aquatic animals and fish species.

Construction can have indirect permanent or temporary effects on wetlands. Permanent wetland loss can occur when wetlands or surface waters are permanently filled, drained, or otherwise converted for placement of structure or impervious surfaces. Temporary impacts occur when material is placed in wetlands and surface waters to create access and storage for construction, and is removed when construction is complete. Vegetation clearing within or adjacent to wetlands, bordering streams, and water bodies can also have temporary or permanent impacts.

Indirect effects to wetlands and surface waters include increased sedimentation and erosion from construction and nonpoint-source runoff, reducing the quality of aquatic habitats. Increased potential for introduction of non-native species and increased artificial lighting can adversely

affect use of the wetlands by wildlife (e.g., amphibian breeding). Installation of barrier or silt fencing for construction can restrict wildlife movement in and out of the wetland. Shoreline construction may also interfere with wetlands or esturaries that provide habitat.

8.3.3 DETECTION, INSPECTION, SURVEILLANCE, AND COMMUNICATIONS TECHNOLOGY EXPANSION ALTERNATIVE

The Detection, Inspection, Surveillance, and Communications Technology Expansion Alternative focuses on deploying more effective detection, inspection, surveillance, and communications technology and making improvements and upgrades to current technology. About 100 small construction projects are planned under this alternative, such as towers and other infrastructure to mount antennas. This alternative also includes increasing aircraft operations to fewer than 125 flights per day and marine vessel operations increasing to fewer than 175 operations per day. About 200 non-motorized and 1,300 motorized ground patrols would occur each day. Use of systems including remote sensors, short-range radar, RVSS and MSS, new camera systems, and stationary communications systems would increase to about 2500 hours per day. The use, deployment, and upgrades of these technologies would be similar to those in the No Action Alternative.

Impacts from this alternative are expected to be minor and adverse. There are a number of techniques available to assist in mitigating and reducing impacts; these are discussed more fully in section 8.3.6—Best Management, Minimization, and Mitigation. The Detection, Inspection, Surveillance, and Communications Technology Expansion Alternative would deploy more effective surveillance and communication technologies in support of CBP activities. It would include improvements to the identification and inspection technologies used by the Office of Field Operations (OFO) as well as continuing Office of Technology Innovation and Acquisition (OTIA) and Office of Information Technology (OIT) technological developments and plans.

Cargo Inspection at Seaport

Source: (USDHS, No Date[c]).

8.3.3.1 Operation of Sensors and Other Technologies (including surveillance/communication towers)

Impacts to Terrestrial and Aquatic Resources

Fielding the upgrades under this alternative would have impacts similar to those in the No Action Alternative.

8.3.4 TACTICAL SECURITY INFRASTRUCTURE DEPLOYMENT ALTERNATIVE

The Tactical Security Infrastructure Deployment Alternative would focus on constructing additional barriers (selective fencing, vehicle barriers, etc.) at select points along the border to deter and delay CBVs. It would also include construction of access roads and related facilities to increase the mobility of USBP agents for surveillance and response to international border violations. About 30 small projects (< ¼ mile in length) and about 5 large projects (> ¼ mile in length) would take place under this alternative. As discussed in the No Action Alternative, the construction of roads and barriers reduces the amount of natural habitat, creates barriers to the migration and movement of species, and also fragments habitat and home ranges.

Impacts from this alternative are expected to be minor to moderate and adverse. There are a number of techniques available to assist in mitigating/reducing impacts; these are discussed more fully in section 8.3.6— Best Management, Minimization, and Mitigation. The Tactical Security Infrastructure Deployment Alternative would construct additional barriers (selective fencing, vehicle barriers, etc.) at selected points along the border to deter and delay cross-border violators. It would also construct additional access roads and related facilities to increase the mobility of USBP agents for surveillance and response to various international border violations.

Below is a list of construction activities that CBP has undertaken or will undertake in the future. This list is not all-inclusive, but illustrates possible construction of linear facilities. The potential impact to biological resources from such activities would be similar to, but in some cases distinct from, the potential impact from construction of fixed-point facilities (described in the Facilities Development and Improvement Alternative).

- Construct pedestrian or vehicle fences or other physical barriers; and
- Construct access roads, drag roads, bridges, culverts, and low-water crossings.

Construction of any of the linear facilities above could have ecological consequences, especially in rural and relatively undisturbed habitat. Disturbance of habitat can be a catalyst of ecological change (Turner, 2010). The potential for impact would depend on the location and footprint of the proposed construction.

8.3.4.1 Construction and Maintenance of Linear Facilities

Impacts to Terrestrial Resources

Disturbance may occur during construction of fences and barriers and may result in site-specific effects to biological resources. Negative direct or indirect effects during construction, operation, and maintenance could affect threatened and endangered resources, wildlife, and vegetative habitat unless avoidance and minimization measures are used. Long stretches of barrier fencing can prove deleterious to ecological systems. Such fencing could severely fragment habitat, or disrupt migratory or post-breeding movement of animals. It could also introduce non-native species or disease into new or sensitive areas, or provide predators with access to otherwise sheltered prey species. Disturbance of forested habitats by road or trail construction would likely result in more impact on wildlife than similar construction in croplands or grasslands. Direct environmental impacts due to erection of barriers or fencing may include collision or entrapment

mortality for wildlife coming in contact with the fence. Indirect impacts include habitat fragmentation and inaccessibility to resources such as water or food.

Unintended environmental impacts could occur between border crossing stations and along barrier corridors. Access and patrol roads along barriers or fences could provide hunters, poachers, mineral hunters, and others access to previously inaccessible areas. Increased potential for poaching, illegal shooting, and incidental trapping can substantially harm species with low numbers, affecting population stability (Foreman and Alexander, 1998; Simmons et al., 2010; Wisdom, 2007; Rowland et al., 2005). Major highways create movement barriers for many wildlife species, particularly wide-ranging carnivores and hoofed animals, and are suspected of being a major factor in the decline of some forest carnivores, such as the fisher (Martes pennanti) and the American marten (Martes Americana) in WOR and New England Regions, and the Black Bear (Ursus americanus) in the Great Lakes Region (USDA, 2010).

New construction of roads, culverts, and bridges has ecological consequences. One problem is habitat fragmentation, in which the amount of large, contiguous habitat for a species is reduced by human activity. Habitat fragmentation due to road construction can isolate wildlife populations and is considered a growing and substantial threat to species persistence (Reed, 2004). Rare or declining amphibian populations and some grassland bird species may be negatively affected by increasing road density. Some grassland bird species will no longer breed in areas where habitat patch size is below an area threshold. Examples of such bird species include the sharp-tailed grouse, *Tympanuchus phasianellus* [WOR Region], the Greater Prairie Chicken, *Tympanuchuscupido,* and Greater Sage Grouse, *Centrocercusurophasianus* [EOR Region], the Sharp-tailed Grouse, *Tympanuchus phasianellus* [Great Lakes Region], and Henslow's Sparrow, *Ammodramus henslowii* [New England Region].

"Roadway barriers can reduce access to resources and disrupt population dynamics" (Simmons et al., 2010), possibly leading to extirpation of a species in the affected area. Reduction of habitat connectivity may limit movement and dispersal, affecting population dynamics and causing eventual elimination of a species from a geographic area. Long-term habitat impacts would result from permanent changes to vegetation structure, primarily where vegetation is prevented from reoccupying areas of development. Creation of permanent structures and growth of non-natural ground cover would convert many habitats to early successional vegetation stages (USDOI, 2010c).

Construction of roads, trails, and fences may lead to the introduction and spread of invasive species. Disturbance of natural areas caused by construction or maintenance activities may lead to the introduction of invasive plant species. This can negatively impact natural areas, agriculture, and horticulture (Simberloff, 1996). Indirect effects of noxious weed spread include degradation of wildlife habitat, declines in natural diversity, reduced aesthetic value of the landscape, encroachment upon rare plant populations and their habitats, potential reductions in soil stability and subsequent increases in erosion, and overall decline of ecosystem health (USDOI, 2007).

Fill soils for road construction could introduce weed and invasive species seeds into the seed bank of a previously undisturbed area. Soil compaction could alter hydrology in or near wetlands or waterways.

In general, wildlife road mortality increases with traffic volume and speed. Small mammals, reptiles and amphibians are more vulnerable because individuals are inconspicuous and slow-moving. Amphibians may be especially vulnerable to road mortality because their life histories often involve migration between wetland and upland habitats. Raptors are also vulnerable to collisions on forest roads due to their foraging behaviors (USDA, 2010).
Construction of additional access roads would allow more patrols by standard, off-road (ORV), and all-terrain vehicles (ATV). Developing new and more-accessible trails for this region could produce impacts on wildlife and protected landscapes. The scope and extent of these impacts are likely to increase if an extensive motorized transport is involved, especially with increased public use.

Increased human activity can cause changes in wildlife behavior. Studies have documented shifts in animals' home range and foraging patterns, and disturbance of nesting or breeding behaviors from motorized road or trail use and associated increased human activity. Many species avoid areas close to roads or trails, or exhibit flight behavior within a certain distance of route use. Black bear (*Ursus americanus*), for example, cross roads with low traffic volume more frequently than those with high volume. They almost never cross interstate highways (Baruch-Mordo et al., 2008; Kasworm and Manley, 1990) [EOR, Great Lakes, and New England].

Noisy activities or visible human activities at sensitive locations (e.g., nest trees) have the potential to disrupt normal behavior patterns. Intrusion-induced behaviors, such as nest abandonment and decreased nest attentiveness, have led to reduced reproduction and survival in species intolerant of intrusion (Korschgen and Dahlgren, 1992).

Impacts to Aquatic Resources

Direct adverse impacts to wetland habitats and plant communities could result from soil erosion, sedimentation, and hydrologic alterations due to road, culvert, or bridge construction projects. Roads near riparian corridors pose a risk to aquatic habitat quality and population structure. Roads can route sediment into water bodies, fragment aquatic habitat creating barriers to migration, and provide vectors for aquatic nuisance species and hazardous materials. Additionally, roads can allow access to riparian areas for livestock, leading to widespread degradation of stream banks, in-channel aquatic habitat, and riparian vegetation (USDA, 2008).

Long-term effects from access roads may come from the runoff and associated erosion of road materials into riparian areas associated with heavy rainfall, snowmelt, and maintenance activities. Runoff from access roads could contribute additional sediment to streambeds, clogging fish gills, reducing dissolved oxygen levels, forming additional sandbars, and filling in coarse substrate (USDOI, 2010c). Salmon and trout (including steelhead) are at risk from sedimentation due to construction and road building activities in the vicinity of streams or rivers. Applying best management practices will reduce the potential severity of the impact. Much of Puget Sound, the Strait of Juan de Fuca, Georgia Basin, and associated streams and rivers in Washington are critical habitat for the Chinook salmon (USDOC, 2007). Avoiding or minimizing habitat disturbance from construction or road building during the spawning season will reduce short-term impacts.

8.3.5 FLEXIBLE DIRECTION ALTERNATIVE

The Flexible Direction Alternative allows CBP to use a mix of any of the actions described in the previous four alternatives on an as-needed basis to respond to evolving threats along the border. Adverse impacts from this alternative are expected to be minor to moderate and adverse. There are a number of techniques available to assist in mitigating/reducing impacts; these are discussed more fully in section 8.3.6—Best Management, Minimization, and Mitigation. This alternative would allow CBP to follow a mix of any of the above directions based on programmatic need. The required mix of mitigation measures could change as a result of changes in CBP programmatic need activities along the Northern Border. This alternative could be expected to cause the maximum impact that may result from full implementation of the other alternatives described above. However, as discussed above, the impacts related to each alternative would be minor to moderate. For each proposed action the applicable BMPs would be applied to minimize the potential impacts. Therefore, the impacts of the Flexible Direction Alternative are expected to be minor to moderate.

8.3.6 BEST MANAGEMENT, MINIMIZATION, AND MITIGATION

CBP seeks to avoid, reduce, minimize, and, when necessary, repair the impacts of its actions on the human environment. It does so with a combination of best management practices, siting plans, design strategies, mitigation measures, and monitoring plans best suited to the scale and the location of the particular action. Toward that end, in implementing its proposed action CBP could choose from among the following actions to avoid or minimize impacts to biological resources.

The activities associated with these impacts can generally be grouped under the following:

- Impacts to general wildlife and habitat (8.3.6.1);
- Impacts to wetlands and aquatic resources (8.3.6.2); and
- Impacts to threatened and endangered species (8.3.6.3).

Mitigation measures are actions that reduce the severity of an impact. In some cases, the law requires mitigation solutions for certain direct impacts. These measures would be negotiated and coordinated with applicable Federal, and possibly state and local agencies.

CBP would ensure that applicable construction activities follow DHS Environmental Planning Management Directive 025-01, Sustainable Practices for Environmental, Energy and Transportation Management. CBP will avoid or minimize habitat loss, disturbance, and fragmentation through appropriate site design. A construction stormwater general permit would be obtained prior to construction requiring a notice of intent (NOI) to implement an action. CBP would incorporate appropriate BMPs for project construction to minimize area disturbance. CBP sustainable practices include measures to manage highly erodible soils, wastewater, runoff, noise, light, and discharge of hazardous substances. As required by Federal and state law, CBP implements erosion-control measures and appropriate BMPs before, during, and after soil-disturbing activities. Depending on project needs and requirements, CBP would implement other protective measures to prevent or limit the spread of invasive plants or animals into native habitats.

CBP implements protective and mitigation measures for threatened and endangered species and other specially protected species. For example, if a construction activity would likely harm certain migratory birds or their habitat, the Migratory Bird Treaty Act requires surveys to locate and avoid active nest sites. Applicable permits would be sought if construction would likely affect migratory birds. To avoid and minimize impacts to biological resources, CBP will strive to site new buildings or structures outside of wetlands, sensitive wildlife habitats, migratory flyways, or habitat of threatened or endangered species. While minimal to moderate potential adverse impacts for the listed alternatives exist when combined with other similar activities and actions related to the project, direct and cumulative effects could be reduced to acceptable levels through in-house BMPs, environmental regulatory compliance, and interagency consultation.

8.3.6.1 Mitigation for Impacts to General Wildlife and Habitat

Site-specific NEPA review would be required if impact to wildlife is a concern at a particular construction site. Planning activities will take the species into consideration within site-specific NEPA review.

Black bear

Source: (Laubenstein, 2008).

Ground-disturbing construction activities should not take place during wildlife migration or breeding periods without consultation with the U.S. Fish and Wildlife Service. If construction or demolition is scheduled to start during these periods, steps should be taken to prevent species from using areas of potential impact. Possible steps include: covering equipment and structures; surveying specific sites for nesting migratory birds prior to clearing them; and establishing buffers around known breeding and high-use areas (USDOD, 2008). CBP would implement best management practices to prevent soil erosion and sedimentation during construction.

Reducing vehicular use in sensitive areas helps to protect wildlife habitat. Vehicle barriers would also discourage activity in sensitive areas.

The FWS has provided recommendations to communications companies and the Federal Communications Commission on tower height, lighting regimes, and placement (USDOI, 2000). Redesigned lighting on communications towers can limit avian mortality from collisions, which frequently occur on nights with bad weather (fog or low cloud ceiling). Use of strobe or white lights and removal of non-flashing and steady-burning red lights can substantially reduce mortality (Gehring et al., 2009).

Increased activity along roads may contribute to weed seeds in grassland and prairie soils. Due to the longevity of the seed banks of weed species, any grassland excessively disturbed by patrols will experience a future increase of invasive weeds, which may ultimately result in a loss of native grassland species (Renne and Tracy, 2007). Habitats are highly susceptible to invasive plant infestations once disturbed. Non-native invasive plant species can negatively impact natural areas, forestry, agriculture, and horticulture (Simberloff, 1996). Those CBP activities that may accidentally introduce invasive species should be monitored and introductions of harmful plants prevented, when possible.

Disturbance could occur during construction of roads, bridges, culverts, and low-water crossings. Soil disturbance during construction may result in site-specific effects to biological resources. CBP would implement BMPs to prevent soil erosion and sedimentation during construction. Negative direct or indirect effects during construction, operation, and maintenance activities may affect threatened and endangered resources, wildlife, vegetative habitat, and aquatic resources without use of avoidance and minimization measures.

Use of native vegetation as part of site landscaping could benefit some birds, small mammals, and insects by providing food and cover. These negligible indirect benefits would be limited to small mammal, insect, and avian species not restricted by the fence surrounding a facility.

8.3.6.2 Mitigation for Impacts to Wetlands and Aquatic Resources

Construction of new POEs (at this time, no new POEs are planned) would require an assessment of those wetlands and surface waters potentially affected under existing Federal and state regulations in compliance with NEPA. Section 404 of the Clean Water Act requires that projects affecting wetlands follow the sequential process of avoiding adverse wetland and surface-water effects, then minimizing impacts not practicably avoided, and compensating for impacts that cannot be further minimized through wetland mitigation and restoration.

Secondary impacts to wetlands would be mitigated through use of BMPs that reduce erosion and sedimentation during POE construction. These practices include minimizing the length of time that bare soil remains exposed, including timely reseeding and mulching. Construction and maintenance of potable water and long-term sediment and surface-water retention features could further reduce erosion and sedimentation. CBP may provide and implement an erosion and sediment control plan to protect wetlands and other waterways from additional storm water runoff. Landscaping near wetlands would include native species to avoid introducing invasive species. Invasive plant species management includes the cleaning of construction equipment prior to site entry.

CBP would try to keep unavoidable wetland and surface-water impacts within the threshold of U.S. Army Corps of Engineers (USACE) and state-issued nationwide and general permits (0.5 to 3 acres of wetland impact, depending on construction location). Mitigation would be required to compensate for unavoidable wetland loss. Depending on the state, mitigation could include purchase of credits from a wetland mitigation bank, monetary compensation for wetland loss, or wetland restoration or preservation. Impacts to wetlands would normally be no more than moderate, and are likely to become minor with mitigation requirements. Any new POE facility will be evaluated through the NEPA process as well as Federal and state permit processes, ensuring reduction of individual and cumulative impacts of the authorized activities.

CBP would provide and implement a long-term erosion and sediment control plan for storm water treatment structures. Secondary impacts from new lighting structures would be reviewed during the permitting process based on potentially affected wildlife (e.g., breeding amphibians). Landscaping near wetlands could include planting native species to avoid introducing invasive species. Invasive plant species management would also include cleaning construction equipment prior to site entry.

All disturbed areas should be mulched and revegetated with native woody and herbaceous species (USDOI, 2011c).

Consultation with U.S. Fish and Wildlife Service will be needed if endangered or threatened species are found in affected wetlands.

To protect fish spawning, no in-water work should occur between April 15 and June 30, and similar time constraints may affect work scheduling if aquatic endangered species' breeding, nesting, or egg-laying activities take place (USDOI, 2011c).

8.3.6.3 Mitigation for Impacts to Protected Species

Under the implementing Federal regulations (50 CFR 402), Federal agencies must review proposed actions and determine whether an action may affect federally listed and proposed species, or proposed or designated critical habitat. To accomplish this, a request is made to the FWS for a list of species and critical habitat that may be in the project area (USDOI, 2010d).

Once a species list is obtained or verified as accurate, Federal agencies must determine whether their actions may affect any listed species or their critical habitat. If no species or their critical habitats are affected, no further consultation is required. If species may be affected, the agency must consult with the FWS (USDOI, 2010d).

Gray Wolf

Source: (Kramer, 2008).

Implementing avoidance and minimization efforts may reduce potential impacts to listed species. The potential effects by region are as follows. Species locations by county can be found in Appendix M.

- In the WOR Region, for example, woodland caribou (*Rangifertarandus caribou*), spotted owl (*Strixoccidentalis*), and marbled murrelet (*Brachyramphusmarmoratus*) have specific

habitat requirements. Construction and disturbance in high-quality, intact habitat where these species occur should be avoided to the greatest extent practicable. CBP can minimize impacts to the leatherback turtle (Dermochelyscoriacea) by reducing use of nocturnal lighting around marine and coastal sites, which can disturb navigation, in areas of known turtle activity.

- In the EOR Region, the black-footed ferret (*Mustelanigripes*) requires extensive grassland habitat, particularly in North Dakota. Construction and disturbance activities in high quality, intact habitat that this species inhabits should be avoided, as this is one of the most endangered mammals in the United States (USDOI, 2008b). Impacts to migrating whooping cranes (*Grusamericanus*) may be minimized by avoiding marshes and prairie potholes in the summer and known migratory pathways in the spring and fall.
- In the Great Lakes Region, the piping plover (*Charadrius melodus*) nests along the shoreline of lakes Superior, Michigan, Huron, Erie, and Ontario. Activities that disturb nest sites should be avoided to the greatest extent practicable. The Hine's emerald dragonfly (*Somatochlora hineana*) requires specific wetland habitat. Construction and disturbance activities in or near documented critical habitat should be avoided.
- In the New England Region, the least tern (*Sterna antillarum*) and roseate tern (*S. dougallii*) are beach-nesting species with populations along the Atlantic Coast. Activities that disturb nest sites should be avoided to the greatest extent practicable. Atlantic salmon (*Salmo salar*) populations are in decline so construction and disturbance activities in or near spawning habitat should be avoided.

Surveys are recommended to determine the presence or probable absence of species near the proposed site if the proposed projects directly or indirectly affect any of the habitat types for federally listed species in the region. Any survey should be designed and conducted in coordination with the endangered species coordinator at the nearest FWS office. Surveyors must also have valid Federal and state permits to take stock of federally listed species (USDOI, 2011b).

Roads should be closed and new road construction minimized on Federal land to create road less habitat for grizzly bears (*Ursus arctos horribilis*) and other threatened and endangered species if applicable without creating national security vulnerability.

Surveys for protected species should be conducted prior to construction in areas where expected impacts to rare species are a concern. If protected plant species are growing in a proposed construction area, populations would be flagged for avoidance prior to construction.

Threatened and endangered species are protected from "take," which includes harassment or killing of these rare species. If impacts to protected species cannot be avoided, CBP may apply for an incidental take permit through the FWS (USDOI, 2010e). The incidental take process provides accepted methods for negotiating unavoidable conflicts due to construction or other activities.

Construction, maintenance, or surveillance activities during the breeding season, migration, or winter can affect bald eagles throughout a project area. The FWS offers guidance for activities near nesting eagles (USDOI, 2010f). To avoid disturbing nesting bald eagles, the FWS

recommends maintaining natural forested (or vegetative) buffers around nest trees and avoiding certain activities during the nesting season. Buffer areas reduce the visual and auditory impacts of human activities near nest sites. In other seasons, disturbance may still occur, and the FWS guidance provides methods to limit disturbance and other potentially deleterious impacts.

If any active eagle nests are within 0.5 miles of a CBP project site, ODNR recommends work restriction from mid-January through July to allow pre-nesting activities, incubation, and raising of the young (USDOI, 2011c).

Site-specific and surrounding area effects to threatened and endangered resources, wildlife, vegetative habitat, and aquatic resources may occur. Site-specific evaluations have been or would be conducted prior to POE modernization and upgrading activities. CBP maintains an ongoing operational and environmental education initiative to avoid and minimize impacts to biological resources to the greatest extent practicable.

While some minor to moderate adverse impact to biological resources will occur regardless of the alternative chosen, mitigation actions can reduce both real and potential impacts. A comparison of CBP activities to similar activities by the general public may prove helpful in determining overall impact. For example, while CBP may have many marine vessels in use within the WOR Region, over 1,000,000 marine vessels are registered in this area for public and commercial usage. CBP conducts numerous motorized ground operations in a typical day, compared with millions of vehicles in use by the public.

Although the above comparison is instructive, it is still possible for the improper or compromised use of one vehicle on a single occasion to harm sensitive habitat. Therefore, the training and mitigation plans above, as well as interagency coordination in determining locations of sensitive habitat, remain critically important in carrying out the CBP mission while maintaining a healthy ecosystem.

8.3.7 SUMMARY OF POTENTIAL BIOLOGICAL RESOURCES IMPACTS

Table 8.3-1 summarizes the biological resource impacts of the four alternatives.

Table 8.3-1. Summary of Potential Biological Resources Impacts

Impact-Producing Activity	Level of Impact				
	Negligible Adverse	Minor adverse	Moderate Adverse	Major Adverse	Beneficial
NO ACTION ALTERNATIVE					
Small construction projects (< 1 acre and < 1/4 mile: e.g., minor repairs to facilities, parking lot repairs, access road repairs)	X				
Large construction projects (> 1 acre and > 1/4 mile: e.g., repairs to facilities, parking lot repairs, access road repairs)			X		
Checkpoint operations	X				

Impact-Producing Activity	Level of Impact				
	Negligible Adverse	Minor adverse	Moderate Adverse	Major Adverse	Beneficial
Ground operations—motorized		X			
Ground operations—nonmotorized		X			
Aircraft operations	X				
Vessel operations	X				
Operation of NII systems	X				
Operation of sensor and other technologies	X				
OVERALL IMPACT		**X**	**X**		
FACILITIES DEVELOPMENT AND IMPROVEMENT ALTERNATIVE					
Small construction projects		X			
Large construction			X		
OVERALL IMPACT		**X**	**X**		
DETECTION, INSPECTION, SURVEILLANCE, AND COMMUNICATIONS TECHNOLOGY EXPANSION ALTERNATIVE					
Small construction projects (e.g., towers and other infrastructure to mount antennas)		X			
Ground operations—motorized		X			
Ground operations—nonmotorized		X			
Aircraft operations		X			
Vessel operations		X			
Operation of NII systems	X				
Operation of Sensor and other technologies	X				
OVERALL IMPACT		**X**			
TACTICAL SECURITY INFRASTRUCTURE DEPLOYMENT ALTERNATIVE					
Small construction projects (trench cuts, towers, minor access roads and fences)		X			
Large construction projects (access roads and fences)			X		
OVERALL IMPACT		**X**	**X**		
FLEXIBLE DIRECTION ALTERNATIVE					
Small construction projects		X			
Large construction projects			X		
Checkpoint operations		X			

Impact-Producing Activity	Level of Impact				
	Negligible Adverse	Minor adverse	Moderate Adverse	Major Adverse	Beneficial
Ground operations—motorized			X		
Ground operations—no motorized					X
Aircraft operations	X				
Vessel operations	X				
Operation of NII systems					X
Operation of sensor and other technologies					X
OVERALL IMPACT		**X**	**X**		

8.4 ENVIRONMENTAL CONSEQUENCES TO GEOLOGY AND SOILS

Impacts on geology and soils may be caused by: (1) activities causing substantial changes in soil stability, permeability, or productivity, such as the removal of surface vegetative cover; (2) increases in impermeable surfaces resulting in increased erosion of soil by wind and storm runoff; (3) changes in the physical character of natural landforms and surface features, or actual removal of earth, such as for road building or construction of facilities. For descriptions of the regional affected environments for geology, topography, and soils see Sections 4.4.2 (West of the Rockies), 5.4.2 (East of the Rockies), 6.4.2 (Great Lakes), and 7.4.2 (New England).

Impacts to geology and soils vary greatly with each U.S. Customs and Border Protection (CBP) activity described in the regional analyses. On-the-ground conditions such as terrain, soil type, and regional geology would determine the specific level of impact. Generally speaking, however, direct and indirect impacts from all of the alternatives across the Northern Border as a whole would be moderate and adverse (see Sections 4.4.3, 5.4.3, 6.4.3, 7.4.3, and Table 8.4-1). Moreover, best management practices (BMPs), such as design for seismic hazards, unstable slope avoidance, erosion and sediment control requirements, and soil management plans would be implemented to maintain state and Federal compliance (see Section 9.4). As a result, CBP's incremental contributions to cumulative impacts across the Northern Border as a whole would be negligible.

8.4.1 NO ACTION ALTERNATIVE

Construction Projects

Impacts to Geology

Construction projects currently underway may affect the surficial geologic and related topographic conditions in specific localized areas. These impacts are contingent upon the specific characteristics of the location.

Currently, about 20 small construction projects in each region are underway or in the planning process. About 15 large construction projects are planned or in progress in each region. Grading requirements for all construction projects generally come in the form of excavation of surficial earth materials and replacement of those materials as compacted fill. Excavation activities would have localized permanent impacts at construction site locations. Grading requirements for projects also change the various topographic conditions for site drainage purposes. Typical construction activities would have negligible effects on regional geology since grading and excavation for small facilities and utilities (e.g., on-site septic systems) generally only requires fairly shallow (generally less than 10 feet in depth) excavation activities.

Depending upon site conditions and the size of larger projects, grading and excavation requirements could be on the order of tens of feet in depth. In hilly to mountainous terrain, removal of slopes may require the creation of retaining walls depending upon engineering requirements. Impacts are expected to be minor to moderate and adverse, contingent upon the specific characteristics of the location.

In areas such as the Cascade region, where seismic hazards exist, facilities would adhere to seismic building codes. In areas prone to land subsidence, landslides, or potential adverse geologic conditions, a geologic and engineering evaluation of the subsurface geologic condition would minimize risks. The West of the Rockies and East of the Rockies Regions do not have a great deal of karst topography. The Great Lakes and New England Regions do have a great deal of karst topography. Areas where karst topography occurs would mandate special consideration for any construction projects. Construction projects on or near karst topography would be at risk for subsidence if groundwater withdrawal would continuously exceed replenishment or groundwater were to become acidic. Risks would also be considerable in areas of slope instability or adverse geologic conditions. Bedrock geology would be analyzed prior to construction to determine gross and surficial stability to minimize such risks.

The installation of underground utilities infrastructure would likely have minor adverse impacts to geology resulting from localized trenching for utility placement. A detailed report on the geologic conditions and engineering characteristics of the selected location would be necessary to determine the appropriate methods of installing underground utilities. The actual impacts to the geology would depend on site construction requirements.

Impacts to Soils

Soil characteristics depend upon two factors: the region in which they develop and the underlying substrate. The specific soil type at a project site will largely determine soil impacts. While 20 small and 15 large construction projects are currently taking place or planned each region, the specific soil type at the site of the action will largely determine soil impacts. Construction related to the creation, maintenance and repair for roads, checkpoints, and support facilities would have localized adverse impacts to soils. The West of the Rockies and East of the Rockies Regions have a large amount of erodible soil. The Great Lakes Region has clay-rich soils that are usually not highly susceptible to erosion. Some areas have a higher susceptibility (e.g., inceptisols in New York). The New England Region has some erodible soil (inceptisols), particularly in Vermont and Maine. The potential for soil erosion is highest during construction. The temporary period required for construction or improvement of checkpoints and supporting facilities would have moderate adverse impacts to soils. The expansion of impermeable surfaces related to the projects has the potential to increase soil erosion by storm water runoff. Erosion would be particularly likely in drier portions of the region where large rain events occur. Removal of soil and replacement of the soil as engineered fill during any site development will permanently alter the soil characteristics. However, based on the amount of soil in any given region the overall impacts from CBP actions are expected to be minor to moderate and adverse.

Compaction of soil to create engineered fill would result from construction or site improvements. Vehicular traffic on access roads generally decreases soil porosity, which decreases the transfer of air and water through the soil and lessens vegetative productivity due to root restriction. BMPs would be implemented to reduce access roads and prevent soil erosion. BMPs would be used to reduce soil erosion include revegetation, installation of windbreaks, and contouring. If the project area is situated on designated Prime Farmland, form AD-1006 would be completed to assign a farmland conversion impact rating. Impacts from access road use are expected to be moderate and adverse.

With underground installation of utility infrastructure, impacts to soils would be permanent, would vary according to the size of the installation, and would be minor to moderate and adverse. The effects of excavation and installation can be minimized using BMPs.

On-site Trade and Travel Processing Operations

Impacts to Geology

Since proposed operations do not include construction of any type, there would not be any impacts to geology.

Impacts to Soils

Routine activities at a POE, border station, or forward operating base (FOB) have the potential to produce localized soil impacts resulting from construction or operational activities. An average of 20 small (West of the Rockies and New England Regions), 30 small (East of the Rockies Region), and 10 small and 3 large (Great Lakes Region) on-site trade and travel processing operations occur. Only one large on-site trade and travel processing operation takes place in the West of the Rockies region. There are no on-site trade and travel processing operations in the East of the Rockies or New England Regions.

As the areas have been previously disturbed by construction, most permanent soil impacts would be caused by soil erosion due to wind action and runoff of water from impermeable road surfaces. Impacts from the operational use of paved roadways would be minor and adverse. Soil erosion prevention plans would be developed based on local, state, and regional regulations. These impacts are expected to be long-term, minor to moderate, and adverse, although most impacts would likely be minor.

Motorized Ground Operations

Impacts to Geology

Since proposed operations do not include construction of any type, there would be no impacts to regional geology.

Impacts to Soils

Each U.S. Border Patrol (USBP) Station uses a variety of vehicles to monitor and patrol border areas. Surveillance operations use four-wheel-drive trucks, sedans, all-terrain vehicles (ATVs), snowmobiles, and motorcycles. In each of the four regions, motorized ground operations take place an average of 800 times per day. If these operations became concentrated in areas with vulnerable soils, moderate impacts would result from the raising of dust, which could potentially causing erosion by creating rutting. Specific effects would be based on the character of the local soil, which varies throughout the regions. Impacts to soils from motorized ground operations are expected to be minor to moderate and adverse.

Two-tracks are previously disturbed pathways or ruts, created by the passage of two- and four-wheel drive vehicles. Agents follow established two-track pathways when using four-wheel drive vehicles for patrols. Because agents would use the same tracks created during initial area surveillance, soils impacts would be minimized. At times, interdictions may demand that a

vehicle leave the established track. In this case, soil impacts would be minor and adverse as long as agents do not repeatedly leave the previously established tracks.

The soils in two-tracks become compacted by regular use and loss of topsoil, making them prone to erosion from rain and wind. Revegetation becomes more difficult due to the increased soil density. In addition to soil compaction, stresses from vehicles can cause gullies to develop, which increases erosion potential (Stokowski and LaPointe, 2000). In areas with sensitive soil conditions, some impacts could be heightened. Impacts could be minimized by identifying and avoiding sensitive areas and using BMPs, such as maintaining native vegetation and repairing ruts from patrols. Overall impacts of four-wheel drive vehicle surveillance would range from minor to moderate and adverse.

Two-wheel drive vehicles such as motorcycles can also affect soils. The speed of a motorcycle is a factor in the extent of impact. Higher speeds produce more damaging effects; repeated passes over the same area increase compaction and rutting (Stokowski and LaPointe, 2000). Depending on the terrain, soil character, rainfall, and surrounding vegetation, impacts to soils from two-wheel drive vehicles are expected to be minor and adverse based on the use of BMPs (rut repair, etc.) and the small scale of patrols.

Impacts caused by ATVs would be similar to impacts caused by two- and four-wheel drive vehicles. Soil impacts such as compaction, rutting, and erosion can occur from high-volume use of ATVs (Stokowski and LaPointe, 2000). Soil impacts from ATV use are expected to be minor and adverse, given the low frequency and volume of ATV patrols. CBP would adhere to specific regulations in protected areas such as national parks.

Snowmobiles can also have adverse impacts on soils when used at times of low snowpack or on steep slopes if the vehicle treads encounter the underlying soil. Snowmobiles can cause erosion in exposed areas due to repeated passes if the vehicle treads encounter soil. Compaction may also occur, making revegetation more difficult (Baker and Buthmann, 2005). Impacts from snowmobiles are expected to be minor and adverse.

Nonmotorized Ground Operations

Impacts to Geology

Since proposed operations do not include construction of any type, there would be no impacts to regional geology.

Impacts to Soils

Mounted patrols on horseback for border surveillance can have some of the same effects on soils as other surveillance methods, although to a lesser degree. Horses compact soils as they travel along paths; their hooves can also displace topsoil. These combined factors increase the potential for soil erosion. Impacts from mounted patrols are expected to be short-term, minor, and adverse because this method of surveillance is used infrequently. In all of the four regions, nonmotorized operations average about 150 per day, per region. Given the vast amount of land in each region, impacts from nonmotorized ground operations are not expected to affect soils beyond a minor and adverse level.

In protected and preserved areas such as national parks and natural wildlife reserves, border surveillance sometimes takes place on foot. Although soil compaction and trampling would occur, the extent would be minimal. Impacts resulting from foot patrols are anticipated to be minor and adverse.

Border Patrol agents use canine patrols mainly for narcotic and firearms detection. Some canine teams are trained for search and rescue operations. Soil impacts that may occur during search and rescue operations include compaction and trampling. Given the likely brief exposure of soils to canine operations, impacts are expected to be negligible.

Operation of Sensors and Other Technologies

Impacts to Geology

Since proposed operations do not include construction of any type, there would not be any impacts to regional geology.

Impacts to Soils

Unattended ground sensors (UGSs) are small electronic devices that monitor movement through seismic and magnetic transmitters. Sensors are typically placed along roads or trails known to be used as illegal travel corridors. Impacts to soils caused by the sensors themselves would be negligible. Maintenance and replacement of the UGSs may affect soil integrity due to trampling and compaction. Impacts from regular maintenance of the UGSs are expected to range from negligible to minor, short-term, and adverse; local soil characteristics would determine the severity of impact. The operation of mobile surveillance systems (MSS) would cause impacts similar to those caused by single passes of motorized patrols, as the systems would be driven to remote locations and would remain in place for between a week and a month. The low frequency of their mobility would make the impacts short-term and minor with rapid recovery of topsoil when the system was moved. In general, each region has about 1,500 UGSs and remote surveillance platforms in operation; fewer than 50 of these are remote surveillance systems. Given the amount of total land in each region and the dispersion of UGS required to provide adequate coverage, impacts caused by sensors and MSS operations would be negligible. Impacts to soils caused by operation of these technologies would be minor and adverse.

In conclusion, impacts to geology and soil from the No Action Alternative would generally be minor to moderate and adverse. Specific impacts would be determined upon closer study of localized project areas.

8.4.2 FACILITIES DEVELOPMENT AND IMPROVEMENT ALTERNATIVE

The Facilities Development and Improvement Alternative would provide new and permanent facilities to allow USBP agents and CBP officers to operate more efficiently and respond to situations more quickly. Included in this alternative is the proposed construction of semi-permanent and temporary facilities, such as FOBs, checkpoints, and other facilities that support the operational duties of CBP law-enforcement agents and officers. Much of the proposed construction would occur at facilities that are outdated or that do not operate efficiently due to space constraints. This alternative would also allow an increase of large and small on-site trade and travel processing operations.

In each of the four regions, about 30 small and 20 large construction projects would occur under this alternative.

Large construction projects can take approximately seven years to design, execute, and bring to full functionality. Considered in this time frame is the time needed for project planning, financing, approval, and construction. Impacts to soils from construction activities would be similar to those already occurring at existing facilities. If the selected project location is a previously undisturbed area, soil impacts would likely be moderate and adverse with implementation of construction mitigation practices. Soil disruption, compaction, and erosion are all likely effects of USBP Station construction. Additional impermeable surfaces would intensify storm water erosion, exacerbating soil loss. In these areas, soils would be permanently altered by the new surface. A soil erosion plan would help to control the impact of impermeable surfaces; NPDES permitting may apply. Impact intensity would depend on regional soil characteristics and physical properties.

Access roads would also be created for new USBP Stations or POE upgrades. This would increase impermeable surface and could potentially accelerate soil erosion due to clearing. Roadside revegetation and drainage would decrease this effect. Soil impacts from new roads would be short-term, moderate, and adverse with the use of mitigation techniques.

Impacts to regional geology from construction of a new CBP facility would be long-term, minor, and adverse. While recovery in the geological strata would not occur after excavation, the impacts would be minor unless the project occupies an area of karst terrain or high relief. Grading and excavation would prove necessary in most cases, which could expose soils and cause erosion. A geological evaluation of bedrock would help determine a suitable location for the building and related infrastructure.

In general, impacts from this alternative to regional geology and soils would be expected to be minor to moderate and adverse. Specific impacts would be determined through closer study of local project areas.

8.4.3 DETECTION, INSPECTION, SURVEILLANCE, AND COMMUNICATIONS TECHNOLOGY EXPANSION ALTERNATIVE

The Detection, Inspection, Surveillance, and Communications Technology Expansion Alternative would deploy more effective force by increasing technologies used to support CBP activities. This alternative would include improvements of the identification and inspection technologies used by the Office of Field Operations. This alternative would also allow an increase in the numbers of motorized and nonmotorized ground operations.

This alternative would include an increase of approximately 100 small construction projects in each of the four regions. Motorized ground operations may increase to about 1,300 per day, per region. Nonmotorized ground operations may increase to about 200 per day, per region. Installation of underground sensors and use of MSS would increase to approximately 2,500 devices, where needed. Installation of sensors generally consists of excavating several one-foot diameter holes to a depth of 1-2 feet. One to several rows of UGS is installed in a given area. Short-term, minor, and adverse impacts would occur due to the disturbance of surface and subsurface soil during the lifetime of UGS installation and operation.

Additional and upgraded detection, inspection, surveillance, and telecommunications systems would be implemented under this alternative, including:

- Vehicle and cargo inspection systems;
- High-energy X-ray imaging scanners;
- Innovative wireless technologies;
- Acoustic air surveillance systems
- OmniSense sensor systems;
- Stationary and mobile surveillance systems (MSS); and
- Low-flying aircraft passive acoustic detection systems.

These upgrades would enable CBP law enforcement components to focus on identified threat areas, to improve agent and officer communications systems, and to deploy personnel to resolve incidents with maximum efficiency. These upgrades would have similar impacts to those in the No Action Alternative. Due to the relatively small footprint of tactical infrastructure and surveillance systems, impacts to geology and soils are expected to be minor and adverse. Construction of supporting infrastructure such as poles, towers, and access roads would disrupt soils, but only temporarily outside the immediate footprint of the support structure. Permeable materials would be used in the creation of access roads so infiltration would remain similar to the level it was prior to construction. Impacts to geology and soils from this alternative are expected to be minor and adverse. Specific impacts would be determined upon closer study of localized project areas.

In conclusion, impacts to geology and soils from the Detection, Inspection, Surveillance, and Communications Technology Expansion Alternative would be minor to moderate and adverse. Specific impacts would be determined through closer study of local project areas.

8.4.4 TACTICAL SECURITY INFRASTRUCTURE DEPLOYMENT ALTERNATIVE

Implementation of this alternative would allow CBP to construct small areas of ground-based vehicle barriers (such as gates and fencing near existing roads and rights-of-way, trenches, and other deterrents) in locations where cross-border violators operate. Access roads would be improved or constructed to reach the tactical infrastructure. Patrol and access road improvements and vehicle barriers would require ground disturbance during construction. Impacts to soil and local geology would range from minor to moderate, depending on the properties of the earth materials encountered during excavation and the level of construction activities at the project location. Implementation of this alternative would increase the amount of small and large construction projects to about 30 and 5 per region, respectively. All of the regions have many areas with erodible soils. Geotechnical studies would be completed prior to construction. These impacts would be expected to be minor and adverse based on the anticipated depth of proposed excavations (generally less than 10 feet).

For areas that have become impassible, infrastructure improvements would include construction of new bridges, repair of existing bridges, and emplacement of culverts, low-water crossings, gabions, and water bars. These structures could impact soils and geologic conditions by shifting

water flow and potentially increasing bank and channel erosion. CBP would take special caution in each of the four regions due to the high relief and erodible soils. Specific impacts would be determined with closer study of the localized project area. Impacts to geology and soils from this alternative are expected to be long-term, minor to moderate, and adverse.

In conclusion, impacts to geology and soils from the Tactical Security Infrastructure Deployment Alternative would tend to be minor to moderate and adverse. Specific impacts would be determined with closer study of localized project areas.

8.4.5 FLEXIBLE DIRECTION ALTERNATIVE

This alternative includes all of the elements of the three other action alternatives. The maximum possible impact of the full implementation of all three action alternatives is analyzed under the Flexible Direction Alternative.

Anticipated changes under this alternative include an increase in small construction projects by 160 and large construction projects by approximately 25 per region. Small on-site trade and travel processing operations would increase to about 10 for the Great Lakes Region, 20 for the West of the Rockies Region, and 30 each for the East of the Rockies and New England Regions. Large on-site trade and travel processing operations would increase by five operations for each region. Motorized ground operations would increase to around 1,300 per day and nonmotorized ground operations would grow to about 200 per day. Sensors and other technology use may rise to approximately 2,500.

Similar to the other action alternatives, impacts to regional geology from this alternative would be minor and adverse. Impacts to soils from this alternative would range from minor to moderate and adverse, depending on soil type and anticipated level of grading for site development. Even at their highest levels of impact, actions under this alternative would not be more than moderate, due to the relatively small amount of land affected compared to the size each region and the overall Northern Border study area.

In conclusion, impacts to geology and soil from the Flexible Direction Alternative would be minor to moderate and adverse. Specific impacts would be determined upon closer study of localized project areas due to the variation of soils and geology in the regions.

8.4.6 BEST MANAGEMENT, MINIMIZATION, AND MITIGATION

CBP seeks to avoid, minimize, repair, and reduce the impacts of its actions in the human environment. The agency does so with a combination of BMPs, siting plans, design strategies, minimization measures, and monitoring plans best suited to the scale and the location of the particular action. Mitigations available to CBP may not necessarily be mandatory. In implementing its proposed action CBP could choose from among the following actions to minimize impacts to geology and soils:

- Address potential impacts resulting from regional seismic hazards during the design phase, using reinforced concrete and masonry in construction if necessary;
- Negate potential mass-movement (landslide) hazards by avoiding areas prone to slope instability and using protective barriers to reinforce areas of potential risk;

- Address potential impacts related to highly erodible soils and susceptible geologic formations on a case-by-case basis. Those earth materials which are subject to erosion should be addressed in sediment control plans based on local regulations and engineering analysis. A Federal NPDES permit may also be required dependent on the proximity of the action to water bodies of concern. Dust control plans would also reduce impacts. Uncontrolled soil compaction can be controlled by re-using established access roads and trails rather than creating new pathways. Drainage along impermeable surfaces should reflect the specific hydrologic requirements in the area that they serve. Revegetation would also improve soil conditions and reduce erosion potential. Spill prevention control and countermeasure plans may be a requirement for actions that potentially contribute hazardous materials to the soil.

8.4.7 SUMMARY OF POTENTIAL GEOLOGY, TOPOGRAPHY, AND SOILS IMPACTS

Table 8.4-1 summarizes the impacts of the alternatives on geology, topography, and soils.

Table 8.4-1. Summary of Potential Geology, Topography, and Soils Impacts

		Level of Impact				
Impact-Producing Activity		**Negligible Adverse**	**Minor Adverse**	**Moderate Adverse**	**Major Adverse**	**Beneficial**
NO ACTION ALTERNATIVE						
Small Construction Projects (<1 acre and <1/4 mile: e.g., minor repairs to facilities, parking lot repairs, access road repairs, etc.)			G/S	S		
Large Construction Projects (>1 acre and >1/4 mile: e.g., repairs to facilities, parking lot repairs, access road repairs, etc.)			G/S	S		
Small On-site Trade and Travel Processing Operations		G	S	S		
Large On-site Trade and Travel Processing Operations		G	S	S		
Ground Operations–Motorized		G	S	S		
Ground Operations–Nonmotorized	On-Road	G	S			
	Off-Road	G	S			
Operation of Sensors and Other Technologies		G	S	S		
OVERALL IMPACT		**G**	**S**	**S**		
FACILITIES DEVELOPMENT AND IMPROVEMENT ALTERNATIVE						

		Level of Impact				
Impact-Producing Activity		**Negligible Adverse**	**Minor Adverse**	**Moderate Adverse**	**Major Adverse**	**Beneficial**
Small Construction Projects		G	G/S	S		
Large Construction Projects		G	G/S	S		
OVERALL IMPACT		**G**	**S**	**S**		
DETECTION, INSPECTION, SURVEILLANCE, AND COMMUNICATIONS TECHNOLOGY EXPANSION ALTERNATIVE						
Small Construction Projects (towers and other infrastructure to mount antennas, etc.)		G	G/S			
Operation of Sensors and Other Technologies		G	S			
Ground Operations–Motorized		G	S	S		
Ground Operations–Nonmotorized	On-Road	G	S			
	Off-Road	G	S			
OVERALL IMPACT		**G**	**S**	**S**		
TACTICAL SECURITY INFRASTRUCTURE DEPLOYMENT ALTERNATIVE						
Small Construction Projects (trench cuts, towers, minor access roads and fences)		G	S	S		
Large Construction Projects (access roads and fences)		G	S	S		
OVERALL IMPACT		**G**	**S**	**S**		
FLEXIBLE DIRECTION ALTERNATIVE						
Small Construction Projects		G	S	S		
Large Construction Projects			G/S	S		
Small On-site Trade and Travel Processing Operations		G	S	S		
Large On-site Trade and Travel Processing Operations		G	S	S		
Ground Operations–Motorized		G	S	S		
Ground Operations–Nonmotorized		G	S			
Operation of Sensors and Other Technologies		G	S	S		

	Level of Impact				
Impact-Producing Activity	**Negligible Adverse**	**Minor Adverse**	**Moderate Adverse**	**Major Adverse**	**Beneficial**
OVERALL IMPACT	**G**	**S**	**S**		

Note: G=Geology and topography; S= Soils.

8.5 ENVIRONMENTAL CONSEQUENCES TO WATER RESOURCES

The following section evaluates the effects of activities identified for each alternative developed in Chapter 2.0 Proposed Action. Activities that do not have an effect on water resources are not evaluated in this section. Activities that do not affect water resources include checkpoint operations, aircraft operations, operation of NII systems, and operation of sensor and other technologies. This section considers the potential adverse and beneficial impacts of U.S. Customs and Border Protection's (CBP) alternative actions on water resources.

Water resources are distributed widely throughout the 4,000- by 100-mile Northern Border study area and consist of hydrologic and groundwater resources (aquifers, subterranean watercourses, and recharge areas), surface water and waters of the United States (lakes, ponds, rivers, streams, and channels), and floodplains. Water resources include several beneficial elements, such as water supply quantity and quality, habitat for aquatic organisms, recreation, and flood storage capacity, which are subject to effects from proposed CBP activities. For descriptions of the regional affected environments for Water Resources see Sections 4.5.2 (West of the Rockies), 5.5.2 (East of the Rockies), 6.5.2 (Great Lakes), and 7.5.2 (New England).

The presence of a water resource within the 100-mile buffer of the Northern Border does not guarantee that it would be impacted by CBP's activities. For construction activities, there are potential effects on receiving waters related to removal, replacement, and disturbance of soil where protective vegetation has been removed. It is common practice in the civil construction industry (and is often specified in the issuance of construction permits) to implement best management practices (BMPs) such as silt fences, silt dams, and mulching for sediment and erosion control. These BMPs substantially reduce the amount of sediment leaving construction sites and entering receiving waters. The small amount of sediment that cannot be effectively removed using BMPs would be minor in magnitude and of a short duration while any project was under construction.

Routine operational activities that require a water supply and sewer collection affect water resources. Whether the activity is located in an urban area, with access to municipal water and sewer systems; or in a rural or remote location, where water supply and waste treatment are provided on-site, systems would be designed to provide a site utilities solution that meets the water and sewage requirements adequately, in accordance with applicable regulations, and that protects water resource quantity and quality.

Consideration of all CBP activities having a potential impact on water resources in all alternatives across the Northern Border, combined with the understanding that BMPs would be implemented, and considering the dispersed nature of the non-CBP projects and their resulting impacts, leads to the conclusion that the overall direct and indirect impacts of all of the alternatives across the Northern Border as a whole would be minor and adverse (see Table 8.5-3). As a result of CBP's overall small, incremental contributions to water quality and supply issues, cumulative impacts to water resources across the Northern Border as a whole would be negligible as well.

8.5.1 NO ACTION ALTERNATIVE

With implementation of identified mitigation measures, effects to water resources under the No Action Alternative would be minor and adverse. Discussion of impacts analysis for this alternative follows.

Large and Small Construction Projects

For purposes of evaluating the effects of CBP activities on water resources, it is not necessary to separate the consideration of large and small construction projects. Under the No Action Alternative, construction primarily consists of repair and maintenance of existing facilities, technology, and infrastructure, or is limited to infrastructure that needs replacement to preserve current functionality of CBP mission. CBP estimates completing approximately 35 projects of this type over the next 5 to 7 years. A wide spectrum of potential CBP construction programs will be evaluated in this alternative, though these construction programs are limited by current funding.

Each construction activity related to removal, replacement, and disturbance of soil where protective vegetation has been removed has some potential effect on surface receiving waters. It is common practice in the civil construction industry, and is often specified in the issuance of construction permits, to implement mitigations for sediment and erosion control such as silt fences, silt dams, and mulching. These mitigation measures substantially reduce the amount of sediment leaving a construction site and entering receiving waters. The size of the construction project determines the extent of these mitigations. The small amount of sediment that cannot be removed using mitigations is minor in magnitude and of a short duration (while the project is in construction). A list of mitigations that will be implemented for CBP's construction activities is provided in Section 8.5.6. With implementation of mitigations, the impact of these activities would be minor and adverse.

Construction projects also typically use water to inhibit dust. The amount of water used for this purpose will vary depending upon the local climate and the levels of humidity and precipitation. Restrictions on water use for this purpose are uncommon along the northern border, and any such restrictions that may be imposed through the construction permitting process would be accommodated as required.

Any construction that occurs within a floodplain reduces the capacity of the floodplain to store floodwaters. For this reason, construction of any infrastructure within a floodplain should be avoided. Most floodplains are highly regulated by local communities' floodplain regulations with cooperation and support from FEMA. Compelling reasons may arise for building infrastructure within a floodplain, and if construction must occur, a permit or variance can be created that addresses the restrictions imposed by Federal and local regulation. The small number of construction projects that cannot avoid siting in a floodplain would be of minor magnitude and long-term duration. With implementation of mitigation, this effect would be minor.

Overall, the level of impact for large and small construction projects would be minor and adverse.

Large and Small On-Site Trade and Travel Processing Operations

For purposes of evaluating the effects of CBP activities on water resources, it is not necessary to separate consideration of large and small on-site trade and travel processing operations. Operations that have an effect on water resources are those that generate water supply and sewage collection requirements. Whether the facility is located in an urban area with access to municipal water and sewer systems, or in a rural or remote location where water supply and waste treatment are provided on-site, systems can be designed that provide an adequate site utilities solution. The site utilities solution must meet the requirement in accordance with applicable regulations, and protect water resources from a perspective of both resources quantity and quality. CBP currently executes 20 operations in the New England Region, 13 in the Great Lakes Region, 30 in the East of the Rockies Region (EOR), and 21 in the West of the Rockies Region (WOR).

A small to medium-sized POE may employ officers, agents and various support personnel. These facilities require adequate water supply and wastewater treatment. A list of mitigations for maintenance of routine operations at a POE is provided in Section 8.5.6. With implementation of mitigation, the effect of POE operation on water resources would be minor and adverse.

The operation of USBP Stations has an effect on water resources because these activities generate water supply and sewage collection requirements. Though USBP Stations are often located in or near developed areas where municipal services are available, requirements for responsible design and installation of properly sized and functional water distribution and sewage collection systems remains a primary consideration. Each station accommodates 25 to 50 agents, most of whom spend a large portion of the day out on patrol away from the station. These stations are small- to medium-sized office facilities; multiple sites possess an adequate water supply from which the facility can be served and wastewater treated sufficiently before disposal. A list of mitigations that would be implemented for continuing operations at USBP Stations is provided in Section 8.5.6. With implementation of mitigation, this effect would be minor and adverse.

The primary effect to water resources resulting from the use of canine teams at POEs arises from the management of animal wastes in the kennels. Border Patrol canine handlers manage animal waste by washing it into septic systems. Wherever they are available, CBP uses municipal sewer systems. The effect of management and disposal of animal waste from canine patrol programs on water resources is minor in magnitude with a localized extent and short-term duration for a single event of mismanaged animal waste. A list of mitigations for operation of canine patrols is provided in Section 8.5.6. With implementation of mitigation, this effect would be minor and adverse.

The use of forward operating bases (FOBs) requires providing potable water, which must be transported to the remote facility from another location. Similarly, wastewater is collected in portable containers at FOBs and transported to another location for treatment. The off-site sources of water supply and wastewater treatment are selected such that these services have only minor effects on the water resources at those locations. With off-site sources for water supply and wastewater treatment, the effect of routine activities at an FOB is minor in magnitude, localized in extent, and of short duration while the FOB is in operation. A list of mitigations that

would be implemented for maintaining routine activities at an FOB is provided in Section 8.5.6. With implementation of mitigation, this effect would be minor and adverse.

Ground Operations–Motorized

Motorized operations occur with the use of trucks on highway surfaces, as well as snowmobiles and all-terrain vehicles (ATVs) on off-road surfaces. CBP estimates performing approximately 800 motorized ground operations per day in each region over the next 5 to 7 years. Motorized patrols may pass over the same spot on any route twice per day. The use of trucks on highway surfaces is not expected to produce water resources effects and will not be evaluated further.

Conduct ATV Patrols

ATV patrols can impact water quality by rutting the areas over which they travel, leading to erosion and runoff and producing sedimentation and water quality degradation. Operation of approximately 100 ATVs on approximately 40 off-road trails in each region occur almost exclusively on established paths or trails. Much ATV use occurs in areas and under conditions designed to prevent rutting. However, rutting may occur in rough and steep terrain or under adverse weather conditions. Border Patrol agents receive extensive training in rider technique that allows them to minimize rutting during patrol operations, but some rutting is inevitable. The number of rutting events that occur is very low in relation to the overall number of ATVs registered in Northern Border states, shown below in Table 8.5-1.

Table 8.5-1. Registered ATVs by State

West of the Rockies State	Number of Registered ATVs
Idaho	98,283 (2009)
Montana (West)	n/a
Washington	n/a
East of the Rockies State	**Number of Registered ATVs**
Minnesota	350,000 (2005)
Montana (East)	65,000 (2011) MT DOT
North Dakota	22,737 (2007)
Great Lakes State	**Number of Registered ATVs**
Michigan	181,659 (2008)
New York	12,747 (2009)
Ohio	N/A
Pennsylvania	N/A
Wisconsin	275,400 (2009)

New England State	Number of Registered ATVs
Maine	63,467 (2007)
New Hampshire	N/A
Vermont	N/A

Sources: (Iverson, 2010; Nelson and Stynes, 2010; ATV Minnesota, 2005; NYDMV, 2010; NDPRD, 2007; WIDNR, 2009; MDIFW, 2008).

The twice-daily frequency and extent of rutting in relation to all recreational trails travelled is very small. The magnitude of rutting events is minor and the duration is moderate unless repairs are made. A list of mitigations that would be implemented for operation of ATV patrols is provided in Section 8.5.6. With implementation of mitigation, this effect would be minor and adverse. If responsive repair and maintenance of rutted travel surfaces cannot be arranged through partnerships, the effect would be moderate and adverse.

Conduct Snowmobile Patrols.

Effects caused by snowmobile patrols are similar to the effects of ATV patrols and occur in similar locations. Snowmobiles are utilized when travel surfaces become unstable due to the presence of snow on the travel surface. As with ATV patrol operations, snowmobile patrols can cause sedimentation and water quality degradation that result from erosion and runoff in areas rutted by use of snowmobiles. This occurs in areas that are not repaired as a part of the snowmobile patrol program.

Operations of approximately 40 snowmobiles in each region are almost exclusively on established paths or trails. Much of the activity occurs in areas and under snow-covered conditions such that rutting does not occur. However, rutting may occur in areas where the travelled surface transitions from snow-covered ground to ground without snow.

Border Patrol agents receive extensive training in rider technique that allows them to minimize rutting during snowmobile patrol operations, but some rutting is inevitable. The number of rutting events from patrol operations in relation to overall recreational snowmobile travel in the region is very small, as shown below in Table 8.5-2.

Table 8.5-2. Registered Snowmobiles by State

West of the Rockies State	Number of Registered Snowmobiles
Idaho	50,000
Montana	23,440
Washington	31,532
East of the Rockies State	**Number of Registered Snowmobiles**
Minnesota	277,290
Montana	23,440
North Dakota	21,000
Great Lakes State	**Number of Registered Snowmobiles**
Michigan	301,805
New York	146,662
Ohio	19,500
Pennsylvania	45,270
Wisconsin	232,320
New England State	**Number of Registered Snowmobiles**
Maine	96,600
New Hampshire	73,625
Vermont	41,000

Source: (ACSA, 2010).

The National Park Service (NPS) prepared an EIS for Winter Use in Yellowstone and Grand Teton National Parks in 2007 (USDOI, 2007). The preferred alternative identified in this EIS allowed for the use of 540 snowmobiles and 83 snowcoaches per day within the parks and dismissed the consideration of water resource effects resulting from operations of oversnow vehicles and other winter activities at the parks.

The twice-daily frequency and extent of rutting in relation to all recreational snowmobile trails travelled is very small because a very high percentage of the travel is performed on snow where no rutting will occur. The magnitude and duration of a rutting event is negligible; therefore, this effect would be negligible.

Ground Operations—Nonmotorized

Nonmotorized CBP operations include foot patrols and horse patrols. CBP estimates that approximately 150 operations of this type would occur per day in this region over the next 5 to 7 years. The infrequency and benign character of foot patrols are not expected to produce water resources effects and are not evaluated further.

Effects on water resources can be caused by buildup of animal wastes from horse patrols and loss of vegetative cover from horse stables and pastures. The nutrients and sediment released from these facilities during periods of precipitation is a nonpoint source pollution that can degrade water quality in nearby receiving waters. Excessive nutrients in receiving waters can reduce oxygen availability and promote algae growth. This effect can be mitigated if horse boarding facilities are properly managed.

With proper management of horse boarding facilities, the effect of horse stable operations on water resources is minor in magnitude, localized in extent, and of moderate duration during warmer seasons when algae growth occurs. A list of mitigations that would be implemented for the operation of horse patrols is provided in Section 8.5.6. With implementation of mitigation, this effect would be minor and adverse.

Vessel Operations

Waterborne patrols place watercraft that contain fuels, oils, and seized materials in direct contact with surface water resources. Approximately 77 of these operations are performed per day across the Northern Border area: 15 in WOR, 20 in EOR, 42 in the Great Lakes Region, and 16 in the New England Region. A spill or leak in this context could involve direct introduction of contaminants into a water resource with little opportunity for recovery. The probability and frequency of such an event are very low. For virtually all substances that may be spilled, the volume of the potential spill in relation to the larger water body is very small. The magnitude of such a spill would be minor; the extent of the spill would be localized, and the duration would be temporary.

Watercraft operators receive training in the safe operation of watercraft, including fueling operations and storage of potential contaminants. A list of mitigations that would be implemented for continued operation of waterborne patrols is provided in Section 8.5.6. With implementation of mitigation, this effect would be minor and adverse.

With implementation of identified mitigation measures, overall effects to water resources under the Facilities Development and Improvement Alternative would be minor and adverse.

8.5.2 FACILITIES DEVELOPMENT AND IMPROVEMENT ALTERNATIVE

Under this alternative, CBP would focus on construction of new facilities and major modernization of existing facilities. With implementation of identified mitigation measures, the effects to water resources evaluated under the Facilities Development and Improvement Alternative would be minor and adverse.

Activities that would be increased with implementation of the Facilities Development and Improvement Alternative include:

Large and Small Construction Projects

Construction of larger facilities such as USBP Stations may involve re-grading, which has the potential to alter natural drainage patterns. Site design mitigations commonly used by local jurisdictions as regulatory conditions for land development may be implemented. These mitigations may include provision of on-site detention basins that limit the rate of runoff or drainageways that collect runoff and redirect it to natural receiving waters. The small amount of

runoff that cannot be returned to its natural drainage course at historic rates would be minor in magnitude and of a short duration (while the project is in construction). With implementation of mitigation, this effect would be minor.

Constructing Roads, Bridges, Culverts, and Low-water Crossings

CBP constructs roads, bridges, and culverts to meet security requirements. If roads, bridges, and culverts placed in or adjacent to waterways are not properly designed, the water surrounding this infrastructure may behave in an unplanned and generally undesirable manner. State and local jurisdictions typically adhere to design standards for this infrastructure, including conveyance of storm water within road rights-of-way. The capacity of a structure to effectively pass storm water is dependent upon the size of the cross-section through which the water passes and the hydraulic gradient of the water as it passes through the structure. These design standards reflect accepted engineering practices and assure a reduction in impacts resulting from placement of these structures in or across a waterway. The deviation of water flow from the natural conditions of an established waterway to the hydraulic passage through a well-designed manmade drainage structure would be minor in magnitude and long-term in duration. With implementation of mitigation, the effect of road and bridge construction on water quality would be minor and adverse.

CBP constructs low-water crossings to allow vehicles to pass through waterways that have predominately shallow depth at the crossing. A rock or concrete paved bottom section is developed to protect the physical integrity of the waterway. Any foreign matter clinging to a vehicle as it passes through the shallow water at the crossing could be washed into the water as a contaminant. The vehicles are typically washed at shift change, so the likelihood of contaminants is low. With routine vehicle washing, waterway contamination caused by the passage of vehicles through a low-water crossing would be of minor magnitude and temporary and infrequent duration. The effect of low-water crossings on water quality would be minor and adverse.

The primary concern for protection of designated Wild and Scenic Rivers (designated rivers) is the preservation of these resources in a free-flowing state. The placement of a bridge, culvert, or low-water crossing within the free-flowing section of a designated river is restricted. Though it is unlikely that CBP activities would require placement of such a structure in a designated river, future project planners must be aware of this restriction and avoid placement of these structures on designated rivers in this region.

Since the Facilities Development and Improvement Alternative would result in a greater number of USBP Stations than the No Action Alternative, the construction activities associated with these facilities would result in a greater number of effects across the Northern Border. In each of the regions, there would be approximately 50 additional construction projects anticipated over the 5 to 7 year period under this alternative.

Construction of more POEs and USBP Stations is associated with a greater aggregate amount of soil disturbed and vegetation removed during the construction period for these facilities. Therefore, under this alternative, there would be more sites with the potential to alter and redirect natural drainage patterns. More facilities may be considered for siting near watercourses with floodplain resources.

Facility construction projects would contribute to a gross increase in potential impacts to water resources. However, these projects are dispersed across each of the regions. Mitigations would be implemented that would reduce these adverse impacts to negligible or minor levels. The increased facility construction associated with this alternative would not cause effects that exceed the minor and adverse effects of the No Action Alternative.

8.5.3 DETECTION, INSPECTION, SURVEILLANCE, AND COMMUNICATIONS TECHNOLOGY EXPANSION ALTERNATIVE

With implementation of identified mitigation measures, overall effects to water resources under the Detection, Inspection, Surveillance, and Communications Technology Expansion Alternative would be minor and adverse.

In this alternative, CBP would focus on increased use of surveillance and communication tools such as the remote video surveillance system (RVSS), short-range radars, ground sensors, unmanned aircraft systems, various types of scanning technologies for vehicle and cargo inspections, fixed and mobile video, surveillance cameras, surveillance aircraft, and underground sensor resources.

Activities that would be increased with implementation of the Detection, Inspection, Surveillance, and Communications Technology Expansion Alternative include:

Small Construction Projects

Approximately 100 additional minor actions per region related to non-facility construction and installation are proposed under the Detection, Inspection, Surveillance, and Communications Technology Expansion Alternative over the next 5 to 7 years at POEs, USBP Stations, and other locations, some of them remote, not collocated with facilities. Water resources could be impacted by construction activities associated with RVSS, short-range radar, and ground sensors. Improvements associated with unmanned aircraft systems, various types of scanning technologies for vehicle and cargo inspections, fixed and mobile video, surveillance cameras, and surveillance aircraft would not affect water resources.

An expanded use of detection, inspection, surveillance, and communications technology would be associated with greater soil disturbance and vegetation removal during the construction period for improvements. Work on certain sites could have the potential to alter and redirect natural drainage patterns. Expansion improvements may be considered near watercourses that have floodplain resources.

The addition of detection, inspection, surveillance and communications technology expansion projects would have slightly greater effects than the No Action Alternative, but projects and associated effects would be dispersed across each of the regions. Mitigation measures would be implemented that would reduce the adverse effects of these facility improvements to negligible or minor levels. These conditions make it unlikely that the increased construction activity associated with this alternative would cause effects greater than those associated with the No Action Alternative, which would be minor and adverse.

Construct Roads, Bridges, Culverts, and Low-water Crossings

Activity associated with site work such as access roads and site development for new detection, inspection, surveillance, and communications improvements may be slightly increased under this alternative, but work of this type would have the same level of effect as the No Action Alternative, which would be minor and adverse after implementation of mitigation.

Ground Operations–Motorized

This alternative is associated with an increase in the numbers of motorized patrols. The number of daily motorized ground operations would increase to approximately 1,300 per region. An increased number of operations to patrol the same length of border would mean that each individual operation would cover the same ground more thoroughly, passing by the same spot on a route perhaps three to five times rather than twice, as in the No Action Alternative. This is not a substantial increase in frequency, so the effects would be the same. With implementation of mitigation, the effects would be minor and adverse. If responsive repair and maintenance of rutted travel surfaces cannot be arranged through partnerships, the effect would be moderate and adverse.

Ground Operations–Nonmotorized

Nonmotorized ground operations would increase under this alternative in the same manner that motorized ground operations would increase. The number of daily nonmotorized ground operations would increase to approximately 200 per region. The frequency for passing by the same spot on a given route would also increase. More horses would be boarded in facilities, and pasture acreage would need to increase to accommodate additional horses in a sustainable manner. With implementation of mitigation, this effect would be minor and adverse.

Vessel Operations

Vessel operations under this alternative would increase by 41 to a total of 118 per day across the Northern Border: 21 in WOR, 10 in EOR, 63 in the Great Lakes Region, and 24 in the New England Region. With implementation of mitigation, the effect would be minor and adverse, as it is under the No Action Alternative.

8.5.4 TACTICAL SECURITY INFRASTRUCTURE DEPLOYMENT ALTERNATIVE

In this alternative, CBP levels would focus on increased use of tactical security infrastructure deployment tools. With implementation of identified mitigation measures, the effects to water resources evaluated under the Tactical Security Infrastructure Deployment Alternative would be minor and adverse.

Activities that would be increased with implementation of the Tactical Security Infrastructure Deployment Alternative include:

Large and Small Construction Projects

The Tactical Security Infrastructure Deployment Alternative would involve an increase in non-facility construction and installation actions at POEs and in other locations, some of them remote, not collocated with facilities. Although the overall number of 35 large and small construction projects per region is approximately the same as under the No Action Alternative, the construction activities would focus on fences, other barriers, roadways, trails, and new

construction or repair of existing bridges, culverts, low-water crossings, gabions, and water bars would involve some new actions in this category of activities. The numbers of large facility-type projects would be reduced.

The overall number of construction projects would be roughly the same under this alternative as under the No Action Alternative, which means that roughly the same amount of soil would be disturbed and roughly the same amount of vegetation would be removed during the construction period, compared to the No Action Alternative. Work at some sites may have the potential to alter and redirect natural drainage patterns. Tactical infrastructure improvements may be considered near watercourses with floodplain resources.

The completion of these construction projects would have little or no increase in the effects of the No Action Alternative, and they are widely dispersed across the Northern Border. Mitigation would be implemented that would reduce the adverse effects of these facility improvements to negligible or minor levels. There is no evidence to support the conclusion that effects caused under this alternative would exceed the level of effects of the No Action Alternative, which would be minor and adverse.

Construct Roads, Bridges, Culverts, and Low-water Crossings

This alternative would involve an increased level of activity associated with construction of roadways, trails, and new construction or repair of bridges, culverts, low-water crossings, gabions, and water bars. An increase in roads, bridges, culverts, and low-water crossings projects would be associated with a greater level of soil disturbance and vegetation removal than would occur under the No Action Alternative. Work at some sites may have the potential to alter and redirect natural drainage patterns and tactical infrastructure improvements may be considered near watercourses with floodplain resources.

The primary concern for protection of designated Wild and Scenic Rivers (designated rivers) is the preservation of these resources in a free-flowing state. The placement of a bridge, culvert, or low-water crossing within the free-flowing section of a designated river is restricted. Though it is unlikely that CBP activities would require placement of such a structure in a designated river, future project planners must be aware of this restriction and avoid placement of these structures on designated rivers in this region.

The addition of roads, bridges, culverts, and low-water crossing projects would have slightly greater effects than the No Action Alternative, but they are widely dispersed across the Northern Border. Mitigation would be implemented that would reduce the adverse effects of these facility improvements to negligible or minor levels. There is no evidence to support the conclusion that the increased construction activity associated with this alternative would cause effects that exceed those that would occur under the No Action Alternative, which would be minor and adverse.

8.5.5 FLEXIBLE DIRECTION ALTERNATIVE

In this alternative, CBP would simultaneously increase levels of activity for each category of actions described by the previous alternatives. The simultaneous increase may not occur to the full extent in each category, but analysis of this alternative will offer the flexibility for CBP to adjust levels of activity within each category as the mission demands it. With implementation of

identified mitigation measures, effects to water resources under the Flexible Direction Alternative would be minor and adverse.

Activities that would be increased with implementation of the Flexible Direction Alternative include:

Large and Small Construction Projects

The proposed level of construction activity for this alternative is approximately 185 large and small construction projects per Region. These projects would be the same type analyzed and discussed in Sections 8.5.2 to 8.5.4. An increased number of these facilities would be associated with a greater level of soil disturbance and vegetation removal than would occur under the No Action Alternative. Work at some sites may have the potential to alter and redirect natural drainage patterns and tactical infrastructure improvements may be considered near watercourses with floodplain resources.

These facility construction projects would contribute to a gross increase in impacts to water resources, but they would be dispersed across each of the regions. Most of their impacts, including those that are cumulative, have been previously assessed. Mitigations would be implemented that would reduce the adverse effects of facility improvements to negligible or minor levels. There is no evidence to support the conclusion that the increased facility construction activity associated with this alternative would have effects that exceed the effects of the No Action Alternative, which would be minor and adverse.

Ground Operations–Motorized

Approximately 1,300 motorized operations would occur per day across each region under this alternative, which is the same level previously analyzed under the **No Action** Alternative. With implementation of mitigation, this effect would be minor and adverse, as it is under the **No Action** Alternative.

Ground Operations—Nonmotorized

There would be approximately 200 nonmotorized operations per day across the regions under this alternative, which is the same level previously analyzed under the No Action Alternative. With implementation of mitigation, this effect would be minor and adverse, as it is under the No Action Alternative.

Vessel Operations

Under this alternative, there would be approximately 41 additional vessel operations, for a total of 118 per day across the Northern Border: 21 in WOR, 10 in EOR, 63 in the Great Lakes Region, and 24 in the New England Region. With implementation of mitigation, this effect would be minor and adverse, as it is under the No Action Alternative.

With implementation of identified mitigation measures, overall effects to water resources under the Flexible Direction Alternative would be minor and adverse.

8.5.6 BEST MANAGEMENT, MINIMIZATION, AND MITIGATION

CBP seeks to avoid, minimize, repair, and reduce the impacts of its actions on the human environment. It does so with a combination of best management practices, siting plans, design strategies, mitigation measures, and monitoring plans best suited to the scale and the location of the particular action. Towards that end, in implementing its proposed action CBP could choose from among the following actions to avoid or minimize impacts to water resources:

8.5.6.1 Construction Activities

- Silt fences would be used for new construction.
- Diversion ditches would be used for new construction.
- Vegetation on bare soil would be reseeded and reestablished as soon as possible following construction.
- Highly compacted areas left after construction would be scarified and aerated to offset potential impacts from soil compaction. Other mitigations may also be implemented that are suitable to the terrain.
- Mulching, straw berms, and temporary cover crops would be applied as appropriate.
- Portable and long-term sediment and surface water retention features would be constructed, operated, and maintained.
- Appropriate erosion and sediment control would be in place and functional before earth-moving operations begin and would remain intact throughout the project. Disturbed areas would be planted as quickly as possible to prevent erosion.
- Design and construction measures would include development of surface water control features to ensure that post-development runoff from construction sites does not exceed pre-development runoff.

8.5.6.2 Operation of Facilities

- Areas around buildings and parking lots would be well-vegetated to minimize soil erosion. In addition, catch basins, diversion ditches, and pipe conveyances may be created to handle additional storm water runoff.
- Design elements such as grass swales and landscaped features would be designed to help minimize runoff and soil erosion.
- Storm gutters and other storm drainage system improvements would be installed in conjunction with construction of new facilities.
- On-site detention or retention basins would be provided for developed sites to reduce the rate of runoff.
- Drainage improvements would be provided, including storm water channels that intercept runoff directed toward areas that had not previously accepted runoff and divert it to natural receiving waters.
- New infrastructure would not be built in 100-year floodplains. Local regulations that govern development of floodplains would be followed.

- Accepted engineering design practices and/or established state or local standards would be used to design the capacity of road drainageways, bridges, culverts, and low-water crossings in a manner that minimizes erosion and creation of sediment at the structure.
- Accepted engineering practice would be used to design water and waste systems that are properly sized for facility occupancy.
- Canine wastes would be removed from kennel areas and properly disposed of in waste systems such as municipal sewers or septic systems.

- Temporary or permanent water supply and waste disposal systems would be in place and operational when FOBs are manned.

8.5.6.3 Waterborne Patrols

- Training would be provided to watercraft operators in the safe operation of boats, including handling, storage, disposal, and use of fuels and lubricants. Training would include safe interim storage of intercepted materials to prevent spillage or leakage.

8.5.6.4 Motorized Patrols

- A 2-week (80 hour) rider safety course, designed to educate riders in order to eliminate ATV- or snowmobile-related accidents and agent injuries, would be provided to develop driving skills that minimize effects on the environment.
- Under conditions of unstable travel surfaces, ATVs would be driven at speeds that avoid rutting, if possible.

- Partnerships would be maintained or initiated to identify and make provisions for repair or maintenance of easily rutted roads or trails.

8.5.6.5 Horse Patrols

- Horse stables would not be sited in drainage swales or areas with poor soil drainage; areas around stables would be graded to divert runoff away from structure (LSU, 2009).
- Horse stables would not be placed near ponds, streams, and wetlands (LSU, 2009).
- Gutters, down spouts, and splash blocks would be installed on all horse-related structures. A significant amount of roof runoff can be diverted away from paddocks, exercise lots, and stall areas through the use of a properly designed and maintained drainage system (LSU, 2009).
- A properly maintained and managed pasture is essential to reducing mud and soil erosion to maintain water quality. Pasture vegetation species would be selected that create healthy and vigorous pastures to ensure good soil cover and reduce runoff. Closely grazed areas promote runoff and soil erosion. Larger pastures would be considered for division into several smaller units for rotational grazing. Horses would be removed from a pasture area when the forage is consumed to 2 to 3 inches. When horses were removed, personnel would clip pasture vegetation, fertilize soil, and spread manure to enable the pasture to recover (LSU, 2009).

8.5.7 SUMMARY OF POTENTIAL WATER RESOURCES IMPACTS

Table 8.5-3 summarizes the comparison of potential impacts to water resources from the various alternatives.

Table 8.5-3. Summary of Potential Water Resources Impacts

Impact-Producing Activity		Level of Impact				
		Negligible Adverse	Minor Adverse	Moderate Adverse	Major Adverse	Beneficial
NO ACTION ALTERNATIVE						
Small construction projects (< 1 acre and < 1/4 mile: e.g., minor repairs to facilities, parking lot repairs, access road repairs)			X			
Large construction projects (> 1 acre and > 1/4 mile: e.g., repairs to facilities, parking lot repairs, access road repairs)			X			
Small on-site trade and travel processing operations			X			
Large on-site trade and travel processing operations			X			
Checkpoint operations		X				
Ground operations–motorized			X			
Ground operations–nonmotorized	On-road		X			
	Off road		X			
Aircraft operations		X				
Vessel operations			X			
Operation of NII systems		X				
Operation of sensor and other technologies		X				
OVERALL IMPACT			**X**			

Impact-Producing Activity		Level of Impact				
		Negligible Adverse	Minor Adverse	Moderate Adverse	Major Adverse	Beneficial
FACILITIES DEVELOPMENT AND IMPROVEMENT ALTERNATIVE						
Small construction project (< 1 acre and < 1/4 mile: reconstruction/ or construction of USBP structures, parking lot repairs, access road repairs)			X			
Large construction projects (> 1 acre and > 1/4 mile: reconstruction/ construction or construction of USBP structures, parking lot repairs, access road repairs)			X			
OVERALL IMPACT			**X**			
DETECTION, INSPECTION, SURVEILLANCE, AND COMMUNICATIONS TECHNOLOGY EXPANSION ALTERNATIVE						
Small construction projects (towers and other infrastructure to mount antennas, etc.)			X			
Ground operations–motorized			X			
Ground operations–nonmotorized	On-road		X			
	Off road		X			
Aircraft operations		X				
Vessel operations			X			
Operation of NII systems		X				
Operation of sensor and other technologies		X				
OVERALL IMPACT			**X**			
TACTICAL SECURITY INFRASTRUCTURE DEPLOYMENT ALTERNATIVE						
Small construction projects (trench cuts, towers, minor access roads and fences)			X			
Large construction projects (access roads and fences)			X			
OVERALL IMPACT			**X**			

Impact-Producing Activity	Level of Impact				
	Negligible Adverse	Minor Adverse	Moderate Adverse	Major Adverse	Beneficial
FLEXIBLE DIRECTION ALTERNATIVE					
Small construction projects		X			
Large construction projects		X			
Checkpoint operations	X				
Ground operations–motorized		X			
Ground operations–nonmotorized		X			
Aircraft operations	X				
Vessel operations		X			
Operation of NII systems	X				
Operation of sensor and other technologies	X				
OVERALL IMPACT		**X**			

8.6 ENVIRONMENTAL CONSEQUENCES OF NOISE

This section considers the potential adverse and beneficial impacts of U.S. Customs and Border Protection's (CBP) alternative actions on noise. Effects would be considered minor unless the activity would create areas of incompatible land use or violate any Federal, state, or local noise ordinance.

The Northern Border study area contains many soundscapes and noise-sensitive receptors (such as national parks, residences, and schools) that could experience impacts due to implementation of any of the proposed alternatives. For descriptions of the regional affected environments for noise see Sections 4.6.2 (West of the Rockies), 5.6.2 (East of the Rockies), 6.6.2 (Great Lakes), and 7.6.2 (New England).

However, across the Northern Border all of the alternatives would have only short-term minor and long-term minor adverse direct and indirect noise impacts. These impacts would be primarily due to noise from construction activities and from the routine operation of ports of entry (POEs), United States Border Patrol (USBP) stations, forward operating bases (FOBs), and border patrol activities using motorized equipment such as aircraft, marine vessels, all-terrain vehicles (ATVs), and snowmobiles. All new sources of noise would be located within 100 miles of the Northern Border and, in general, increases in this noise would not create areas of incompatible land use or violate any Federal, state, or local noise ordinance.

In addition to CBP's activities, a wide range of other activities along the Northern Border produce noise. Noise generated by CBP's activities for all alternatives across the Northern Border as a whole would be minor and not concentrated, except as noted at POEs and USBP stations. These activities would constitute small, incremental increases in the overall noise environment, and thus are not expected to contribute appreciably to adverse cumulative noise impacts. As a result, across the Northern Border as a whole, no noise impacts would be significant enough to require mitigation measures (see Section 9.6).

Several CBP activities create either no noise whatsoever or negligible amounts of noise. These activities include nonmotorized ground operations, operation of nonintrusive inspection (NII) systems, and operation of sensor and other technologies. These activities would have either no effect or a beneficial effect on the noise environment; they have not been carried forward for additional analysis.

8.6.1 NO ACTION ALTERNATIVE

The No Action Alternative would have short- and long-term minor adverse effects to noise. These effects would be primarily due to planned construction projects and motorized ground, aircraft, and vessel patrols. An overview of these noise sources can be found in Section 7.6.2.2. Under this alternative, CBP would (1) continue the current level of operations and (2) continue maintaining and repairing existing facilities, technology, and infrastructure. In general, increases in noise are not likely to create areas of incompatible land use or violate any Federal, state, or local noise ordinance.

8.6.2 FACILITIES DEVELOPMENT AND IMPROVEMENT ALTERNATIVE

The Facilities Development and Improvement Alternative would have short-term minor and long-term moderate adverse effects on the noise environment. In addition to activities outlined in the No Action Alternative, these effects would be primarily due to both small and large construction projects and to the establishment of helipads and small arms ranges at upgraded POEs and new and upgraded USBP stations. In general, increases in noise would not create areas of incompatible land use or violate any Federal, state, or local noise ordinance. A detailed analysis is provided below.

Construction Projects

Both large and small construction projects would have short-term minor adverse effects. Individual pieces of heavy equipment typically generate noise levels of 80 to 90 A-weighted decibels (dBA) at a distance of 50 feet (Table 8.6-1). With multiple items of equipment operating concurrently, noise levels can be relatively high during daytime periods at locations within several hundred feet of active construction sites. In addition, trucks transporting materials to and from construction sites would have some negligible impact to the noise environment. The zone of relatively high construction noise levels typically extends to distances of 400 to 800 feet from the site of major equipment operations. It would be possible for residences and other noise-sensitive receptors, such as schools, churches, and hospitals, closer than 800 feet to experience appreciable amounts of construction noise. Given the temporary nature of construction activities, this impact would be minor. If regulatory limits were exceeded during construction, sound reduction measure such as limiting hours of construction or utilizing sound barriers would be implemented.

Table 8.6-1. Noise Levels Associated with Outdoor Construction

Construction Phase	dBA Leq at 50 Feet from Source
Ground clearing	84
Excavation, grading	89
Foundations	78
Structural	85
Finishing	89

Source: USEPA, 1971.

Although construction-related noise impacts would be minor, the following best management practices would be performed to reduce the already-limited noise effects:

- Construction would primarily occur during normal weekday business hours; and
- Construction equipment mufflers would be properly maintained and in good working order.

Construction noise would dominate the soundscape for all on-site personnel. Construction personnel, particularly equipment operators, would don adequate personal hearing protection to limit exposure and ensure compliance with Federal health and safety regulations.

Due to their temporary nature, individual construction projects would have only a minor effect on the noise environment.

Operation of upgraded POEs could have long-term moderate adverse effects on the noise environment. These effects may be due to changes in traffic patterns, new permanent stationary sources of noise such as stand-by generators, the use of helicopters, the establishment of small arms firing ranges, and operation of dog kennels.

Changes in local traffic patterns and associated noise would be expected. Areas near new and modified POEs would experience changes in traffic noise due to the rerouting of traffic crossing the border. These effects would be offset on a one-to-one basis by decreases in activities at other POEs or at entrances and exits within the modified POE. Background noise was estimated using the ANSI Procedures for Description and Measurement of Environmental Sound. These procedures are based on population density and are strongly correlated to the level of traffic activities in an area. Notably, a doubling in traffic would be required to induce even a barely perceptible (3 dBA) change in the noise environment. Long-term noise levels associated with modified POEs would likely be consistent with the current noise environment regardless of the ultimate locations chosen or the types of modifications made. These effects would be minor for most operating scenarios. However, if new access-controlled highways or new secondary roadways within urban areas were necessary, site-specific information would be required to make a more detailed analysis at this activity and to determine the level of effect under the National Environmental Policy Act (NEPA).

Standby generators at modified POEs would be completely enclosed by buildings or other enclosures. Standby generators would operate for limited periods for maintenance and testing and during power outages. Due to their limited use, effects to the noise environment from standby generators would be minor.

For POEs with helicopter pads, helicopter operations would increase noise levels at nearby noise-sensitive areas. For ease of analysis, the Sikorsky UH-60A Blackhawk was used as a reasonable worst case CBP rotorcraft. Notably, the UH-60A would be louder than the Eurocopter AS-350B A-Star and other helicopters in CBP's fleet, since it has more horsepower and a greater gross weight. If a helicopter were to fly over a nearby noise-sensitive area at an airspeed of 140 knots and an altitude of 200 feet, the sound exposure level (SEL) would be 97.8 dBA (Table 8.6-2). If a single helicopter per day flew over the same noise-sensitive area, the annual day-night sound level (DNL) would be approximately 48.4 dBA. This would be well below the EPA 65 dBA threshold and would be fully compatible with adjacent land uses. It would take an estimated 46 helicopter operations per day (16,790 per year) at 200 ft. above ground level (AGL) over a single receptor to drive the DNL above 65 dBA. The helicopter operations are spread throughout the sector rather than concentrated in any one location, and if a CBP helicopter were to go to an POE, it would not travel at 140 knots at 200 feet; therefore this is not an accurate representation of CBP activities. For the purposes of analysis, however, this level of activity was carried forward as the reasonable upper bound of possible activities to facilitate a discussion of effects under NEPA.

Table 8.6-2. Estimated Noise Levels for CBP Helicopters

Phase of Flight/Airspeed	Distance from Aircraft to Receptor (feet)				
	200	300	500	1,000	2,000
Landing or takeoff					
SEL	96.7	93.9	90.5	85.4	79.5
DNL (1 overflight per day)	47.3	44.5	41.1	36	30.1
In flight/70 knots					
SEL	93.5	90.9	87.4	82.5	77.0
DNL (1 overflight per day)	44.1	41.5	38	33.1	27.6
In flight/120 knots					
SEL	96.5	94.0	90.5	85.6	80.2
DNL (1 overflight per day)	47.1	44.6	41.1	36.2	30.8
In flight/140 knots					
SEL	97.8	95.2	91.8	87.0	81.6
DNL (1 overflight per day)	48.4	45.8	42.4	37.6	32.2

Source: USDoD, 2002.

Use of helicopter pads would be on an as needed basis, and operations normally would be limited to the occasional transport of essential personnel to and from the site. On rare occasions, noise may be annoying to residents directly under the approach and departure flight tracks. Individual flights would be loud enough to interfere with communications or wake up sleepers; however, the overall DNL would be comparable to daytime background levels given the long periods of quiet in between overflights. It is unlikely that remote POEs would have helicopter pads with noise-sensitive areas nearby. In the final design stage care would be taken to not locate helicopter pads adjacent to noise-sensitive areas. These effects would be minor.

In addition, small indoor firing ranges could be established at modified POEs and USBP stations. Normally, there would be no outdoor live-fire small arms activities. All firing would occur indoors, and controls would be put in place to ensure the noise would be inaudible outside the perimeter of the POE. Noise generated during indoor training at the firing ranges is not expected to generate disruptive noise levels outside of POEs and USBP stations. In the final design stage, the facility would be designed and located such that noise from training activities would be inaudible to nearby residences and effects would be minor. However, if firing ranges were to be sited outdoors or the small arms noise could not be completely contained within the POE, site-specific information would be required to make a more detailed analysis of this activity and to determine the level of effect under NEPA.

The optional canine facilities (kennels, dog runs, and storage areas) could add to the noise levels at new and upgraded POEs. Kennel facilities would be operated in accordance with all Federal, state, and local noise ordinances. These effects would be minor.

Additional analysis would be performed in situations where site-specific information is necessary to make a more detailed analysis of an activity and to determine the level of its effect under NEPA. This would be necessary for actions that include:

- New access-controlled highways or the establishment of a new secondary roadway within an urban area;
- More than 46 helicopter operations per day; or
- Outdoor firing ranges or small arms noise that could not be completely contained within the POE.

8.6.3 DETECTION, INSPECTION, SURVEILLANCE, AND COMMUNICATIONS TECHNOLOGY EXPANSION ALTERNATIVE

The Detection, Inspection, Surveillance, and Communications Technology Expansion Alternative would have short- and long-term minor adverse effects on the noise environment. In addition to activities outlined in the No Action Alternative, these effects would be primarily from small construction projects and additional motorized ground patrols, aircraft, and vessel operations. In general, increases in noise would not create areas of incompatible land use or violate any Federal, state, or local noise ordinance.

Construction Projects

As with the Facilities Development Alternative, and for similar reasons, both small and large construction projects would have short-term minor adverse effects. It would be possible for residences and other noise-sensitive receptors, such as schools, churches, and hospitals, closer than 800 feet to experience appreciable amounts of construction noise. Due to the limited amount of noise and the activities' temporary nature, these activities would have a less than major effect on the noise environment.

Ground Operations—Motorized

Conducting additional motorized ground operations along the Northern Border would have long-term minor adverse effects on the noise environment. For ease of discussion, these activities have been separated into three distinct categories: (1) onroad vehicle patrols, (2) ATV patrols, and (3) snowmobile patrols.

Onroad Vehicle Patrols

Conducting additional onroad vehicle patrols would have long-term negligible adverse effects on the noise environment. Background noise was estimated using the ANSI Procedures for Description and Measurement of Environmental Sound. These procedures are based on population density and strongly correlated to the level of traffic activities in an area. Notably, a doubling in traffic would be required to induce even a barely perceptible (3dBA) change in the noise environment. Due to the limited number of onroad vehicle patrols outlined under the Detection, Inspection, Surveillance, and Communications Technology Expansion Alternative, long-term noise levels would be consistent with the current noise environment regardless of the ultimate location of the patrols.

ATV Patrols

Conducting additional ATV patrols would have long-term minor adverse effects on the noise environment. In general, ATV activities have the potential to be incompatible with certain noise-sensitive land uses. As a result, this Programmatic Environmental Impact Statement (PEIS) assesses the effects of the potential for additional CBP ATV patrols to increase noise near sensitive receptors. Because ATV activity changes throughout the year and throughout any given day, DNL was chosen to evaluate the noise environment for ATVs' effects. Although the exact nature and locations of patrols have not been specifically inventoried, this analysis provides a bounded approach to determine at what operational level major effects may be possible.

Throughout the year, ATVs would be audible from locations near tracks or trails, more so in the summer than in the winter due to recreational activities. Although ATVs can be noisy, the effect on noise-sensitive areas is not of primary concern, because the activity is normally widespread and sporadic. In general, the number of ATVs passing a single location would not be sufficient to generate areas of incompatible land use or significantly affect noise-sensitive areas.

CBP ATVs with two-stroke engines are louder than those with four-stroke engines. Noise levels can vary based on operation, but average 90-100 dBA at a distance of 20 inches from the exhaust.

In a reasonable worst case, it was assumed that a single noise-sensitive area would have the potential to be passed 7,800 times per month during ATVs' months of operation. Because the ATVs are spread throughout the sector and not concentrated in any one location, this is not an accurate representation of CBP's activities. For the purposes of analysis, however, this level of activity was carried forward as the reasonable upper bound to facilitate a discussion of effects under NEPA. Under these conditions, ATVs generate a DNL of 53.7 dBA (Table 8.6-3). Due to the limited number of onroad vehicle patrols outlined under the Detection, Inspection, Surveillance, and Communications Technology Expansion Alternative, these levels would be well below the 65-dBA DNL threshold. Because of their widespread nature, actual CBP ATV activities at any location would be much less than those described herein. If CBP's ATV activities were to increase dramatically within a national park or an area known to have threatened or endangered species present, site-specific information would be required to make a more detailed analysis of this activity and to determine the level of effect under NEPA. Noise levels were calculated based on the operational levels outlined in Chapter 2 under the Detection, Inspection, Surveillance, and Communications Technology Expansion Alternative.

Table 8.6-3. Noise Levels for Patrol Activities under the Detection, Inspection, Surveillance, and Communications Technology Expansion Alternative

CBP Activity	Vehicle Type		
	ATVs	Snowmobiles	Units
Individual Pass-By			
Measured sound level of single unit	95.0	76.0	dBA
Distance of measurement	0.5	15.2	meters
Calculated sound level at 25 m	78.1	73.8	dBA
Speed of vehicle	40	30	mph
Audible distance	2	2	miles
Audible time	3	4	minutes
Annual Activity			
Trips per day	260	260	
Total monthly pass-bys	7,800	7,800	trips
Percent time audible	1.35%	2.41%	
Distance to receptor	60	60	meters
DNL from Activity	53.7	52.0	dBA

Snowmobile Patrols

Conducting snowmobile patrols would have long-term minor adverse effects on the noise environment. In general, snowmobile activities have the potential to be incompatible with certain noise-sensitive land uses. As a result, this PEIS assesses the effects of the potential for additional CBP snowmobile patrols to increase noise near sensitive receptors. Because snowmobile activity changes throughout the year and throughout any given day, DNL was chosen to evaluate the noise environment for its effects. Although the exact nature and locations of patrols have not been specifically inventoried, this analysis provides a bounded approach to determine at what operational level major effects may be possible.

Snowmobiles are operable only on snow and have limited seasonal use; therefore, these machines would be audible from locations near tracks or trails where snow is present. Although snowmobiles can be noisy, the effects on noise-sensitive areas are not of primary concern because the activity is normally widespread and sporadic. In general, the number of snowmobiles passing a single location would not be sufficient to generate areas of incompatible land use or significantly affect noise-sensitive areas.

CBP snowmobiles with two-stroke engines are louder than those with four-stroke engines. Noise levels can vary based on operation, but average 76 dBA at a distance of 50 feet while traveling 40 miles per hour (mph). For purposes of analysis, it was assumed the snowcats were quieter than the snowmobiles in all modes.

In a reasonable worst case it was assumed that a single noise-sensitive area would have the potential to be passed 7,800 times per month. Because the snowmobiles throughout the sector are not concentrated in any one location, this is not an accurate representation of CBP's activities. For the purposes of analysis, however, this level of activity was carried forward as the reasonable upper bound to facilitate a discussion of effects under NEPA. Under these conditions, snowmobiles would generate a DNL of 52.0 dBA. These levels would be well below the 65-dBA DNL threshold. Because of snowmobiles' widespread nature, actual CBP snowmobile activities at any location would be much less than those described herein. If CBP's snowmobile activities were to increase dramatically within a national park or an area known to have threatened or endangered species present, site-specific information would be required to make a more detailed analysis of this activity and to determine the level of effect under NEPA.

Aircraft Operations

Conducting additional aircraft patrols along the Northern Border would have long-term minor adverse effects to noise. These activities have been separated into two distinct areas: manned aerial surveillance patrols and unmanned aircraft systems (UAS) missions.

Manned Aerial Surveillance Patrols

Conducting additional manned aerial surveillance patrols would have long-term minor adverse effects on the noise environment. In general, aircraft noise from an airport or air installation may exceed levels that make certain noise-sensitive land uses (e.g., residences, schools, churches, and hospitals) incompatible with air operations. Therefore, this PEIS assesses the effects of the potential for additional CBP aircraft operations to increase aircraft noise outside an airport's boundaries and under the paths of individual overflights.

Detailed noise analysis is not required or meaningful for airport activities whose DNL 65 dB contour lies within airport boundaries. It is expected that the increases in areas of DNL 65 dB would be minor and predominately confined to any airport or air installation with operational levels below 90,000 annual propeller operations or 700 annual adjusted jet operations (USDOT, 2007; USDOT, 1985). Based on the latest modeling technology, these levels of piston-powered or jet-powered general aviation operations have been shown to produce DNL 60 dB over an area less than 1.1 square miles, extending no more than 12,500 feet from the start of takeoff roll. The resulting maximum DNL 65 dB contour would be 0.5 square miles and would not extend more than 10,000 feet from the start of takeoff roll. These effects would be minor. Due to the limited amount of noise, CBP's manned aerial surveillance patrols would have a less than major effect on the noise environment at air installations with operational levels below 90,000 annual adjusted propeller operations or 700 annual adjusted jet operations.

Notably, a doubling of air operations would be required to increase noise near an airport or installation by 3 dBA. Since CBP's manned aerial surveillance patrols make up a very small amount of air operations at any airport or air installations, their contribution to the overall noise environment is, and would continue to be, negligible.

Individual aircraft overflights may generate distinct but distant acoustical events that have minor effects. The SEL represents the sound energy normalized to one second, and it is simple to calculate DNL from SEL. If there is one flight per day, the DNL can be calculated by subtracting from SEL a constant representing 10 times the base 10 logarithm of the 86,400

seconds in a 24-hour day, which is 49.4. For example, if 49.4 were subtracted from 92.1 dBA (i.e., sound level of a Cessna Citation cruising at 500 ft AGL) the DNL would be 45.2 dB. Notably, the Cessna Citation and UH-60 are the loudest aircraft in CBP's existing fleet (Table 8.6-4 and 8.6-5).

Table 8.6-4. Noise Levels Directly Below Flight Track of Cessna Citation

	Single Overflight		Number of Overflights Required to Generate 65 dBA DNL	
Feet AGL	SEL	DNL	Daytime (7:00 a.m.–10:00 p.m.)	Nighttime (10:00 p.m.–7:00 a.m.)
500	92.1	45.2	170	17
700	89.6	42.7	300	30
1,000	87.0	40.1	550	55
1,500	83.8	36.9	1,150	115

Note: Assumed level flight at 160 knots.
Source: (USDoD), 2002.

Table 8.6-5. Noise Levels Directly Below Flight Track of a UH-60 Helicopter

	Single Overflight		Number of Overflights Required to Generate 65 dBA DNL	
Feet AGL	SEL	DNL	Daytime (7:00 a.m.–10:00 p.m.)	Nighttime (10:00 p.m.–7:00 a.m.)
500	91.8	44.9	180	18
700	89.5	42.6	300	30
1,000	87.0	40.1	550	55
1,500	83.9	37.0	1,125	125

Note: Assumed level flight at 160 knots.
Source: (USDoD, 2002).

It is expected that it would take a minimum of 170 operations per day (62,000 annually), or 17 operations per night (6,205 annually), of either the Cessna Citation or the UH-60 helicopter at 500 ft. AGL over a single receptor to drive the DNL above 65 dBA; current operations are much less than that for CBP's air operations along the entire Northern Border. Individual overflights would be loud enough to interfere with communications or to awaken sleepers; however, the overall DNL would be comparable to daytime background DNL levels, given the long periods of quiet in between overflights. Therefore, the effects of noise from this activity over noise-sensitive areas away from the air installations would be minor.

Subsequent NEPA analysis would be conducted where necessary to determine the specific impacts of manned aerial surveillance patrols if CBP's manned aerial surveillance patrols were to increase to more than 10 percent of the total air operations at an individual airport or air

installations with operational levels above 90,000 annual adjusted propeller operations or 700 annual adjusted jet operations. These effects would be minor.

UAS Missions

Conducting UAS missions would have long-term minor adverse effects on the noise environment. These effects would be due to individual UAS overflights that may generate distinct but distant acoustical events.

Individual UAS overflights may generate distinct but distant acoustical events that have minor effects. The loudest part of a UAS landing and takeoff cycle is the runup before takeoff. The Predator UAS used for tactical reconnaissance and border surveillance has a noise level of approximately 86 dBA at 192 feet during its runup operations; this level was used as a reasonable worst case for in-flight operations during the takeoff and landing cycle (Table 8.6-6). UASs operate at an altitude of 18,000 feet except for takeoff and landing. Once a UAS reaches approximately 3,000 feet AGL, it will no longer be heard on the ground (Roop, 2004). Because of the airspace restrictions and their limited levels of noise, no residences, communities, or sensitive noise receptors would experience any notable change to the overall noise environment due to changes in UAS activities.

Table 8.6-6. Maximum Noise Levels of the Predator UAS Compared to Other Noise Sources

Noise Source	Distance (ft.)	Maximum Noise Level (dBA)
Predator (UAS)	192	86
Predator (UAS)	24	104
Passenger car (65 mph)	25	77
Motorcycle	25	90
Air conditioner	60	60

Source: (USDoD, 1998).

Overall, increases in the use of Predator UAS would translate into negligible (not distinguishable from existing) changes in the overall noise environment. In general, UASs are quieter, normally operate at much higher altitudes, and are used less frequently than helicopters. Because of their relatively low noise levels, they are not commonly accounted for in determining the effects of air operational noise on communities and individuals living adjacent to airports and military air installations. As with helicopters, no changes to existing areas of incompatible land use would be generated due to changes in UAS operations at airports and air installations used by CBP. Specifically, the noise generated by a UAS during runup and takeoff is not sufficient to change the 65-dBA DNL incompatible noise contour at airports and air installations.

Due to the limited amount of noise, these activities would have a less than major effect on the noise environment.

Vessel Operations

Conducting waterborne patrols would have long-term minor adverse effects on the noise environment. In general, boating activities have the potential to be incompatible with certain noise-sensitive land uses, such as residences, schools, churches, and hospitals. As a result, this PEIS assesses the potential effects of additional CBP waterborne patrols that may increase noise near sensitive receptors. Because boating activity changes throughout the year and throughout any given day, DNL was chosen to evaluate the noise environment for the effects of waterborne patrols. Although the exact nature and locations of marine-based CBP patrols have not been specifically inventoried, this analysis provides a bounded approach to determine at what operational level major effects may be possible.

Throughout the year, boats would be audible from locations along a shoreline or waterway, more so in the summer than in the winter due to recreational activities. Although watercraft can be noisy, the effect of watercraft noise on noise-sensitive areas is not of primary concern because the activity is widespread and sporadic. In general, the number of boats passing a single location would not be sufficient to generate areas of incompatible land use or significantly affect noise-sensitive areas (Table 8.6-7). For example, a common midsized watercraft would have an overall sound level of 68–71 dBA at a distance of 82 feet (25 meters) (PIWA, 2008). Noise levels for each region were calculated based on the operational levels outlined in Chapter 2 under the Detection, Inspection, Surveillance, and Communications Technology Expansion Alternative.

Table 8.6-7. Noise Levels for Vessel Activities for Each Alternative

CBP Activity	No Action Alternative	Detection, Inspection, Surveillance, and Communications Technology Expansion Alternative	Flexible Direction Alternative	Units
Individual Pass-By				
Sound level	71	71	71	dBA
Distance of measurement	25	25	25	meters
Sound level at 25 m	71	71	71	dBA
Speed	30	30	30	mph
Audible distance	2	2	2	miles
Audible time	4	4	4	minutes
Annual Activity (West of the Rockies Region)				
Trips per day	14	21	21	trips
Total monthly pass-bys	840	1,260	1,260	pass-bys
Percent time audible (equivalent)	0.26%	0.39%	0.39%	percent

CBP Activity	No Action Alternative	Detection, Inspection, Surveillance, and Communications Technology Expansion Alternative	Flexible Direction Alternative	Units
Distance to receptor	60	60	60	meters
DNL from Activity	39.4	41.2	41	dBA
Annual Activity (Great Lakes)				
Trips per day	42	63	63	trips
Total monthly passbys	2,520	3,780	3,780	passes
Percent time audible (equivalent)	0.78%	1.17%	1.17%	percent
Distance to receptor	60	60	60	meters
DNL from activity	44.2	46	46	dBA
Annual Activity (New England)				
Trips per day	16	24	24	trips
Total monthly pass-bys	960	1,440	1,440	pass-bys
Percent time audible (equivalent)	0.30%	0.44%	0.44%	percent
Distance to receptor	60	60	60	meters
DNL from activity	40	41.8	41.8	dBA
Annual Activity (EOR)				
Trips per day	5	10	10	trips
Total monthly passbys	300	600	600	passes
Percent time audible (equivalent)	0.09%	0.19%	0.19%	percent
Distance to receptor	60	60	60	meters
DNL from activity	35	38	38	dBA

Assumptions based on historic operational levels were made for the worst case for each region. In a reasonable worst case, it was assumed that a single noise-sensitive area would have the potential to be passed 1,260 times per month in the West of the Rockies Region, 600 times per month in the East of the Rockies Region, 3,780 times per month in the Great Lakes Region, and 1,440 times per month in the New England Region. The boats are spread throughout the Region rather than concentrated in any one location; therefore, this is not an accurate representation of CBP's boating activities. For the purposes of analysis, however, this level of activity was carried forward as the reasonable upper bound of possible activities to facilitate a discussion of effects under NEPA. Under these conditions, boats would generate DNLs ranging from 41.2 dBA to approximately 46 dBA. These levels would be well below the 65-dBA DNL threshold. Because of their widespread nature, actual CBP boating activities at any location would be much less than those described herein. Effects of noise from these activities would be minor.

Additional analysis would be performed in situations where site-specific information is necessary to make a more detailed analysis of an activity and to determine the level of its effect under NEPA. This would be necessary for actions that include:

- Helicopter operations expected to exceed 46 operations per day at POE or a USBP station or
- Manned aerial surveillance patrol increases that make up more than 10 percent of the total air operations at an individual airport or at air installations with operational levels above 90,000 annual adjusted propeller operations, or 700 annual adjusted jet operations.

8.6.4 TACTICAL SECURITY INFRASTRUCTURE DEPLOYMENT ALTERNATIVE

The Tactical Security Infrastructure Deployment Alternative would have short-term minor adverse effects on the noise environment. In addition to activities outlined in the No Action Alternative, these effects would be primarily due to both small and large construction projects. In general, increases in noise would not create areas of incompatible land use or violate any Federal, state, or local noise ordinance.

Construction Projects

As with the Facilities Development Alternative, and for similar reasons, both small and large construction projects would have short-term and long-term minor adverse effects. It would be possible for residences and other noise-sensitive receptors, closer than 800 feet such as schools, churches, and hospitals, to experience appreciable amounts of construction noise. Due to the limited amount of noise and the activities' temporary nature, these activities would have a less than major effect on the noise environment. Notably, under this alternative, the construction of roadways, trails, fencing, barriers, and trench cuts is unlikely to have any ongoing operational sources of noise. No additional generators, dog kennels, small arms ranges, or helipads are anticipated under this alternative.

8.6.5 FLEXIBLE DIRECTION ALTERNATIVE

The Flexible Direction Alternative would have short-term minor and long-term moderate adverse effects on the noise environment. In addition to activities outlined in the No Action Alternative, these effects would be primarily due to both small and large construction projects, the establishment of helipads and small arms ranges at upgraded POEs and new and upgraded USBP stations, and additional air, ground, and water patrols throughout the region. In general, increases in noise would not create areas of incompatible land use or violate any Federal, state, or local noise ordinance.

Construction Projects

As with the Facilities Development Alternative, and for similar reasons, both small and large construction projects would have short-term minor and long-term moderate adverse effects. It would be possible for residences and other noise-sensitive receptors closer than 800 feet, such as schools, churches, and hospitals, to experience appreciable amounts of construction noise. Due to the limited amount of noise and the activities' temporary nature, these activities would have a less than major effect on the noise environment.

As with the Facilities Development Alternative, and for similar reasons, operation of a upgraded POE could have long-term moderate adverse effects on the noise environment. These effects may be due to changes in traffic patterns or new permanent sources of noise, such as stand-by generators, the use of helicopters, the establishment of small arms firing ranges, and operation of dog kennels.

Ground Operations—Motorized

As with the Detection, Inspection, Surveillance, and Communications Technology Expansion Alternative, and for similar reasons, conducting additional motorized ground patrols along the Northern Border would have long-term minor adverse effects to noise.

Aircraft Operations

As with the Detection, Inspection, Surveillance, and Communications Technology Expansion Alternative, and for similar reasons, conducting additional aircraft patrols along the Northern Border would have long-term minor adverse effects to noise.

Conducting additional manned aerial surveillance patrols would have long-term minor adverse effects on the noise environment. Subsequent NEPA analysis would be conducted where necessary to determine the specific impacts of manned aerial surveillance patrols if CBP's manned aerial surveillance patrols were to increase to more than 10 percent of the total air operations at an individual airport or air installations with operational levels above 90,000 annual adjusted propeller operations or 700 annual adjusted jet operations. These effects would be minor.

Conducting UAS missions would have long-term minor adverse effects on the noise environment. These effects would be due to individual UAS overflights that may generate distinct but distant acoustical events. Due to the limited amount of noise, these activities would have a less than major effect on the noise environment.

Vessel Operations

As with the Detection, Inspection, Surveillance, and Communications Technology Expansion Alternative, and for similar reasons, conducting waterborne patrols would have long-term minor adverse effects on the noise environment. In general, boating activities have the potential to be incompatible with certain noise-sensitive land uses such as residences, schools, churches, and hospitals.

In a reasonable worst case, it was assumed that a single noise-sensitive area would have the potential to be passed 1,260 times per month in the West of the Rockies Region, 600 times per month in the East of the Rockies Region, 3,780 times per month in the Great Lakes Region, and 1,440 times per month in the New England Region. The boats are spread throughout the sector and not concentrated in any one location; therefore this is not an accurate representation of CBP's boating activities. For the purposes of analysis, however, this level of activity was carried forward as the reasonable upper bound of possible activities to facilitate a discussion of effects under NEPA. Under these conditions, boats would generate DNLs ranging from of 41.2 dBA to approximately 46 dBA. These levels would be well below the 65-dBA DNL threshold. Because of their widespread nature, actual CBP boating activities at any location would be much less than those described herein. Effects of noise from these activities would be minor.

Additional analysis would be performed in situations where site-specific information is necessary to make a more detailed analysis of an activity and to determine the level of its effect under NEPA. This would be necessary for actions that include:

- The establishment of new access-controlled highways or a new secondary roadway within an urban area;
- Helicopter operations expected to exceed 46 operations per day at POE or a USBP station;
- Outdoor firing ranges or indoor ranges where the noise could not be completely contained within CBP's properties;
- Manned aerial surveillance patrol increases that make up more than 10 percent of the total air operations at an individual airport or air installations with operational levels above 90,000 annual adjusted propeller operations, or 700 annual adjusted jet operations; or
- Substantial increases in ATV or snowmobile activities within a national park or an area known to have threatened or endangered species present.

8.6.6 BEST MANAGEMENT, MMINIMIZATION, AND MITIGATION

No additional operational management, minimization or mitigation measures would be required for noise.

8.6.7 SUMMARY OF POTENTIAL NOISE IMPACTS

Table 8.6-9 summarizes the comparison of impacts to noise stemming from the various alternatives.

Table 8.6-8. Summary of Potential Noise Impacts

Impact-Producing Activity	Level of Impact				
	Negligible Adverse	Minor adverse	Moderate Adverse	Major Adverse	Beneficial
NO ACTION ALTERNATIVE					
Small construction projects (< 1 acre and < 1/4 mile, e.g., minor repairs to facilities, parking lot repairs, access road repairs)		X			
Large construction projects (> 1 acre and > 1/4 mile, e.g., repairs to facilities, parking lot repairs, access road repairs)		X			
Checkpoint operations	X				
Ground operations—motorized		X			
Ground operations—nonmotorized	X				
Aircraft operations		X			
Vessel operations		X			

Impact-Producing Activity	Level of Impact				
	Negligible Adverse	Minor adverse	Moderate Adverse	Major Adverse	Beneficial
Operation of NII systems	X				
Operation of sensor and other technologies	X				
OVERALL IMPACT		**X**			
FACILITIES DEVELOPMENT AND IMPROVEMENT ALTERNATIVE					
Small construction projects		X			
Large construction			X		
OVERALL IMPACT		**X**	**X**		
DETECTION, INSPECTION, SURVEILLANCE, AND COMMUNICATIONS TECHNOLOGY EXPANSION ALTERNATIVE					
Small construction projects		X			
Ground operations—motorized		X			
Ground operations—nonmotorized	X				
Aircraft operations		X			
Vessel operations		X			
Operation of NII systems	X				
Operation of sensor and other technologies	X				
OVERALL IMPACT		X			
TACTICAL SECURITY INFRASTRUCTURE DEPLOYMENT ALTERNATIVE					
Small construction projects		X			
Large construction projects		X			
OVERALL IMPACT		X			

Impact-Producing Activity	Level of Impact				
	Negligible Adverse	Minor adverse	Moderate Adverse	Major Adverse	Beneficial
FLEXIBLE DIRECTION ALTERNATIVE					
Small construction projects		X			
Large construction projects		X			
Checkpoint operations	X				
Ground operations—motorized		X			
Ground operations—nonmotorized	X				
Aircraft operations		X			
Vessel operations		X			
Operation of NII systems	X				
Operation of sensor and other technologies	X				
OVERALL IMPACT		**X**	**X**		

8.7 ENVIRONMENTAL CONSEQUENCES FOR CLIMATE AND RESOURCE SUSTAINABILITY

This section describes the potential adverse and beneficial impacts to climate and resource sustainability associated with U.S. Customs and Border Protection's (CBP) ongoing and proposed activities.

Climate change is defined as any significant change in climate metrics, including precipitation, temperature, and wind patterns, over a period of time. Sustainability and smart growth are approaches to human activity that aim to meet the needs of the present without compromising the ability of future generations to meet their own needs. For descriptions of the regional affected environments for climate and resource sustainability, see sections 4.7.2 (West of the Rockies Region), 5.7.2 (East of the Rockies Region), 6.7.2 (Great Lakes Region), and 7.7.2 (New England Region).

The effects of climate change most people refer to today stem from "global warming," a relatively recent phenomenon of rising average temperatures across the globe. The temperature increase is thought to be due in large part to the human-induced increase in greenhouse gas emissions (GHGs) released into the atmosphere as a result of combustion. Common GHGs, such as carbon dioxide, methane, and nitrous oxide, trap radiant heat from the Earth causing the average temperature to rise.

Temperatures are predicted to continue to increase. Summer temperature changes are projected to be greater than winter temperatures. These future climate conditions are not likely to affect CBP's operations, nor would these changes significantly affect the national mission that CBP serves. In general, the long-term effects of climate change would likely be similar in nature to, but greater in magnitude than, some of the effects of short-term climate variability observed on an annual basis.

Across the Northern Border as a whole, impacts from all of the alternatives would range from negligible-to-minor adverse impacts. Beneficial impacts would also occur. A substantial array of mitigation measures relating to GHG inventory, improved energy efficiency, emission reduction, and green-technology utilization would be available on a site-specific basis to further reduce any of these potentially adverse impacts. As a result of CBP's proposed small, incremental construction and operational activities, cumulative impacts to climate and sustainability across the Northern Border as a whole would be negligible.

8.7.1 NO ACTION ALTERNATIVE

The No Action Alternative would entail the continuation of the status quo or the current level of CBP operations with generally the same level of manpower that is operating now. This alternative would include routine maintenance and repairs of facilities, equipment, and technology (including commercial upgrades as these become available). Nonmotorized ground operations are not expected to have any impacts on climate or resource sustainability because their footprint is too small to cause any noticeable change. The overall impacts to climate and resource sustainability under the No Action Alternative are expected to be negligible to minor

and adverse. Best management practices (BMPs) and mitigation measures would be employed to the extent possible, as described in greater detail in section 8.7.6, Best Management, Minimization, and Mitigation.

Small Construction Projects

There are approximately 20 small construction projects underway or in planning in each of the regions. These small construction projects include minor repairs to facilities, parking-lot repairs, and access-road repairs. Impacts to climate and resource sustainability resulting from small roadway and parking-lot improvement projects are anticipated to be minor and adverse. Impacts to climate and resource sustainability resulting from minor repairs to facilities are anticipated to be negligible and beneficial, due to the potential of such projects to improve energy efficiency or to reduce water usage or waste generation.

Large Construction Projects

There are approximately 15 large construction projects underway or in planning in each of the regions. These large construction projects include more substantial repairs to facilities, parking lots, and access roads. The United States Border Patrol (USBP) needs roads, bridges, culverts, and low-water crossings, as well as gabions, water bars, and other drainage- or erosion-control structures to help prevent unauthorized border crossings and to provide access to all parts of the border. The majority of the dirt roads within the border region were about 24 feet wide when originally built. Over the years, vegetation has encroached to the point that these roads are now typically less than 10 feet wide. In addition, some roads have experienced severe wind and water erosion, which has resulted in long, impassable stretches.

Impacts to climate and resource sustainability resulting from substantial roadway and parking-lot improvement projects are anticipated to be negligible to minor and adverse due to vehicle and equipment emissions during construction and increased vehicle emissions in areas where new infrastructure such as roads and bridges would be created. Impacts to climate and resource sustainability resulting from substantial repairs to facilities are anticipated to be negligible to minor and beneficial, due to the potential of such projects to improve energy efficiency or to reduce water usage or waste generation.

On-Site Trade and Travel Processing Operations

CBP estimates 20 operations either currently underway or in planning in the West of the Rockies Region, 30 in the East of the Rockies Region, 10 in the Great Lakes Region, and 20 in the New England Region. Of these operations, three in the Great Lakes Region and one in the West of the Rockies Region are large, on-site trade and travel processing facility upgrades underway or in planning.

Ports of entry (POEs) are generally connected to local, county, or municipal sanitary, potable, sewer, and electrical utility systems. Where these are unavailable, POEs are equipped with their own septic systems, water-supply wells, and generators.

USBP stations are either connected to local county or municipal utility systems or have their own septic systems, water-supply wells, lighting, and generators. The USBP uses lighting not only at its stations but also at temporary checkpoints and for surveillance operations. Temporary lighting is generally mounted on a vehicle of some type.

Under the No Action Alternative, impacts to climate and resource sustainability from the replacement of small on-site trade and travel facility replacements would be negligible to minor and adverse. Impacts would occur due to emissions from vehicles idling while waiting for inspection at POEs and from idling CBP agent vehicles at or near POEs. Impacts would also occur due to emissions from vehicles of CBP employees commuting to and from the POE, emissions from vehicles traveling to laboratories for further agricultural inspection, and emissions from full-time operation of the POE building and associated structures. Impacts would be minimized through use of FAST Driver cards and NEXUS cards, which allow expedited travel across the Northern Border. At rural border crossings, limited hours of operation are in effect, also minimizing emission rates. Impacts would vary due to the amount waste generated, materials recycled, and energy and water consumed at each site.

Checkpoint Operations

Under the No Action Alternative, each of the four regions would operate approximately 100 checkpoints per day. Roadway checkpoints generally consist of traffic lanes temporarily controlled by USBP. In some cases, checkpoints include support buildings to provide temporary office and holding space as well as lights, signage, and other support equipment. Impacts to climate and resource sustainability from the setup and operation of mobile traffic checkpoints under the No Action Alternative would be negligible and adverse due to emissions from vehicles idling at checkpoints and emissions from vehicles used to drive to and from the mobile traffic checkpoint location.

Ground Operations—Motorized

When possible, USBP agents remain on existing roads to apprehend cross-border violators but occasionally go off road when required. All sectors use a variety of vehicles including four-wheel drive vehicles, sedans, scope trucks, all-terrain vehicles (ATVs), and snowmobiles. Under the No Action Alternative, each of the four regions would employ approximately 800 motorized vehicles per day, for a total of 3,200 motorized vehicles employed per day across the Northern Border.

Impacts to climate and sustainability resulting from ATV and snowmobile/snowcat patrols would be minor and adverse. CBP does not plan to acquire a large number of new ATVs and snowmobiles under the No Action Alternative. Thus, fuel consumption and emissions from these vehicles would be minor and adverse, depending on their rate of use by CBP.

CBP vehicles may sit idle for significant periods of time (four to eight hours) during the course of a typical work day. This idle time is necessary due to hostile environmental conditions (extreme heat or cold) or other operations that require a vehicle's internal environment to be maintained or electronics to remain fully powered.

Meeting greenhouse-gas- and petroleum-reduction targets is a challenge for CBP because a large portion of CBP's fleet consists of law enforcement vehicles powered by traditional fuel. These vehicles are not necessarily fuel efficient. This challenge is compounded by a lack of alternative fuel infrastructure. Under the No Action Alternative, impacts to climate resulting from on-road vehicle patrols would be minor to moderate and adverse due to fuel consumption and emissions. Impacts to sustainability would also be minor to moderate and adverse due to the use of materials to construct and maintain these vehicles and use of fossil fuels to power the vehicles.

Aircraft Operations

Office of Air and Marine (OAM) agents operate 22 different types of aircraft to intercept people and contraband crossing land and water borders. Most aircraft are home based at existing airports or are tenants on military air installations, where they use existing hangar space, runways, helipads, and fueling facilities. Aircraft and helicopters are generally refueled at established airports.

Under the No Action Alternative, approximately 70 aircraft operations would take place daily across the Northern Border: 15 in the West of the Rockies Region, 20 in the East of the Rockies Region, 20 in the Great Lakes Region, and 15 in the New England Region. Impacts to both climate and resource sustainability across the Northern Border resulting from the operation of aircraft or aircraft operations would be minor and adverse. Impacts would occur due to fuel emissions from aircraft and operation of refueling facilities.

Vessel Operations

For those sectors with water boundaries, the USBP runs maritime patrols using boats and other marine-based watercraft. OAM provides the USBP Sectors with a range of watercraft to assist in river or lake patrols in the East of the Rockies Region. Each sector operates and maintains between 1 and 14 boats of varying sizes and performs two or three patrol shifts per day. Patrols range from 1 to 256 miles, depending on location. Under the No Action Alternative, approximately 77 vessel operations would take place daily across the Northern Border: 14 in the West of the Rockies Region, 5 in the East of the Rockies Region, 42 in the Great Lakes Region, and 16 in the New England Region

Under the No Action Alternative, impacts to climate and resource sustainability resulting from waterborne patrols and the standardization and modernization of the OAM fleet would be negligible and adverse due to fuel consumption and emissions from boat patrols. Use of materials to construct and maintain boats and boat launches would also be negligible and adverse.

Operation of Nonintrusive Inspection Systems, Sensors, and Other Technologies

CBP officers conduct cargo inspections daily, deploying a proper mix of nonintrusive inspection (NII) technologies at each POE to support the detection and interdiction of contraband such as weapons of mass effect, illicit radioactive materials, drugs, and currency. Under the No Action Alternative, the many NII systems utilized by CBP would operate for a total of approximately 1,000 hours per day. Sensors and other technologies would be operated approximately 1,500 hours per day.

Impacts to both climate and resource sustainability from the use of NII technology under the No Action Alternative would be negligible and adverse due to the production of materials used in inspection technologies and use of energy sources required to power the technology.

8.7.2 FACILITIES DEVELOPMENT AND IMPROVEMENT ALTERNATIVE

The overall impacts to climate and resource sustainability under the Facilities Development and Improvement Alternative (Facilities Alternative) are expected to be minor and adverse.

Mitigation measures would be employed to the extent possible, as described in greater detail in section 8.7.6, Best Management, Minimization, and Mitigation.

Small Construction Projects

Small construction projects that may be implemented by CBP under the Facilities Alternative include facility renovations and alterations, removal of vegetation from sites to accommodate buildings and paved areas, the introduction of green-building design elements to comply with the U.S. General Services Administration (GSA) POE guide, landscaping, expansion of parking, construction of housing for radio repeater sites, and other minor construction. CBP estimates that approximately 30 additional projects would occur under this proposed alternative in each of the regions.

Impacts to both climate and resource sustainability from the approximately 120 small construction projects proposed under this alternative would have a negligible-to-minor impact regionally and border wide. Impacts would vary with the volume and type of materials used, emissions during construction, and emissions from facility operations.

Large Construction Projects (POEs, USBP Stations)

To modernize POEs, CBP and GSA rehabilitate property and facilities that they own or buy and upgrade. CBP uses three size-based, standard building concepts to replace facilities; these new designs include green-building features to ensure compliance with Leadership in Energy and Environmental Design (LEED) standards. Under the large construction project category, modernization would entail a level of work similar to the work in building an upgraded POE. All modernization and upgrades must comply with the GSA POE guide.

CBP estimates the potential for 80 large projects (20 per region) along the Northern Border under the Facilities Alternative. Certain aspects of modernizing or upgrading an existing POE would have minor and beneficial impacts related to climate and resource sustainability. The repair and upgrade of water-treatment systems, the installation of energy-efficient lighting, the addition of other energy-efficient systems, and the establishment of on-site, renewable-energy generating sources would reduce energy, water, and materials consumption at the facility; reduce waste; and reduce emissions at POEs.

Modernized POEs would achieve a LEED-certified rating under the LEED New Construction and Major Renovations Version 3.0, as required by CBP. Achievement of LEED certification ensures that installation of utility lines, connection to potable-water supply, and provision of lighting, communications systems, sewage disposal, and solid waste disposal would be executed in a manner that aims to reduce environmental impacts to the extent mandated by the U.S. Green Building Council. Vegetative cover would be retained and new vegetative cover would be established in disturbed areas to the extent practical at all sites.

Large construction projects to upgrade a relatively low number of POEs in each of the four regions under the Facilities Alternative would have negligible-to-minor and adverse impacts to climate due to building emissions related to energy use. Impacts to resource sustainability would be negligible to minor and adverse due to the consumption of materials, water, and energy at the facilities, reduction of pervious surface, and the generation of solid waste.

New building site design and construction would follow the guidelines in the USBP Facilities Design Guide. Construction of a relatively low number of USBP stations in each of the four regions under the Facilities Alternative would have negligible and adverse impacts to climate due to building emissions related to energy use. Impacts to sustainability would be negligible to minor and adverse due to the consumption of materials, water, and energy; reduction of pervious surface; and the generation of solid waste.

8.7.3 DETECTION, INSPECTION, SURVEILLANCE, AND COMMUNICATIONS TECHNOLOGY EXPANSION ALTERNATIVE

The overall impacts to climate and resource sustainability under the Detection, Inspection, Surveillance, and Communications Technology Expansion Alternative (Detection/Inspection Alternative) are expected to be minor and adverse. BMPs and mitigation measures would be employed to the extent possible, as described in greater detail in section 8.7.6, Best Management, Minimization, and Mitigation.

Small Construction Projects

Under the Detection/Inspection Alternative, CBP would install communications and surveillance towers for the installation of radio antennae, radio transmitters and receivers, and remote video-surveillance systems (RVSS) and motion-detection devices. Many towers have a small building to house electronic equipment associated with the operations. Communications tower sites would each require one-half to one acre of property. Vegetation would be cleared within a 50 by 50 foot footprint. An underground power line would be installed to connect the site to the commercial power grid, where possible. In rural or remote areas, a gravel access road would be constructed, causing a greater loss of vegetation cover.

In each of the regions, CBP would initiate approximately 100 small construction projects related to communications and surveillance. Towers and appurtenant elements would be sited, designed, and constructed to avoid or minimize habitat loss within and near the tower footprint. Road access and fencing would be minimized to the extent possible to reduce or prevent ground disturbance. All construction would follow the Department of Homeland Security's (DHS) Environmental Planning Management Directive 025-01 for Sustainable Practices for Environmental, Energy, and Transportation Management.

Impacts to climate from construction and installation associated with approximately 400 total communications towers across the Northern Border under the Detection/Inspection Alternative would be negligible and adverse. Impact to resource sustainability would be negligible to minor and adverse.

Ground Operations—Motorized

Under the Detection/Inspection Alternative, approximately 1,300 motorized ground operations would occur each day in each of the four regions. Impacts to climate and resource sustainability would be minor to moderate and adverse.

Aircraft Operations

Under the Detection/Inspection Alternative, approximately 106 combined aircraft operations would take place each day across all Northern Border regions. Data on net GHG emissions from

aircraft operations under this alternative is provided in Table 8.2-4. Impacts to both climate and resource sustainability resulting from the operation of aircraft or aircraft operations would be minor and adverse. Impacts would occur due to fuel emissions from aircraft and operation of refueling facilities.

Vessel Operations

Under the Detection/Inspection Alternative, CBP would initiate approximately 108 vessel operations per day across all Northern Border regions: 21 in the West of the Rockies Region, 10 in the East of the Rockies Region, 63 in the Great Lakes Region, and 24 in the New England Region. Vessel operations would be associated with increased impacts to climate and resource sustainability. However, impacts would only be negligible and adverse due to fuel consumption and emissions from boat patrols.

Operation of NII Systems, Sensors, and Other Technologies

Under the Detection/Inspection Alternative, NII systems would be in operation for approximately 1,000 hours per day. Sensors and other technology would be in operation for approximately 2,500 hours per day. Impacts to both climate and resource sustainability from the use of NII technology under this alternative would be minor and adverse due to the production of materials used in inspection technologies and the use of energy sources required to power the technology.

8.7.4 TACTICAL SECURITY INFRASTRUCTURE DEPLOYMENT ALTERNATIVE

The overall impacts to climate and resource sustainability under the Tactical Security Infrastructure Deployment Alternative (Tactical Security Alternative) are expected to be minor and adverse. BMPs and mitigation measures would be employed to the extent possible, as described in greater detail in section 8.7.6, Best Management, Minimization, and Mitigation.

Small Construction Projects

Under the Tactical Security Alternative, approximately 30 small construction projects would occur per region. These projects would include, but would not be limited to, trench cuts, construction of towers, and construction or repair of minor access roads and fences. Impacts to climate and resource sustainability resulting from 30 small roadway and parking-lot improvement projects would be minor and adverse.

Large Construction Projects

Under the Tactical Security Alternative, approximately five large construction projects involving the construction or repair of access roads and fences would take place. Impacts to climate and resource sustainability would be negligible to minor and adverse due to vehicle and equipment emissions during construction and increased vehicle emissions in areas where new infrastructure such as roads and bridges would be created.

8.7.5 FLEXIBLE DIRECTION ALTERNATIVE

The Flexible Direction Alternative reflects the maximum amount of activities that would result from combining all of the previously described action alternatives. The number of activities or operations discussed below reflects the total level of operations that would be reached under this alternative. The overall impacts to climate and resource sustainability under the Flexible Direction Alternative are expected to be minor and adverse. BMPs and mitigation measures would be employed to the extent possible, as described in greater detail in section 8.7.6, Best Management, Minimization, and Mitigation.

Small Construction Projects

Under the Flexible Direction Alternative, approximately 160 small construction projects would occur in each of the regions. Impacts to climate and resource sustainability would be minor and adverse.

Large Construction Projects

Under the Flexible Direction Alternative, approximately 25 large construction projects would occur in each of the regions. Impacts to climate and resource sustainability would be minor and adverse.

Checkpoint Operations

Under the Flexible Direction Alternative, approximately 100 checkpoint operations would occur in each of the four regions. Impacts to climate and resource sustainability would be minor and adverse.

Ground Operations—Motorized

Under the Flexible Direction Alternative, approximately 1,300 motorized ground operations would occur each day in each of the four regions. Impacts to climate and resource sustainability would be minor to moderate and adverse.

Aircraft Operations

Under the Flexible Direction Alternative, the same amount of aircraft operations as in the Detection/Inspection Alternative (approximately 106) would occur each day across all of the Northern Border regions. Impacts to climate and resource sustainability would likewise be negligible and adverse.

Vessel Operations

Under the Flexible Direction Alternative, the same amount of vessel operations as in the Detection/Inspection Alternative (approximately 118) would occur each day across all of the Northern Border regions. Impacts to climate and resource sustainability would likewise be negligible and adverse.

Operation of NII Systems, Sensors, and Other Technologies

Under the Flexible Direction Alternative, NII systems across each of the regions would operate approximately 1,500 hours per day. Sensors and other technologies would operate for

approximately 2,500 hours per day in each region. Impacts to climate and resource sustainability would be minor and adverse.

8.7.6 BEST MANAGEMENT, MINIMIZATION, AND MITIGATION

CBP seeks to avoid, minimize, repair, and reduce the impacts of its actions on the human environment. It does so with a combination of BMPs, siting plans, design strategies, mitigation measures, and monitoring plans best suited to the scale and the location of the particular action. Towards that end, in implementing its proposed action CBP could choose from among the following actions to avoid or minimize impacts to climate and resource sustainability:

- Continue development of CBP's Environmental Management System;
- Review and revise the CBP Fleet Handbook to incorporate meeting sustainability goals as an objective;
- Review and revise real-property acquisition and development process maps to include a sustainability review of each project;
- Develop a process to monitor compliance with sustainability goals and targets;
- Identify facilities where installation of an alternative fuel tank would increase the use of alternative fuel;
- Conduct fleet-optimization analysis (including right sizing of fleet and right configuration for defined missions);
- Establish policy and procedure to ensure that high-octane gasoline (E85) or bio-diesel fuel tanks are installed at new CBP fueling centers;
- Continue deployment of flex-fuel vehicles;
- Evaluate hybrid vehicles for administrative use;
- Develop a policy for use of videoconferencing;
- Develop a sustainable process for calculating employee-commute emissions;
- Complete a revised inventory of GHG emissions sources;
- Develop an integrated plan for how CBP will meet GHG emissions-reduction goals;
- Make sure that all new construction, as well as major renovation or repair and alteration of Federal buildings, complies with "Guiding Principles for Federal Leadership in High Performance and Sustainable Buildings," December 1, 2008 (Guiding Principles);
- Make sure that new construction designs are at least 30 percent more energy efficient than the applicable standard;
- Use cost-effective, innovative building strategies to minimize energy, water, and materials consumption in a manner that achieves a net reduction in Department-deferred maintenance costs;
- Modify existing owned facilities and bring them into compliance;
- Complete evaluation of laboratory energy audits and, as appropriate, add implementation of recommended energy-savings initiatives into budget requests;

- Ensure that all Project Management Office project managers are trained in Guiding Principles/LEED® ("Guiding Principles for Sustainable New Construction and Major Renovations");
- Review existing contracts to ensure that sustainability requirements are included in statements of work (SOWs);
- Incorporate participation in regional transportation planning (recognition and use of existing community transportation infrastructure) into existing policy and guidance;
- Update policy and guidance to ensure that all environmental impact statements (EISs) and environmental assessments required under National Environmental Policy Act (NEPA) for proposed new or expanded Federal facilities identify and analyze impacts associated with energy usage and alternative energy sources;
- Complete CBP NEPA Handbook;
- Develop guidance for CBP service providers (GSA and the U.S. Army Corps of Engineers) for site-selection criteria and prioritization based on sustainability goals;
- Reduce potable-water-use intensity—gallons used per square foot—by at least 26 percent by FY2020;
- Reduce industrial, landscaping, and agricultural water use by at least 20 percent by FY2020;
- Achieve objectives established by the U.S. Environmental Protection Agency in Stormwater Guidance for Federal Facilities EISA Selection 438 (42 USC 17094);
- Develop a CBP Water Conservation Handbook;
- Complete the CBP Environmental Compliance Handbook;
- Increase source reduction of pollutants and waste;
- Divert at least 50 percent of nonhazardous solid waste by FY2015, excluding construction and demolition (C&D) debris;
- Divert at least 50 percent of C&D materials and debris by FY2015;
- Reduce printing-paper use;
- Reduce and minimize the acquisition, use, and disposal of hazardous chemicals and materials;
- Increase diversion of compost and organic materials from the waste stream;
- Decrease use of chemicals to achieve FY2020 GHG reduction targets;
- Complete the CBP Recycling and Reuse Handbook;
- Complete 300 environmental compliance assessments (scope includes identification of quantities of hazardous waste disposed annually);
- Complete baseline assessment of waste management practices at all facilities;
- Ensure that 95 percent of new contract actions require the supply and use of products and services that are energy efficient (as designated by Energy Star or the Federal Energy

Management Program [FEMP]), water efficient, bio-based, environmentally preferable, and not ozone depleting, and that they contain recycled content or are non-toxic or, if this is not possible, that the least-toxic alternative is selected;

- Complete the CBP Green Procurement Handbook and policy;
- Establish and implement policy and guidance to ensure use of power management, duplex printing, and other energy efficient or environmentally preferred options and features on all eligible CBP electronic products;
- Update CBP policy to ensure implementation of BMPs for energy-efficient management of servers and Federal data centers;
- Add a chapter on electronics stewardship to the current CBP Electronics Security Handbook; and,
- Conduct an inventory of compliant and noncompliant equipment.

8.7.7 SUMMARY OF IMPACTS

Table 8.7-1 summarizes the potential impacts of the alternatives on climate and resource sustainability.

Table 8.7-1. Summary of Potential Climate and Resource Sustainability Impacts

Impact-Producing Activity	Level of Impact				
	Negligible Adverse	Minor Adverse	Moderate Adverse	Major Adverse	Beneficial
NO ACTION ALTERNATIVE					
Small construction projects		X			X
Large construction projects		X			X
Small on-site trade and travel processing operations		X			
Large on-site trade and travel processing operations		X			
Checkpoint operations	X				
Ground operations—motorized			X		
Aircraft operations		X			
Vessel operations	X				
Operation of NII systems	X				
OVERALL IMPACT	**X**	**X**			

Impact-Producing Activity	Level of Impact				
	Negligible Adverse	Minor Adverse	Moderate Adverse	Major Adverse	Beneficial
FACILITIES DEVELOPMENT AND IMPROVEMENT ALTERNATIVE					
Small construction project		X			
Large construction projects		X			X
OVERALL IMPACT		**X**			
DETECTION, INSPECTION, SURVEILLANCE, AND COMMUNICATIONS TECHNOLOGY EXPANSION ALTERNATIVE					
Small construction projects		X			
Ground operations—motorized			X		
Aircraft operations		X			
Vessel operations	X				
Operation of NII systems		X			
OVERALL IMPACT		**X**			
TACTICAL SECURITY INFRASTRUCTURE DEPLOYMENT ALTERNATIVE					
Small construction projects		X			
Large construction projects		X			
OVERALL IMPACT		**X**			
FLEXIBLE DIRECTION ALTERNATIVE					
Small construction projects		X			
Large construction projects		X			
Checkpoint operations		X			
Ground operations—motorized			X		
Aircraft operations	X				
Vessel operations	X				
Operation of NII systems		X			
OVERALL IMPACT		**X**			

8.8 ENVIRONMENTAL CONSEQUENCES TO LAND USE

This section considers the potential adverse and beneficial impacts to the land uses described in sections 4.8, 5.8, 6.8, and 7.8 that may result from the program alternatives. As described, a land use impact may be caused by an activity that:

- Disrupts an existing or planned future land use;
- Reduces the suitability of land to support its current or planned use;
- Constitutes a fundamental change in land use;
- Is inconsistent with existing land use authority, guidelines, or management plans; or
- Is incompatible with plans and management objectives of adjacent areas under control of other entities.

Several of the actions that U.S. Customs and Border Protection (CBP) is considering are not expected to have any impact on land use resources. Nonmotorized ground operations (i.e., horse and foot patrol), operation of nonintrusive scanning and detection (NII) systems, and operation of sensors and other technologies are unlikely to disrupt existing land uses because they do not preclude particular land uses and do not introduce significant noise or light pollution that would interrupt land use activities. Small construction projects that affect under an acre of land are also unlikely to alter land uses due to their small footprint. Such projects include minor structural and interior repairs to buildings, and construction of technology support infrastructure, such as radio communication towers. Due to the lack of expected impact on land uses, these activities are not considered further in this section. In addition, none of the alternatives is likely to result in beneficial impacts on land use.

Land use impacts of actions under each of the alternatives are dominated by the potential effects on land use of large construction projects. Large-scale facilities and infrastructure developments directly remove the land on which they are constructed from its existing use and alter the landscape such that surrounding land uses may also be affected. While the impacts of these projects would be permanent, they would remain localized at the project site and unlikely to affect the viability of regional land-use activity. As such, impacts of these large construction projects are expected to be moderate and adverse resulting in moderate impacts on land use of each of the evaluated alternatives. Impacts of other CBP activities, such as small construction projects, patrols, and trade and travel processing operations, may increase noise or light disturbance and negatively affect the relative appeal of the area near the project site for recreation or residential development. Depending on surrounding land use (e.g., proximity to residential and recreational areas) and the length and intensity of the noise or light disturbance, these activities are likely to result in only negligible to minor impacts as the effects are localized and temporary. Likewise, because of the permanent but localized impacts of large construction projects, cumulative impacts are expected to be moderate. While land use changes result from CBP developments, these projects would affect a relatively small, localized area compared to the combined land-use effects of ongoing activities in the Northern Border Regions, such as non-

CBP energy projects (e.g., wind enery developments), mine developments, and utility and transportation projects.

8.8.1 NO ACTION ALTERNATIVE

The No Action Alternative is to continue the current pace of operations in terms of the current types and levels of CBP activities along the Northern Border. Impacts are dominated by large facilities and infrastructure construction projects that cause direct land use changes at a project site. When additional land is needed for facility construction, CBP seeks to acquire lands through purchase or lease from willing private sellers when not available from other Federal agencies or State or local partner agencies. This practice would continue to hold true for all acquisitions under all alternatives.

The following discussion describes how CBP activities in the No Action Alternative could affect land uses in the four regions. The following general categories of CBP activities have the potential to affect land use resources:

- Construction of new facilities or major repair and maintenance of existing facilities;
- Activities that introduce noise or light disturbance, such as construction, checkpoints, patrols, or deployment of new surveillance technologies;
- Road and bridge construction; and
- Construction of fences or other physical barriers.

Large Construction Projects

Large CBP construction projects include modernization or expansion of POEs, and construction of USBP stations, permanent traffic checkpoints, and FOBs. Projects may also involve construction of fences and other physical barriers, roads, bridges, and culverts. The following discussion focuses on construction projects that affect more than one acre or a quarter mile of road.

Following are general descriptions of the types of large construction projects that may occur in each of the four regions.

Construct a USBP Station

This activity requires purchase or lease of approximately 10 acres to develop an office/storage building and 10,000 sf of parking. For USBP stations in remote areas, CBP would also consider the need to construct a 3,600 sf helipad.

Modernization or Maintenance of Existing POE or USBP Station

Maintenance and repairs at existing facilities range from minor upgrades or repairs to major modifications, such as demolition of existing structures and construction of new ones. These activities may, therefore, be either small or large construction projects.

Set Up Permanent Traffic Checkpoints

The total land area required remains uncertain, but should be able to support some or all of the following components: a new, 6,000 sf building; less than 1 acre for canine-unit kennels; storage

areas for evidence, equipment, and tools; parking; tollbooth-like structures for shelter from weather; detention rooms; a HAZMAT quarantine area to store vehicles; inspection lanes; area for utilities, potable water supply, communications towers, sewage disposal, and solid waste storage; and on-site renewable energy generating sources at some sites.

Construct a New Forward Operating Base

The total land area required is generally about 3 to 5 acres and should support modular structures or buildings; portable toilet and shower facilities; portable generators; fuel; and water trailers. The FOBs are temporary and operate on a regular basis for several days to several weeks.

Construct Fences or other Physical Barriers

Fence and barrier construction along the Northern Border may require access roads, lighting, and other infrastructure during construction. Depending on the amount of area required, these projects may be small or large construction projects.

Access Road Extension

Extending access roads for more than a quarter of a mile is considered a large construction project.

CBP anticipates that under the No Action Alternative, up to 15± large construction projects will take place across each of the four regions. These projects are either currently underway or in the planning stages. Construction projects may affect land use in two ways: by directly removing the parcel of land on which development will occur from its existing use; or by changing the landscape in such a way that the surrounding area becomes less attractive for a particular land use (e.g., due to temporary or permanent increases in noise or visual disturbance). To the extent that construction is occurring directly against the border, this second category may also affect border areas in Canada.

The overall impacts of these activities on land use are likely to be moderate and adverse. While the change in land use at the developed sites would be unavoidable and permanent, the land area required for new developments is relatively small, ranging from one acre to tens of acres. Although conversion of some land to CBP facility development would result from these activities, the relatively small amount of land converted would be unlikely to affect the viability of any particular land use in the broader region.

The first category of land use impact is the most direct: removing a parcel of land from its existing use. For these development projects, CBP would acquire private property or government land that is currently forested, agricultural, or pasture, or is a vacant site or existing building in a populated area. The land area required for CBP construction activities would vary by project. Acquisition of private land for Federal program development may be quantified as either a loss to the current private landowner in the form of foregone future revenue on the parcel (if the land is purchased at a value less than the present value of forecast future uses) or as a gain to the landowner as revenue derived from the sale or lease of the parcel (if the land is purchased at a value greater than the present value of forecast future uses). When purchasing (or leasing) lands from willing sellers, CBP (or a government agency acting on behalf of CBP) would conduct market surveys that include comparable land values. The government will make a fair market value offer to the landowner. After negotiation, the government and the landowner

would come to an agreement on the sale or lease of the property. The negotiated cost does not presume that the land use change would result in a negative or positive economic impact on willing sellers (i.e., the assumption is that the fair market value offered is equivalent to the present value of the future uses of the land). If CBP must acquire land through eminent domain, the landowner would lose the value of that land for its existing purpose, but would be compensated at fair market value or more for the land.

Acquisition of land for construction is most likely to affect forested, agricultural, and developed lands. The percentage of forest cover ranges across the states from a low of 55.9 percent in Washington to 79.7 percent in Idaho in the WOR Region, from as little as 2.1 percent in North Dakota to 43.1 percent in Minnesota in the EOR Region, from 21.4 percent in Ohio to 84.0 percent in Wisconsin in the Great Lakes Region, and from 68.4 percent in Vermont to 85.0 percent in New Hampshire in the New England Region.

Agricultural land (both cultivated crops and pasture) is significantly less abundant, ranging from a low of 2.3 percent of land area in Idaho to 12.3 percent in Washington in the WOR Region, from 20.7 percent in Minnesota to 62.3 percent in North Dakota in the EOR Region, from 6.4 percent in Wisconsin to 56.1 percent in Ohio in the Great Lakes Region, and from 2.6 percent in New Hampshire to 15.9 percent in Vermont in the New England Region.

Developed land is relatively scarce in most states, ranging from a low of 1.1 percent in Montana to 6.0 percent in Washington in the WOR Region, from 1.7 percent in Montana to 4.3 percent in North Dakota in the EOR Region, from 4.2 percent in Wisconsin to 17.3 percent in Ohio in the Great Lakes Region, and from 2.6 percent in Maine to 5.4 percent in Vermont in the New England Region.

The second way in which construction of new facilities may affect land use is by altering the conditions or character of a landscape, making the surrounding area less attractive for a particular land use, such as recreation. Such impacts may be temporary, such as increased noise during construction, or permanent due to the noise or visual disturbance associated with a new facility or road.

Recreators may prefer a rural, more natural landscape for activities such as hiking, fishing, hunting, or camping. To the extent that development of CBP facilities degrades the quality of the surrounding area for recreation, visitors may reduce their use of the area or may choose not to use it for recreation. Similarly, individuals residing near the new development may be negatively affected by the noise, traffic, or visual disturbances in their daily lives. Degrading the quality of land for a particular use constitutes a land use impact as defined in this analysis.

Reduced quality or quantity of recreational land use may be measured in terms of social welfare impacts to recreation or regional economic impacts. Impacts to surrounding residential developments may be evaluated by changes to property values associated with decreased willingness to pay for land adjacent to such facilities. Section 8.10 describes the data requirements and methods for quantifying the economic impacts created by the alternatives.

Recreation and residential development are the land uses most likely to be sensitive to the noise and visual disturbances of the construction projects. Relative to other land uses, recreational

lands are limited across the regions, suggesting that large construction projects are unlikely to occur adjacent to areas with significant levels of recreation. The most recreational land in the WOR region is in Washington (1.9 million acres, 8.6 percent of land area) and includes Olympic National Park. Section 5.8 identifies that limited land area within each state in the EOR Region is in recreational land use, ranging from 0.6 percent in North Dakota to 1.8 percent in Montana, including portions of Glacier National Park. Only 1.2 percent of the Great Lakes Region's land is recreational. Recreational land occurs at very low levels in each state, ranging from just a few acres in Wisconsin to 214 acres (1.2 percent of land area) in Michigan. Only 5.3 percent of the New England Region's land area is in recreational land use. Recreational land occurs at relatively low levels in each state within the region, ranging from 46 acres in Vermont (on the percent of land in the region overlapping the state) to 370 acres (2 percent of land area) in Maine.

Developed land is similarly limited, ranging from a low of 1.1 percent of the land area in Montana to 6.0 percent in Washington in the WOR Region, from 1.7 percent of Montana to 4.3 percent in North Dakota in the EOR Region, from 4.2 percent in Wisconsin to 17.3 percent in Ohio in the Great Lakes Region, and from 2.6 percent in Maine to 5.4 percent in Vermont in the New England Region. Consequently, relatively little residential development is likely to be adjacent to large construction projects.

Construction projects close to the border may also affect recreation and development in areas of Canada near the border. Recreation and development within 2 miles of the border in Canada are similar adjacent to the four regions. Recreational land use represents approximately 12.1 percent of the land area in the WOR Region, approximately 4.9 percent in the EOR Region, and approximately 7.5 percent in the Great Lakes Region. No identified recreational lands were identified adjacent to the New England Region. Available data do not identify any developed lands in Canada within 2 miles of the border from the WOR, EOR, and New England Regions. Only 0.9 percent of the land cover is identified as developed adjacent to the Great Lakes Region.

While land use impacts of construction can be characterized overall as moderate and adverse, the extent of impact associated with these activities would depend on:

- The distribution and concentration of large construction projects that CBP may undertake;
- The size of the individual project (acreage required);
- The nature of the land (i.e., existing and potential future land use) being altered for the project; and
- Land uses surrounding a project.

Large construction projects also include construction of fences or other barriers in localized areas across the border to prohibit crossings of unchecked vehicles and individuals. Such construction may temporarily cause land use impacts. The primary impact associated with fencing along the border, however, would affect landowners of contiguous land parcels if the they become bisected by the fencing or barriers.

If CBP constructs a fence or barrier across a land belonging to an individual, the existing use of that parcel may become affected or a portion of the property may no longer remain viable for its

current use. For example, if a fence or barrier is erected across an agricultural field, the farmer may have trouble accessing portions of the fragmented land. If CBP border fencing bisects contiguous land parcels, the landowner(s) will likely feel the effects.

Other Activities that Introduce Noise or Light Disturbance

In addition to the construction activities above, categories of activities under the No Action Alternative that may result in noise or light disturbance include:

- POE trade and travel processing operations (routine activities are POEs and checkpoints)—up to 20± small operations and 1 large one in the WOR Region, up to 30± small operations in the EOR Region, up to 10± small and 3 large operations in the Great Lakes Region, and up to 20± small operations in the New England Region;
- Checkpoint operations (off-site inspections)—up to 100± per day in each of the four regions;
- Motorized ground operations (all-terrain vehicle (ATV), snowmobile, and other vehicle patrols)—up to 800± per day in each region;
- Aircraft operations–up to 15± per day in the WOR and New England Regions and 20± per day in the EOR and Great Lakes Regions.
- Vessel operations–up to 16± per day in the WOR Region, up to 5± per day in the EOR Region, up to 42± per day in the Great Lakes Region, and up to 14± per day in the New England Region.

These activities may increase ambient noise due to construction, traffic, or operation of various patrol vehicles. In addition, the activities may bring light or other visual disturbances through the general operation of patrols and surveillance equipment, or from increased traffic congestion at POEs.

The impacts of noise and light-disturbing activities on land use are expected to be minor and adverse; they would not directly change land use but instead may indirectly negatively affect the quality of directly adjacent land uses. The extent to which the surrounding land uses at any given site are sensitive to noise pollution and visual disturbances, however, vary. The land uses most sensitive to these types of impacts are recreation and residential development, which remain fairly limited across the Northern Border.

Activities that are Inconsistent with Existing Land Use Authority, Guidelines, or Management Plans

The No Action Alternative includes sustaining partnerships between CBP and Federal land managers. These partnerships require managing the issue of Border Patrol access to Federal lands. The 2006 Memorandum of Understanding among the Department of Homeland Security (DHS), Department of Interior (DOI), and U.S. Department of Agriculture (USDA) acknowledges that CBP actions can have natural resource impacts on Federal lands; conversely, access limits due to Federal land management restrictions can affect CBP's security mission. CBP conducts ongoing discussions with its Federal land partners to work within the 2006 MOU, allowing it to implement the CBP security mission while simultaneously maintaining resource

values and regulatory protection of Federal lands. These partnership discussions are intended to minimize the land use impact of CBP projects or activities on these lands.

In conclusion, relatively small land areas (one acre to tens of acres) per project may become directly altered. The quality of recreational activities or residential developments directly surrounding the project sites may also decline. These impacts would diminish with distance from the project site. CBP may alleviate some of these impacts by locating projects on vacant or unproductive lands away from recreational and residential development areas. The overall land use impact of CBP's No Action Alternative is likely to be moderate and adverse due to the permanent, but localized, nature of potential land use changes. Large facilities and infrastructure construction projects that cause direct land use changes at a project site dominate the impacts.

8.8.2 FACILITIES DEVELOPMENT AND IMPROVEMENT ALTERNATIVE

The Facilities Development and Improvement Alternative (Facilities Alternative) involves major modernizations or repairs to existing POEs, construction of new USBP stations, or upgrading existing USBP stations to improve CBP's efficiency in operations and to respond to potential situations along the border. In addition to permanent facilities (e.g., construction of new USBP stations and housing), this alternative includes potential construction of temporary facilities, such as FOBs and checkpoints that support law enforcement operations. For the same reasons as the No Action Alternative, the impacts of the Facilities Alternative on land use would be moderate and adverse. These impacts would likely be greater than the No Action Alternative in proportion to the increased land area required for additional construction and development.

Under this alternative, CBP would undertake up to 20± additional large construction projects in each of the four regions (in addition to the No Action Alternative). On average, the land use impact associated with additional construction will rise proportionally from the impact under the No Action Alternative since the per-project impact of area experiencing converted or degraded land use (one acre to tens of acres) is similar. While up to five additional projects are possible, the proportion of total land area affected in the region remains relatively low. As stated, the extent of land use impact associated with these activities depends upon the distribution and size of new construction projects as well as the nature of land use at both the project site and surrounding areas.

In conclusion, the analysis of the impacts from the Facilities Development and Improvement Alternative on land use resources would increase proportionally to the land area required for construction and development. CBP may reduce the impacts by selecting sites that are relatively remote and on vacant, unproductive lands, whenever practicable. The overall impacts from the Facilities Development and Improvement Alternative are anticipated to be moderate and adverse for the same reasons as the No Action Alternative.

8.8.3 DETECTION, INSPECTION, SURVEILLANCE, AND COMMUNICATIONS TECHNOLOGY EXPANSION ALTERNATIVE

The Detection, Inspection, Surveillance, and Communications Technology Expansion Alternative deploys newer, more-effective technologies to support CBP surveillance and telecommunications. This alternative calls for continued deployment of remote sensors, short-range radar, remote and mobile video surveillance, as well as new camera systems and upgrades to existing communications systems. It also involves increased surveillance and patrols at select

areas along the border. The overall impacts of this alternative on land use are likely minor and adverse, resulting in periodic, minor disturbances to land uses in localized areas.

Under this alternative, CBP would increase motorized ground surveillance by up to 1,300± missions per day in all four regions. Aircraft surveillance would rise by up to 23± missions per day and vessel patrols by up to 21± per day in the WOR Region. In the EOR Region, Aircraft surveillance would increase by up to 30± missions per day, and vessel patrols by up to 10± per day. In the Great Lakes Regions, aircraft surveillance would rise by up to 30± missions per day, and vessel patrols by up to 63± per day. In the New England Region, aircraft surveillance would increase by up to 23± missions per day, and vessel patrols by up to 24± per day. Increasing these activities would result in either: greater frequency of noise or light disturbance at particular sites (if the missions are more frequent, but in the same areas); or a rise in these disturbances across the border (if the additional missions patrol a larger area). If increased surveillance and patrols cover a larger area, the affected land area would likewise increase. In either case, however, this alternative requires no direct land use conversion. Impacts result from reduced quality of certain land uses (e.g., recreation or residential development) near the activity. CBP may minimize such impacts by conducting patrols and surveillance away from other land uses, or during periods of relatively low recreation, when feasible.

In conclusion, the Detection, Inspection, Surveillance, and Communications Technology Expansion Alternative is most likely to have a moderate and adverse impact on land use resources (considering that these activities are in addition to the No Action Alternative activities). While increased patrols and use of improved monitoring and surveillance equipment may degrade the quality of land for recreation or residential development in localized areas, these activities are unlikely to affect the viability of a given land use at the regional level.

8.8.4 TACTICAL SECURITY INFRASTRUCTURE EXPANSION ALTERNATIVE

The Tactical Security Infrastructure Alternative includes additional barrier construction at select points along the border to deter and delay cross-border violators. It also includes more roads and related facilities that would improve CBP's ability to respond to these violators quickly and effectively. Impacts on land use may be moderate and adverse if fences bisect contiguous land parcels. If CBP avoids constructing fences or barriers through these areas, however, impacts are more likely negligible.

Under this alternative, CBP would increase large construction projects building access roads and fencing by up to five projects in each of the four regions (in addition to the No Action Alternative). Fencing or other barriers along the border primarily affects those individuals residing closest to the border. If the fencing or barriers fragment a landowner's property, land use impacts would occur, as described under the No Action Alternative. In some limited areas, the border may bisect contiguous landowner parcels. Thus, land use impacts would likely be adverse and moderate. The impacts would be localized and CBP may have to compensate landowners for the loss of their lands. Landowners or communities would need to due to the fragmentation of their land. CBP prefers to avoid such situations by not constructing fences through individual parcels. If CBP avoids these areas, the land use impacts of this alternative above and beyond the No Action Alternative would most likely be negligible.

In conclusion, the level of impact depends largely on where barriers are constructed. If they bisect contiguous parcels or cross-border communities, restricted access to land may affect land use. Constructing additional fencing or barriers in more remote border areas where passage is difficult to control, as well as avoiding construction of fences through contiguous land parcels, would likely result in negligible impacts on land use. This analysis anticipates that increased fencing and other physical barriers along the border may result in moderate adverse impacts on land use.

8.8.5 FLEXIBLE DIRECTION ALTERNATIVE

As previously indicated, the Flexible Direction Alternative allows CBP to use a mix of any of the actions in the previous four alternatives on an as-needed basis to respond to evolving threats along the border. This alternative allows CBP the most flexibility in border security actions. Impacts of this alternative are most likely moderate and adverse and similar to the No Action Alternative, driven by the number of large construction projects.

Under this alternative, CBP would increase large construction projects by up to 25± projects, checkpoint operations by up to 100±, motorized patrols by up to 1,300±, aircraft patrols by up to 23±, and vessel patrols by up to 21± in the WOR Region. In the EOR Region, CBP would increase large construction projects by up to 25± projects, checkpoint operations by up to 100±, motorized patrols by up to 1,300±, aircraft patrols by up to 30±, and vessel patrols by up to 10±. In the Great Lakes Region, CBP would increase large construction projects by up to 25± projects, checkpoint operations by up to 100±, motorized patrols by up to 1,300±, aircraft patrols by up to 30±, and vessel patrols by up to 63±. CBP would increase large construction projects by up to 25± projects, checkpoint operations by up to 100±, motorized patrols by up to 1,300±, aircraft patrols by up to 23±, and vessel patrols by up to 24±, in the New England Region.

The up-to-25 additional construction projects across each of the four regions would most likely result in a proportional increase in land use impacts above the No Action Alternative. Increased numbers of processing operations and patrols would proportionally increase either the frequency of noise and light impacts or the land area subject to these impacts. The extent of land use impact associated with these activities depends on the distribution and size of new construction projects, and the nature of the land use at the project site and the surrounding area. This alternative, however, would likely have a moderate adverse impact on land usage. While this alternative represents the maximum scope of impact of CBP activities, the land area potentially affected remains moderate in the context of broader border region land uses. Impacts would increase if a particular land use becomes degraded regionally. The number of projects or the extent of degraded land area that would generate major impacts remains uncertain.

Similar to the No Action Alternative, this analysis anticipates that the Flexible Direction Alternative would result in moderate adverse impacts to land use. The threshold at which CBP activities may degrade land use beyond the project level and limit land use more broadly at the regional level remains uncertain. Section 8.8.4 describes actions that may mitigate the effects of these activities on land use.

8.8.6 BEST MANAGEMENT, MINIMIZATION, AND MITIGATION

CBP seeks to avoid unnecessary adverse impacts of its actions on the human environment whenever feasible and consistent with its law enforcement imperatives. It does so with a

combination of best management practices, siting plans, design strategies, and when appropriate, mitigation measures and monitoring plans best suited to the scale and location of the particular action. Towards that end, in implementing its proposed action alternative CBP would incorporate the following actions into its activities to avoid or minimize impacts to land use as generally applicable to the site-specific situation. The following measures could minimize the potential impacts of new facilities construction:

- Siting projects away from existing residential development or recreational areas;
- Locating projects on vacant or unproductive lands;
- Carrying out construction activities during periods of relatively low recreation levels; and
- Developing aesthetically pleasing sites, for example, through landscaping and proper siting of waste storage areas.

The following measures could minimize the impacts on land use from activities that cause noise and light disturbance:

- Using sound-reducing equipment, where feasible;
- Locating projects away from existing residential development or recreational areas; and
- Conducting patrols and surveillance activities during periods of relatively low recreation levels.

The following measures could minimize the impacts of border fencing activities on land use:

- Ensuring that the fencing does not fracture contiguous land parcels.

8.8.7 SUMMARY OF POTENTIAL IMPACTS

Table 8.8-1 summarizes the impacts of the alternatives on land use.

Table 8.8-1. Summary of Potential Land Use Impacts

Impact-Producing Activity	Level of Impact				
	Negligible Adverse	Minor Adverse	Moderate Adverse	Major Adverse	Beneficial
NO ACTION ALTERNATIVE					
Small construction projects (< 1 acre and < 1/4 mile: e.g., minor repairs to facilities, parking lot repairs, access road repairs)	X				
Large construction projects (> 1 acre and > 1/4 mile: e.g., repairs to facilities, parking lot repairs, access road repairs)			X		
Small on-site trade and travel processing operations		X			
Large on-site trade and travel		X			

Impact-Producing Activity		Level of Impact				
		Negligible Adverse	Minor Adverse	Moderate Adverse	Major Adverse	Beneficial
processing operations						
Checkpoint operations		X				
Ground operations–motorized			X			
Ground operations–nonmotorized	On-road	X				
	Off-road	X				
Aircraft operations			X			
Vessel operations			X			
Operation of NII Systems		X				
Operation of sensor and other technologies		X				
OVERALL IMPACT				**X**		
FACILITIES DEVELOPMENT AND IMPROVEMENT ALTERNATIVE						
Small construction project (< 1 acre and < 1/4 mile: various)		X				
Large construction projects (> 1 acre and > 1/4 mile: construction of USBP Stations, other facility construction or major modification)				X		
OVERALL IMPACT				X		
DETECTION, INSPECTION, SURVEILLANCE, AND COMMUNICATIONS TECHNOLOGY EXPANSION ALTERNATIVE						
Small construction projects (towers and other infrastructure to mount antennas, etc.)		X				
Ground operations–motorized			X			
Ground operations–nonmotorized		X				
Aircraft operations			X			
Vessel operations			X			
Operation of NII systems		X				
Operation of sensor and other technologies		X				
OVERALL IMPACT			**X**			

Impact-Producing Activity	Level of Impact				
	Negligible Adverse	Minor Adverse	Moderate Adverse	Major Adverse	Beneficial
TACTICAL SECURITY INFRASTRUCTURE DEPLOYMENT ALTERNATIVE					
Small construction projects (trench cuts, towers, minor access roads and fences)	X				
Large construction projects (access roads and fences)			X		
OVERALL IMPACT			**X**		
FLEXIBLE DIRECTION ALTERNATIVE					
Small construction projects	X				
Large construction projects			X		
Checkpoint operations	X				
Ground operations–motorized		X			
Ground operations–nonmotorized	X				
Aircraft operations		X			
Vessel operations		X			
Operation of NII systems	X				
Operation of sensor and other technologies	X				
OVERALL IMPACT			**X**		

8.9 ENVIRONMENTAL CONSEQUENCES TO AESTHETIC AND VISUAL RESOURCES

The programmatic analysis takes a general approach to the application of visual resource management (VRM) analysis of the Northern Border area. This section considers the potential adverse and beneficial impacts of U.S. Customs and Border Protection's (CBP) alternative actions on the visual environment. Site-specific analysis of an individual project requires use of the tools listed in Appendix G, the *Bureau of Land Management Visual Resources Management Guide*. The Visual Resource Management (VRM) system developed by U.S. Bureau of Land Management (BLM) defines the visual sensitivity of an area and the potential effect of a project on a visual resource. It assigns ratings of Classes I to IV based on combinations of scenic quality, sensitivity levels, and distance zones (for the Framework for Characterizing Resource Impacts on the Northern Border, see chapter 3, section 3.9).

CBP's activities span the entire 4,000-mile border between the contiguous United States and Canada, and extend approximately 100 miles south of the border. This area contains many visual resources that could experience impacts due to activities within the alternative actions. However, the mere presence of a visual resource within the 100-mile buffer of the Northern Border does not guarantee that it will be impacted by CBP's activities, which are site-specific. For descriptions of the regional affected environments for aesthetic and visual resources see Sections 4.9 (West of the Rockies), 5.9 (East of the Rockies), 6.9 (Great Lakes), and 7.9 (New England).

Impacts to the visual environment vary greatly with each CBP activity but the overall impacts would be expected to be long-term, adverse, and minor. Most viewers should already be accustomed to the current CBP activities and infrastructure, and no fundamentally new activities or changes to the types of infrastructure used by CBP are proposed. Most CBP activities occur in populated areas that are not as sensitive to visual impacts and most of those activities that occur in Class I or Class II areas would not permanently change those viewsheds. Most actions would have negligible impacts to the visual environment and most remodeling of infrastructure or changes in activities that create more efficient traffic flow would have beneficial impacts. Cumulative impacts would also be minor and adverse with some beneficial impacts resulting from the modernization of buildings. To the extent that structures are erected in more visually sensitive areas, site-specific visual impacts could be greater, and mitigation or avoidance measures would be implemented. Mitigation measures for visual resources center on reducing visual contrast associated with implementation of project alternatives. This would be accomplished largely through appropriate building design; location, landscaping, and attention to landform characteristics (see Chapter 9, Section 9.9).

8.9.1 GENERAL TYPES OF VISUAL IMPACTS

8.9.1.1 Infrastructure

Roads, buildings, utility poles, and other manmade structures provide forms, textures, and colors that contrast with the natural environment and are often visible from distant vantage points. Visual contrast is somewhat reduced in residential areas, particularly older established

neighborhoods, due to the use of natural materials and colors along with screening afforded by vegetation. New structures may obstruct view corridors from public spaces due to their height, mass, and placement and they may protrude above the tree line in forests. Ridgeline development or development in other elevated or exposed areas may intrude on important public views. Roads, buildings, sidewalks, and other infrastructure elements have the potential to be developed in a way that is inconsistent with the character of the community.

POE Infrastructure

Source: (USDHS, 2010b).

Unlike other states along the Northern Border, Washington's POEs and United States Border Patrol (USBP) stations are more often located in large urban areas. In the Great Lakes Region, the POEs and USBP stations are some of the most congested along the Northern Border. Like most other states along the Northern Border, in the New England Region, the POEs and USBP stations are more often situated in rural areas. Like most other states along the Northern Border, the POE's and USBP Stations are more often found in rural areas in the EOR Region. Providing an aesthetically pleasing environment conducive to positive staff morale is one of the goals of CBP. In 2003, CBP developed the U.S. Border Patrol Facilities Design Guide for USBP Stations (BPF Guide). CBP wants a quality, working environment with plantings, artwork, and other environmental amenities along with architecture that does not call attention to the facility's function and that minimizes the impact of secure construction.

CBP has used the following thresholds in the past to determine if an impact to aesthetic and visual resources caused by USBP station construction would be significant:

- Not meeting mandatory requirements set forth in U.S. Border Patrol Facilities Design Guide (Section 15.1.1); and
- Modifying the site such that an object or building is disproportionate to the landscape, demands attention, or is incompatible with the surrounding landscape.

8.9.1.2 Light and Glare

Projects can have two primary sources of light: light coming from structural interiors and shining through windows and light from exterior sources, such as street lighting, building illumination, security lighting, event lighting in resort areas, traffic headlights, lights for slope grooming, and landscape lighting. Residences, hospitals, and hotels are considered light sensitive, since people

who expect privacy during evening hours typically occupy these places. These inhabitants tend to be disturbed by bright lights. Glare can also pose a problem and comes mainly from sunlight reflecting off buildings with glass and reflective metal surfaces.

At night, lights in developed areas provide illumination, contrasting with the generally uninterrupted darkness of surrounding undeveloped areas. Preservation of dark night skies through appropriate lighting controls is an important goal of many communities. Glare can also be problematic in the evening and at night, caused by the reflection of artificial light sources, such as automobile headlights. Glare is typically related to either moving vehicles or sun angles, although glare from reflected sunlight can occur regularly at certain times of the year. Glare-sensitive areas generally include residences and transportation corridors (e.g., roadways).

The BPF Guide provides design guidelines for exterior lighting. Mandatory requirements are important for safety, security, and convenience. Light poles should be located a minimum of 20 feet from the site perimeter, avoiding the use of high poles in residential neighborhoods. A timer or photocell device should control all exterior lighting.

The POE Guide provides design guidelines for exterior lighting. It also contains mandatory requirements important for safety, security, and convenience. The significant contrast in lighting between the bright booth area at POEs and the darkness from which vehicles approach poses a problem for officers, so bright lighting on the approach route to a primary inspection area is important. Lighting must be adequate to make both the booths and the lanes visible at night (USGSA, 2006). Each commercial primary lane shall have illumination 80 feet before the inspection point to 30 feet after (USGSA, 2006). For critical inspection areas, lighting must be adequate and provide accurate color rendition, since officers need to identify a variety of substances and materials. Walks, parking areas, and other active areas require focused lighting. Cutoff luminaries can light such areas, while reducing light spillage into adjacent areas. The recommended illumination level for outdoor active areas is 3 to 5 foot-candles (FC). The recommended level becomes 1 FC in general outdoor areas and along the border fence extending to 60 feet beyond (USGSA, 2006). Light poles should be avoided in residential areas.

8.9.1.3 Personnel and Activities

Certain CBP operational activities require the use of personnel, vehicles, and technology that do not have a permanent location. Examples include unmanned aircraft system (UAS) missions, temporary checkpoints, and patrols (on foot, by horseback, on ATV, etc.). The amount of personnel activity at permanent infrastructure sites will vary, depending on the time of day and the expected volume of traffic through those sites. Residential areas and natural landscapes used by recreational users tend to have a higher sensitivity to unexpected activities and may be the most severely impacted landscapes and user groups for these actions. However, human activities should take place around infrastructure, such as buildings and roads, and usually would not detract from the visual environment in these instances.

Horse Patrol

Source: (USDHS, 2010b).

8.9.2 NO ACTION ALTERNATIVE

The current CBP program, which would be maintained under the No Action Alternative, involves small and large construction projects including new barriers, roads, towers, and facilities, as well as maintaining current routine operations. Impacts to the visual environment vary greatly with each CBP activity in this analysis, but the overall impacts are expected to be long-term, adverse, and minor. Most viewers should have become accustomed to current CBP activities and infrastructure; no fundamentally new activities or changes to the types of infrastructure are proposed under the No Action Alternative. Routine operations conducted by CBP that may affect the visual environment include setting up and operating mobile traffic checkpoints, conducting aerial, waterborne, ATV, or snowmobile patrols, and deploying mobile surveillance units. These impacts would generally be short-term for most user groups and range from negligible to minor and adverse.

Many CBP activities take place in populated areas that are not as sensitive to visual impacts, primarily in Class I or Class II areas where the activities would not permanently change the viewshed. Most actions would have negligible impacts to the visual environment, while most remodeling of infrastructure or alterations that create more efficient traffic flow would have beneficial impacts. If structures are erected in more visually sensitive areas, site-specific visual impacts could be greater, and mitigation or avoidance measures would be implemented.

8.9.2.1 Small Construction Projects

Construct Pedestrian or Vehicle Fences or Other Physical Barriers

Impacts from the addition of new physical barriers would range from minor and beneficial to minor and adverse. Barriers such as fences can be visually appealing and add to the visual quality of some landscapes (such as rural agriculture areas), depending on the type of fencing. In general, however, CBP uses fences and barriers that are utilitarian in both purpose and placement and often detract from the visual environment (USDHS, 2007a). Fencing and other barriers are generally intrusive visual elements on the landscape's principal formal view and can obscure other scenic views beyond the immediate terrain. Fencing can also change the spatial orientation of views by creating new boundaries and divisions. Despite these impacts, the overall integrity of the landscape is usually maintained. Construction of fences and other physical barriers can affect the visual environment through the following actions:

- Clearing brush in rural areas;
- Clearing obstructions in urban areas;
- Constructing access roads, if necessary, for materials transport;
- Using heavy machinery to dig foundations for posts;
- Using cement trucks to pour foundations;
- Using heavy machinery to transport materials to construction site;
- Installing fence posts into the ground using heavy machinery;
- Installing light posts when adding lighting to fenced area;
- Connecting to local electrical utility; and
- Using lights during nighttime construction.

The nature of the impacts would range from negligible for those landscapes with lower quality views (VRM Class III or IV) or few regular viewers, to adverse, for those land with high-quality views, important cultural or natural resources, or viewers who would have constant exposure to the fence at close distances (USDHS, 2007a). Beneficial impacts are also possible, but are less common (USDHS, 2007a). Such beneficial impacts could include: increased unity or dramatic impact of a view due to the fence; removal of visual clutter within the proposed project corridor which clarifies the view; prevention of littering or despoiling of a viewshed by limiting human access; or association of the fence (by a viewer) with a feeling of greater security.

Removal of existing visual elements would constitute a long-term impact. Where the existing element adds to the visual character and quality of the resource, the impact of its removal would be adverse (USDHS, 2007b). Where the existing element detracts from the visual character and quality of the resource (e.g., rusted equipment or dead trees), the removal could prove beneficial. In all cases, removal of existing elements would expose more of the fence, patrol road, and other tactical infrastructure. In settings where addition of a fence would have a major adverse impact on visual resources, any benefit from removing existing elements would be outweighed by the more dominant adverse visual impact of the fence. Recreational users would most keenly feel these impacts. Impacts due to the loss of access to specific visual resources could be mitigated by adjusting fence placement and including gates that permit access to those resources (USDHS, 2007b).

Construct Roads, Bridges, Culverts, and Low Water Crossings

Infrastructure impacts associated with this action would be similar to those for POE and border station modernization and building construction. Most visual impacts would occur during the construction phase. Normal infrastructure related to vehicle traffic, such as roads, bridges, and culverts, are perceived as normal access routes. Because most viewers access the visual environment through vehicles, the necessary infrastructure related to vehicles is generally a normal part of the visual environment. Most viewer groups and landscapes would experience negligible impacts. By following BMPs and guidelines outlined by CBP's documentation, impacts should be negligibly adverse unless the new infrastructure is located in an area without previous infrastructure and with a Class I scenic quality designation.

8.9.2.2 Large Construction Projects

Construct or Modernize Existing Buildings (FOBs, POEs, USBP stations)

Currently, about 15 large construction projects involving buildings such as POEs associated with POEs and USBP stations are under way or currently being assessed under NEPA along the Northern Border in each region. Potential impacts from the construction of new buildings or expanded facilities would range from short-term and adverse to negligible, while the impacts from modernizing new buildings would mostly be beneficial and minor. Modernization of an existing building can be as simple as a few minor upgrades that go unnoticed by most viewers or as complex as constructing a new building. Likewise, most viewers expect certain lighting conditions on roads and at infrastructure adjacent to roads, so the potential light and glare produced by upgrading existing buildings would have negligible adverse impacts on viewers. Clearing and grading the landscape during construction, as well as demolition of buildings and structures, would remove visual elements from existing viewsheds. CBP would use the POE Guide and BPF Guide to make appropriate choices for landscaping, exterior appearance, and interior design for any improvements to buildings and surrounding area. Beneficial impacts may result from updating these existing facilities (USDHS, 2010c). In addition, aesthetics of the POE may improve because existing aboveground electrical and telephone lines could be buried (USDHS, 2010d).

Overall, the modernization of an existing structure would impact the visual environment in two phases: the actual construction and the permanent facility (USDHS, 2007b). The construction equipment and activities would cause adverse impacts; however, the impacts would generally be short-term and negligible. Constructing a new FOB would have minor negative impacts, mostly due to the remote nature of FOBs and their inherent lack of visibility. In modernization projects, a building already sits on the site. Regardless of the landscape scenic quality or viewer group affected, the adverse impact from additional development would usually be negligible because users would already be accustomed to a building in that location (USDHS, 2010d).

Set Up Permanent Traffic Checkpoints

Permanent traffic checkpoints would have similar visual qualities as an POE; they would include infrastructure such as buildings, fencing, power and telephone lines, parking areas, and special road lanes for inspection. Expected impacts would also be similar, as the visual environment would be associated with a road and thus infrastructure would not be unexpected or visually distracting unless situated along a scenic highway.

Impacts from the construction of new permanent traffic checkpoint would be similar to the construction or modernization of an POE. By following BMPs and guidelines outlined by CBP's documentation, impacts should be long term, negligible to minor, and adverse unless the new infrastructure was situated in a Class I scenic quality area without previous infrastructure. Recreational viewers in Class I areas would experience a minor to moderate adverse impact due to the increase in visible infrastructure in a visually sensitive natural setting.

Install Monopole Towers

Towers affect the visual setting in several ways and their placement may detract from some views and potential impacts from the placement of new towers range from negligible to major

and adverse. While a tower may be visible initially, it will often be less noticeable once it has been part of the landscape for some time or if the project area contains many similar towers (Steel in the Air, 2004).). The WOR, EOR, and NE Regions have large varieties of habitats and topography with generally low-density for their human populations. In contrast, the Great Lakes Region is characterized by high-density populations near the shores of the lakes.

The presence of towers can severely affect landscapes with sparse infrastructure (developed and industrial or undeveloped); conversely, mountain and forested areas can mask the towers' presence. The construction of telecommunication towers in rural areas is often compared with the siting of power-line rights-of-way. Towers, as with power lines, can often be located to minimize impacts along scenic highways or other visually sensitive areas. By placing them in areas already housing other towers, the aesthetic character of an area would not be altered and impacts would be negligible (USDHS, 2002).

High- tech equipment atop this pole is used to see and hear activities of cross-border violators

Source: (USDHS, 2010b).

Monopole communications towers are 80 to 130 feet tall and are installed over a 45-day period. Guy wires will not be used for tower support to reduce the possibility of bird and bat collisions. All construction will follow the Department of Homeland Security's (DHS) Environmental Planning Management Directive 025-01 for Sustainable Practices for Environmental, Energy, and Transportation Management. Once CBP has determined that a given tower is no longer needed, it will be removed within 12 months and the footprint of the tower and its associated facilities will be restored to pre-construction conditions. Towers and associated elements will be sited, designed, and constructed to avoid or minimize habitat loss within and adjacent to the tower footprint. These steps will aid in decreasing the potential visual impact.

The following is a list of potential impact-producing factors associated with previous CBP's monopole installations (USDHS, 2008; USDHS, 2002):

- The unexpected addition of monopole towers to previously undisturbed landscapes includes:
- A tower higher than 10 ft above the dominant trees and higher than the tallest tree within the immediate area:
  - A cleared right-of-way area around the towers, including
    - A 0.5-acre construction staging area; and
    - A permanently cleared 50-ft by 50-ft footprint; and
  - Cleared access roads for construction and maintenance that is:
    - 100 to 200 ft. long in populated areas;
    - to 0.5 mile-long in undeveloped areas; and
    - 12-ft-wide driving surface and 2-ft-wide shoulders (16 feet total width);
- Use of dust suppression measures, such as road watering to minimize airborne particulate matter created during construction;
- The presence of related infrastructure with
  - Electrical lines (located underground unless no nearby commercial power source is available);
  - 9-foot-high chain-link security fence;
- Privacy barrier using landscaping with native vegetation;
- If culverts are needed, they generally will use
  - A 2-to-4-foot diameter pipe approximately 36 ft long; and
  - An 8 by 12 ft equipment shelter.

The primary visual elements are the tower itself and the contrast created by clearing the ground surface. Based on previous studies of tower visibility, the visual modification from these features would tend to be dominant (major in magnitude) when viewed from under 0.5 mi, except when a competing feature or moderate-to-high skyline provides a co-dominant visual feature, such as a city with tall buildings (USDOT, 1999). A high skyline without focal-point sensitivity could render the visual modification noticeable, but not dominant. Between 0.5 mi and 1.5 mi, the tower would appear visually dominant only if the skyline was low and had no other competing features of interest. Beyond 1.5 mi, the tower would be barely noticeable or, at worst, quite subordinate (USDOT, 1999). Given the high density of viewers in developed and industrial areas in much of the Great Lakes Region, towers may be obscured by the complexity of the skyline, but may also cause a negative impact in viewsheds with low competing interest, such as a view of a lake. Given the low human density in much of the WOR, EOR, and New England Regions and their varying topography, towers would not affect large numbers of viewers and would likely be obscured by the complexity of the terrain.

Potentially major long-term visual impacts would occur if towers were sited in high-sensitivity areas or landscapes (VRM Class I areas). These impacts would be felt most keenly by recreational users, which represent a large user group in the WOR and EOR Regions due to the

amount of public lands used for recreation, especially in the western part of this region. To eliminate this potential for significant major adverse visual impacts, proposed towers and associated facilities should be situated at least 1.5 miles from areas designated for their visual sensitivity (e.g., scenic roads, rivers, national parks and monuments, scenic vistas within national and state forests, and open-space districts) whenever feasible. With this siting, no major adverse long-term impacts should occur. Additionally, "stealthing" a communication tower can help the tower blend in by making it look like a fake tree, cactus, bell tower, or flagpole.

OAM Facilities

OAM air facilities are primarily built upon existing airports and air fields. By following BMPs and guidelines outlined by CBP's documentation, impacts from air facility construction activities should be minor and adverse unless the new infrastructure is located in an area without previous infrastructure and with a Class I scenic quality designation.

8.9.2.3 Routine Operational Activities at an POE, USBP Station, or FOB

The impacts caused by most operations and technologies at POEs would remain negligible given their small size or their proximity to other CBP infrastructure. These operations and technologies are consistent with the presence of CBP's facilities and would not obscure or result in abrupt changes to the complexity of the landscape and skyline when viewed from points readily accessible to the public (USDHS, 2007c). CBP facilities are not considered valuable scenic environments and the presence of these technologies would not detract from the visual environment. Most viewer groups and landscape types would experience negligible impacts. The most adverse effect from routine operations would be traffic congestion at times of high commuter volume. In most cases, the adverse effects to the visual environment would be long-term and negligible to minor.

Routine operational activities that would result in negligible visual impacts include:

- Canine and equine patrols;
- USBP station and POE operations;
- On-road vehicle patrols;
- Limited hours of operations in rural locations; and
- Agricultural Inspections.

Routine operational technologies that would result in negligible visual impacts include:

- Nonintrusive/nondestructive inspection and detection technologies;
- Radio frequency identification devices (RIID) and related items; and
- Remote video surveillance systems (RVSS).

A CBP officer checks an individual's documents as a car enters the United States

Source: (USDHS, 2010b).

Set Up and Operate Mobile Traffic Checkpoints

High visibility is an inherent requirement of a traffic checkpoint; as such, modifications to the visual environment of the road have the potential for major adverse impacts. Checkpoints in areas where CBP operates, however, are common and most motorists expect to encounter them. Normal road activities should not affect views of the road from surrounding landscapes but may become compromised if the duration and intensity of road activity is longer or greater than usual. Temporary barriers and facilities for mobile traffic checkpoints would have impacts similar to the construction phase of permanent facilities. Activities associated with mobile traffic checkpoints expected to affect the visual environment include:

- Temporary roadblocks installed primarily by mobile truck-mounted infantry or police units for disrupting unauthorized or unwanted movement or military action;
- Potable rest facilities;
- Warning signs;
- Potable lighting if operating at dusk or night;
- Stoppage of all vehicles for inspection, for those with obvious violations, or for those that appear suspicious; and
- Use of orange cones to slow down and direct traffic.

Both the construction and existence of a mobile-traffic checkpoint would be temporary; thus, impacts would be short-term. Although through travelers would be most affected, the adverse impacts would likely be minor. Even visually unappealing checkpoints are perceived as temporary and most viewer groups and landscapes would experience negligible impacts. The impacts would not be sufficiently severe to diminish the integrity of most landscape features, thus the checkpoints would produce short-term, minor, adverse impacts.

Conduct Unmanned Aircraft System (UAS*)* Missions and (UAS) or Manned Aerial Surveillance Patrols

Currently, unmanned aircraft systems (UASs) take off, fly, and land within a specified range in the terminal control area and most potential impacts from conducting UAS missions would be short-term and negligible. The potential for using civil airspace, however, is possible in the near future. CBP uses specific flight plans which incorporate various flight patterns, duration, size, and altitude. They fly in all terrains and are designed to fly at high altitudes with low detectability in any terrain. CBP uses existing airfields for takeoff, landing, and storage of fixed-wing aircraft and some rotary aircraft. Some CBP facilities have helipads. CBP currently operates light helicopters and fixed-wing manned aircraft in addition to UASs. Approximately 15–20 CBP aircraft flights take place each day in each region.

Two Predator-B UASs awaiting their next mission

Source: (USDHS, 2010b).

Most visual impacts related to aircraft studied by the Federal Aviation Administration (FAA) result from airport facilities (USDOT, 2007). Airport-related lighting facilities and activities could visually affect surrounding residents and other nearby light-sensitive areas such as homes, parks, or recreational areas. Disturbing light emissions may emanate from the following sources associated with a proposed action: airfield and apron lighting, visual navigational aids, terminal lighting, employee/customer parking lighting, both airborne and ground-based aircraft operations, and roadway lighting. Consistency with FAA and other relevant design standards and compatibility with existing structures are also important factors that should be considered to minimize impacts to the visual environment.

Three UH-60 Blackhawk helicopters

Source: (USDHS, 2010b).

The flight path for most missions is usually of low sensitivity due to the sparse population and proximity to existing structures. Some sensitive areas include NPS and USFS properties; consultation with those agencies for clarification of potential impacts would take place for site-specific projects. Aircraft in flight are a common sight. According to the FAA (USDOT, 2009), about 7,000 aircraft are flying overhead in the United States at any given time. Most viewer groups and landscapes would experience negligible impacts from the flights. Impacts to visual resources are expected to be short-term and negligible from either manned aerial surveillance patrols or from UAS missions.

Conduct Waterborne Patrols and Continue to Standardize and Modernize OAM Fleet

Office of Air and Marine (OAM) fleet vehicles and infrastructure, alongside other commercial and recreational vehicles, are already part of the visual environment on most water systems and most potential impacts would be long term and negligible to minor with some beneficial impacts resulting from modernization of facilities. Currently, CBP conducts about 514 vessel operations per day in this region (USDHS, 2010e). CBP plans to maintain current infrastructure, such as boat launches, facilities to overwinter boats (OAM stores most boats), and secure facilities to hold and process arrestees, weapons, ammunition, or seized contraband. There are four classes of marine vessel: Coastal Enforcement, Interceptor, Platform, and Riverine. Riverine Class vessels are used by USBP on small lakes and rivers. On the coasts, the Great Lakes, and river tributaries, OAM uses Coastal Enforcement, Interceptor, and Platform Class vessels.

The visual presence of watercraft on most lakes and rivers is commonplace and expected. Watercraft in areas of high visual sensitivity (Class I or II), however, causes adverse impacts to the viewshed. Recreational users may experience minor and adverse impacts, although impacts to other viewer groups would be negligible. The impacts to the visual environment from the continued use and maintenance of the OAM fleet would be long-term, negligible to minor, and adverse. Some beneficial impacts to the visual environment may occur with modernization of the facilities.

Conduct ATV Patrols or Snowmobile Patrols

All-terrain vehicle and snowmobile patrols take place in areas inaccessible by motor vehicles. Currently, approximately 20 ATVs and two snowmobiles are used per sector to intercept illegal crossing of humans, cargo, and drugs and potential impacts from these patrols would generally

be negligible to the visual environment. The primary complaint among nonmotorized users is that the noise destroys the solitude of natural settings and may negatively affect wildlife and vegetation (USDHS, 2010a). In the New England Region, ATV use in protected recreational areas can degrade the visual quality of the landscape. Trail erosion and compaction caused by off-road and all-terrain vehicles reduce the visual quality of recreational trails and require management action to develop and maintain safe, usable, and aesthetically pleasing trails.

ATV Patrol

Source: (USDHS, 2010b).

Impacts from the use of off-road vehicles would be felt most strongly in visually sensitive areas (Class I or II), where they could be minor to moderate and adverse. However, the number of ATVs and snowmobiles operated by CBP represents only a fraction of the total number of similar vehicles in the United States, estimated at almost four million in 2000 (USEPA, 2000). For the most part, these vehicles only interrupt the visual environment temporarily for a few people at a time (less than 100) due to their use in sparsely populated and remote regions. Most viewer groups and landscapes would experience negligible impacts. For most areas without a high level of visual sensitivity, the impacts from ATV or snowmobile patrols would be short-term and negligible to minor.

Deploy Mobile Surveillance System Units

Mobile Surveillance System (MSS) units combine radar, a daytime camera, a nighttime camera with thermal imaging, a GPS unit, and a laser rangefinder. Each unit can be raised several meters in the back of a pickup truck and the radar makes a visual sweep across its range many times a minute. These units have roughly the same visual imprint as a large vehicle and are restricted to areas accessible by vehicle; therefore, they would not generally occur in visually sensitive or Class I landscapes. Most viewer groups and landscapes would experience negligible impacts.

Border Patrol agent assigned to the Miami Sector deploys a Mobile Remote Video Surveillance System (MRVSS)

Source: (USDHS, 2010b).

In addition to the impacts above, induced growth and development or traffic changes associated with project alternatives could produce indirect impacts on visual resources within the border region. Increased traffic congestion, along with buildings constructed for housing and businesses to support additional CBP staff could alter the visual landscape. These impacts would most likely be adverse, but negligible to minor. Some beneficial impacts would occur with modernization of some CBP facilities, and activities could increase the visual quality of an area or alleviate traffic pressure at some ports.

8.9.3 FACILITIES DEVELOPMENT AND IMPROVEMENT ALTERNATIVE

The Facilities Development and Improvement Alternative would focus on providing new permanent facilities, such as USBP stations, and other facilities to allow USBP agents to operate more efficiently and respond to situations more quickly. There are about 30 small projects (parking lot repairs, access road repairs, etc.) and about 20 large projects (constructing new facilities) that would occur in each region in addition to the No Action Alternative. As the analysis in this section demonstrates, by following BMPs and guidelines outlined in CBP's documentation, impacts should be long term, negligible to minor, and adverse unless the new infrastructure is located in an area without previous infrastructure and with a Class I or II scenic quality designation. Class I and II areas without infrastructure would experience minor to moderate adverse impacts to the visual environment from the addition of new infrastructure. Modernization of existing facilities would overall have a beneficial impact on visual resources as described under the No Action Alternative.

The proposed large facilities by themselves would not necessarily produce major impacts. Instead, a project could produce a major impact if it is sited in visual proximity to a sensitive resource. For example, a an FOB may be situated in the middle of a scenic view that is visible within a panoramic vista viewable from recreational users in a national park, thus detracting would detract from the visual quality of the landscape. Recreational viewers would be the most impacted viewer group for this action. The potential significance of the impact could be analyzed using the VRM classification model as the guide for the determination. Modernization of existing facilities would overall generally have a beneficial impact on visual resources as described under the No Action Alternative.

8.9.3.1 Construct a New Facility

Constructing a new facility would have similar impacts to constructing other infrastructure as discussed in the No Action Alternative. Overall, the construction of a new building would impact affect the visual environment in two phases: the actual construction and operation of the permanent facility. There would be adverse impacts from construction equipment and activities; however, the impacts would generally be short-term and negligible. If the BPF Guide is followed according to light for illumination levels, there would be negligible impacts from the addition of exterior lighting. Recreational viewers would be the most impacted viewer group for this action. By following BMPs and guidelines outlined by in CBP's documentation, impacts should be long term, negligible to minor, and adverse unless the new infrastructure would be is located in an area without previous infrastructure that had a Class I scenic quality designation.

As with the No Action Alternative, indirect visual impacts could occur from induced growth. These would most likely be adverse at negligible to minor levels. Increased traffic congestion and development of buildings for construction of housing and businesses to support increases in CBP's staffing could alter the visual landscape. However, with this alternative, some beneficial impacts would be expected as under this alternative with modernization of some CBP facilities and activities could increase the visual quality of an area or alleviate traffic pressures at some ports.

8.9.4 DETECTION, INSPECTION, SURVEILLANCE, AND COMMUNICATIONS TECHNOLOGY EXPANSION ALTERNATIVE

The Detection, Inspection, Surveillance, and Communications Technology Expansion Alternative focuses on deploying more effective detection, inspection, surveillance, and communications technology and making improvements and upgrades to current technology. This alternative would increase the number of monopole towers. Because the towers would be so far apart, viewers would likely see only one tower in any particular view. As the following analysis shows, with proper siting, no major adverse long-term impacts should result and visual impacts would be long-term, minor, and adverse.

About 100 small construction projects are planned under this alternative, such as towers and other infrastructure to mount antennas. This alternative also includes increasing aircraft operations to approximately 30 in the Great Lakes and EOR Regions and about 23 flights per day in the WOR and New England Regions; and increasing marine vessel operations to fewer than 10 operations in the EOR and about 21 in the WOR Region per day. About 200 nonmotorized and 1,300 motorized ground patrols would occur each day in each of the regions. Use of systems including remote sensors, short-range radar, RVSS and MSS, new camera systems, and stationary communications systems would increase to about 2500 hours per day in each of the regions. The use, deployment, and upgrades of these technologies would be similar to those in the No Action Alternative: Typically, with the exception of monopole towers, these actions would have a negligible impact on the visual environment, because many changes to CBP's technologies do not change the visual environment. Therefore, the impacts from this alternative on the visual environment are expected to be short-term, minor, and adverse during construction of new technologies and upgrades of technology infrastructure, and long-term and negligible for the operation of existing and increased technology.

Potentially major adverse long-term visual impacts would occur if towers were cited in high-sensitivity areas or Class I areas. To eliminate the potential for major adverse visual impacts during site selection, proposed towers and associated facilities should be located at least 1.5 mi from areas designated for their visual sensitivity (e.g., scenic roads, rivers, national parks and monuments, scenic vistas within national and state forests, and open-space districts) when feasible. Recreational users and residential viewers in either natural or urban landscapes would most keenly feel these impacts. Additionally, "stealthing" a communication tower can help the tower blend in by making it look like a fake tree, cactus, bell tower, or flagpole. Deployment of MSS vehicles in visually sensitive areas would cause minor adverse visual impacts, but these impacts would be temporary and no long-term adverse impacts would occur.

Indirect impacts on visual resources focus on the potential for changes along the border from possible induced growth and development or traffic changes associated with project alternatives. Increased detection, inspection, surveillance, and communications along the border would negligibly affect growth and development or traffic congestion; thus, the indirect impacts of this alternative would be negligible. Some beneficial impacts due to better processing times with use of advanced technology may result.

8.9.5 TACTICAL SECURITY INFRASTRUCTURE DEPLOYMENT ALTERNATIVE

The Tactical Security Infrastructure Deployment Alternative would focus on constructing additional barriers (selective fencing, vehicle barriers, etc.) at select points along the border to deter and delay cross-border violators. Generally these activities would result in long-term minor adverse impacts. It would also include construction of access roads and related facilities to increase the mobility of USBP agents for surveillance and response to international border violations. About 30 small projects (< ¼ mile in length) and about 5 large projects (> ¼ mile in length) would take place under this alternative. The construction of roads and barriers usually detracts from the visual environment as discussed in the No Action Alternative section. These activities would be avoided or mitigated in Class I or Class II VRM locations to prevent major impacts to sensitive viewsheds. Recreational users in natural landscapes would most keenly feel these impacts. In general, constructing more of these types of infrastructure would result in long-term minor adverse impacts to the visual environment in any class and negligible impacts to industrial landscapes.

As in the No Action Alternative, indirect impacts on visual resources center on the potential for change along the border due to induced growth and development or traffic changes associated with project alternatives. Constructing new barriers along the Northern Border, however, would have negligible effect on growth and traffic patterns. Modernization of some CBP facilities could boost the visual quality of an area.

8.9.6 FLEXIBLE DIRECTION ALTERNATIVE

The Flexible Direction Alternative allows CBP to use a mix of any of the actions described in the previous four alternatives on an as-needed basis to respond to evolving threats along the border. The potential extent of the visual impacts could be analyzed using the VRM model as guidance for the determination. Impacts to the visual environment vary greatly with each CBP activity in this analysis, but the potential overall impacts are expected to be long term, adverse, and minor.

Typically, with the exception of new construction and monopole towers, these actions would have a negligible impact on the visual environment, because many changes to CBP's technologies do not change this environment. Most viewers should be accustomed to current CBP activities and infrastructure, and no fundamentally new activities or changes to the types of infrastructure used are proposed. Most CBP activities take place in populated areas that are not as sensitive to visual impacts and most activities that occur in VRM Class I or Class II areas would not permanently change the viewshed. Most actions would have negligible impacts to the visual environment and most remodeling of infrastructure or change in activities that create more efficient traffic flow would have beneficial impacts. Therefore, the impacts from this alternative on the visual environment are expected to be short-term, minor, and adverse during the construction of new technologies and upgrades of technology infrastructure, and long-term and negligible for the operation of existing and increased technology. With the exception of updating POE facilities and technologies, most proposed CBP activities do not occur within the same visual setting, and thus few cumulative effects from the maximum of all three alternatives should occur. Modernization of existing facilities would overall have a beneficial impact on visual resources as described under the No Action Alternative.

On Patrol

Source: (USDHS, 2010b).

Impacts on visual resources could also result from possible induced growth and development or traffic changes associated with project alternatives. These impacts would most likely be adverse, but negligible to minor. Some beneficial impacts are expected as modernization of some CBP facilities and activities could enhance the visual quality of an area or alleviate traffic pressure at some ports.

8.9.7 BEST MANAGEMENT, MINIMIZATION, AND MITIGATION

CBP seeks to avoid, minimize, repair, and reduce the impacts of its actions on the human environment. It does so with a combination of best management practices (BMPs), siting plans, design strategies, mitigation measures, and monitoring plans best suited to the scale and the location of the particular action. Towards that end, in implementing its proposed action CBP

could choose from among the following actions to avoid or minimize impacts to the visual environment.

Mitigation measures for visual resources center on reducing the visual contrast associated with implementation of project alternatives. Because visual contrast is most closely associated with the addition of structural elements and changes to landforms, the following mitigation measures are organized into those related to structures and those related to landforms. Appendix G contains a more complete list compiled by BLM, but some techniques to reduce impacts follow.

Structures:

- Use structures, when possible, that are simple, slim, and low-profile with minimal bulk and spread, avoiding over-monumentation, reducing structure depth (compared to deck edge), and maintaining proportionality;
- Use colors for structures that complement the natural landscape;
- Design tapered and rounded forms and edges, where appropriate, to soften appearance and reduce perceived bulk (for example, on bridge piers); and
- Use repeating colors and textures to provide continuity with other structural features, such as retaining walls.

Landforms:

- Implement sensitive grading techniques that blend grades with the natural terrain;
- Control erosion on all disturbed slopes and revegetate using native plant species, as appropriate, for adjacent lands and terrain;
- Reduce color contrast by staining new rock cuts; and
- Selectively clear areas where alternatives encroach on forest edge.

Mitigation measures to minimize impacts from the monopole communications towers include: painting towers to blend into the background and using decorative tower perimeter fencing in residential areas. The color and composition of poles can be chosen to blend with or complement the surrounding landscape. Lines constructed with H-frame poles or on wood rather than steel structures may blend better with natural surroundings. Stronger conductors can minimize line sag.

Right-of-way (ROW) management can mitigate aesthetic impacts with use of vegetative screens that block views of the line, leaving the ROW in a natural state at road crossings, creating curved or wavy ROW boundaries, pruning trees to create a feathered effect, and screening and piling brush from the cleared ROW so that it provides wildlife habitat.

The mitigation measures for the security fence include using context-sensitive design for the fence, or design features that minimize the appearance of fencing, including a black, visually permeable fencing.

Any infrastructure or action must be completed under existing regulations such as:

- All POEs must be designed in accordance with the U.S. POE Design Guide (USGSA, 2006);
- GSA-owned POEs must be designed in accordance with GSA P-100, Facilities Standards for the Public Buildings Service; and
- USBP Stations must comply with the guidelines outlined in the 2003 U.S. Border Patrol Facilities Design Guide (BPF Guide).

8.9.8 SUMMARY OF IMPACTS

Table 8.9-1 summarizes the impacts of CBP's operations on visual resources.

Table 8.9-1. Summary of Visual and Aesthetic Resources Impacts

Impact-Producing Activity	Level of Impact				
	Negligible Adverse	Minor adverse	Moderate Adverse	Major Adverse	Beneficial
NO ACTION ALTERNATIVE					
Small construction projects		X			
Large construction projects		X			X
Checkpoint operations	X				
Ground operations—motorized		X			
Ground operations—nonmotorized		X			
Aircraft operations	X				
Vessel operations	X				
Operation of NII systems	X				
Operation of sensor and other technologies	X				
OVERALL IMPACT		**X**			
FACILITIES DEVELOPMENT AND IMPROVEMENT ALTERNATIVE					
Small construction projects		X			
Large construction projects			X		X
OVERALL IMPACT		**X**			

Impact-Producing Activity	Level of Impact				
	Negligible Adverse	Minor adverse	Moderate Adverse	Major Adverse	Beneficial
DETECTION, INSPECTION, SURVEILLANCE, AND COMMUNICATIONS TECHNOLOGY EXPANSION ALTERNATIVE					
Small construction projects (towers and other infrastructure to mount antennas, etc.)		X			
Ground operations—motorized		X			
Ground operations—nonmotorized	X				
Aircraft operations	X				
Vessel operations	X				
Operation of NII systems	X				
Operation of sensor and other technologies	X				
OVERALL IMPACT		**X**			
TACTICAL SECURITY INFRASTRUCTURE DEPLOYMENT ALTERNATIVE					
Small construction projects		X			
Large construction projects			X		X
OVERALL IMPACT		**X**			
FLEXIBLE DIRECTION ALTERNATIVE					
Small construction projects		X			
Large construction projects		X			X
Checkpoint operations	X				
Ground operations—motorized		X			
Ground operations—nonmotorized	X				
Aircraft operations	X				
Vessel operations	X				
Operation of NII systems	X				
Operation of sensor and other technologies	X				
OVERALL IMPACT		**X**			

8.10 ENVIRONMENTAL CONSEQUENCES TO SOCIOECONOMIC RESOURCES

This section considers the adverse and beneficial impacts to the socioeconomic resources detailed in sections 4.10, 5.10, 6.10 and 7.10 that may result from U.S. Customs and Border Protection's (CBP) alternative actions.

Socioeconomic resources reflect demographic trends and existing human capital as well as accumulated wealth, opportunities for employment, and the overall well-being of the population. In the United States, more than 28 million people, approximately 9.1 percent of the national population, live in counties that overlap the geographic area within 100 miles of the U.S-Canada border. Approximately 81.8 percent (26 million people) of the entire Canadian population resides within the study area. Most major cities in Canada, including Vancouver, Toronto, and Montreal, sit along Canada's southern border. Canada's total population is, therefore, significantly more concentrated along the border compared to the American population. The study area is relatively prosperous; the flow of goods and services, as well as people, across the border contributes to the economic activity of the Northern Border area as a whole. For descriptions of the regional affected environments for socioeconomic resources see sections 4.10.2 (West of the Rockies), 5.10.2 (East of the Rockies), 6.10.2 (Great Lakes), and 7.10.2 (New England). Two appendices provide further information on socioeconomic resources: Appendix P, Regional Economic Profiles of Selected POEs and USBP Stations contains tables summarizing key economic sector data and trade statistics for the POEs and USBP stations profiled in the regional report sections; and Appendix Q, United States–Canada Trade Statistics, has trade statistics for surface modes of transportation across the Northern Border.

Socioeconomic impacts may be caused by an activity that:

- Disrupts the flow of goods, services, and people across the border;
- Disrupts the social fabric of border communities;
- Changes regional income or employment levels, directly or indirectly;
- Affects population levels or population distribution;
- Changes a population's demographics;
- Limits the level or quality of regional economic activity, for example, by reducing the opportunity for regional development or degrading land used for recreation; or
- Reduces property values or otherwise affects housing markets.

This section describes the socioeconomic impacts associated with the alternatives, as well as factors that may affect the magnitude of impact. The major categories of potential socioeconomic impact are:

- Social welfare and regional economic impacts associated with decreased or degraded land uses;

- Impacts to land and property values that preclude or degrade potential land uses;
- Impacts to the social fabric of communities along the border; and
- Economic impacts of time delay on both individuals and trade activity.

Particular CBP activities are not likely to affect socioeconomic resources. Nonmotorized ground operations (i.e., horse and foot patrol) and certain surveillance technologies are localized activities that are unlikely to result in sufficient noise to degrade land values or interrupt economic activities, such as recreation. Due to the lack of expected socioeconomic impact, these activities are not considered further in this section.

Overall, the direct and indirect socioeconomic impacts of all of CBP's alternatives are expected to be moderate and adverse (Table 8.1-1). Both adverse and beneficial impacts associated with temporary construction activities and patrols would be minor and temporary. Adverse impacts from time delays along the border due to traffic checkpoints and POE closures, however, may be sustained and require some level of adjustment for individuals and trade activities at particular border crossings. None of the alternatives would adversely affect other socioeconomic resources, such as population demographics. Mitigation measures include siting CBP's facilities away from recreational areas and performing construction activities during off-peak hours or seasons for recreation activities, and off-peak border crossing times (Section 8.10.6). Cumulative impacts along the Northern Border as a whole, therefore, would be minor, though some potential exists for greater impacts on a site-specific basis in places where other development activities are concentrated.

Table 8.10-1 summarizes the categories of socioeconomic impact that may occur, by activity. Sections 8.10.1 through 8.10.5 describe impacts associated with each of CBP's program alternatives. Section 8.10.6 provides information on project guidelines or measures that may alleviate potential impacts.

Table 8.10-1. Major Categories of Socioeconomic Impact Associated with CBP's Activities

U.S. Customs and Border Protection Activity	Social Welfare and Regional Economic Impacts of Decreased or Degraded Recreation	Land and Property Value Impacts of Precluding or Degrading Potential Land Uses	Impacts to the Social Fabric of Border Communities	Socioeconomic Impacts of Time Delay on Individuals and Trade Activity
Small construction projects (<1 acre and <1/4 mile)	✓			✓
Large construction projects (>1 acre and >1/4 mile)	✓	✓	✓	✓
Small on-site trade and travel processing operations				✓
Large on-site trade and travel processing operations				✓
Checkpoint operations				✓

U.S. Customs and Border Protection Activity	Social Welfare and Regional Economic Impacts of Decreased or Degraded Recreation	Land and Property Value Impacts of Precluding or Degrading Potential Land Uses	Impacts to the Social Fabric of Border Communities	Socioeconomic Impacts of Time Delay on Individuals and Trade Activity
Ground operations–motorized	✓		✓	
Ground operations–nonmotorized				
Aircraft operations	✓		✓	
Vessel operations	✓		✓	
Operation of NII systems			✓	✓
Operation of sensor and other technologies			✓	✓

Social Welfare and Regional Economic Impacts of Decreased or Degraded Recreation

Most of CBP's activities identified in Chapter 2 have some potential to affect the relative attractiveness of areas surrounding a project site for recreational activities, such as hiking, hunting, fishing, snowmobiling, all-terrain vehicle (ATV) use, or wildlife viewing. Much of the landscape along the border is undeveloped (sections 4.8, 5.8, 6.8, and 7.8) and may be targeted by individuals intending to commune with nature through their recreational activities. CBP activities that interrupt the natural landscape, either through noise (construction) or by increasing regional development and access, may degrade the quality of adjacent recreation activities. In addition, potential beneficial impacts to recreational visitors may result from a feeling of added security due to the presence of patrolling CBP units. Two general categories of economic impact may be associated with degrading the quality of an area for recreation: social welfare impacts and regional economic impacts.

Social Welfare Impacts

Social welfare impacts reflect changes in utility (defined by economists as a sense of well-being) that individuals derive from recreation activities. These impacts are measured by what individuals are willing to pay for something above and beyond what they are required to spend (e.g., on travel and equipment for recreation). Social welfare impacts occur: when individuals continue to engage in the recreation activity at the affected site, but experience a decreased willingness to pay for the activity; or when individuals choose to visit a less-preferred substitute site or activity for which they have a lower willingness to pay.

A significant body of published economics literature focuses on monetizing values for many types of recreation. These studies evaluate participation levels and spending, for example for fishing or boating, to determine individuals' willingness to pay for the activities (i.e., per unit values for various recreation activities). In short, individuals reveal their preferences for recreational activities through their behavior. Additionally, other studies focus on the effect of site-specific characteristics (e.g., species present for wildlife viewing opportunities) and other factors (e.g., level of crowding) on willingness to pay for recreation.

The following information is required to quantify a total social welfare impact of any CBP alternative on regional recreation activities:

- The specific sites at which the identified activities will occur;
- The baseline levels of recreation occurring adjacent to these sites (i.e., the numbers of individuals participating in various recreation activities);
- Site- or state-specific per-unit values for various recreation activities;
- Individuals' elasticity of demand for recreation trips (i.e., the percent change in quantity of trips demanded associated with a percent change in trip price); and
- The marginal change in willingness to pay, associated with the disturbance introduced by the various CBP activities (i.e., noise, increased traffic, or increased proximity to development).

While some of these categories of information are available at the level of a programmatic EIS, information on the types and levels of recreation activities surrounding a potential CBP project site is largely unknown. Recreation along the border may occur on many types of land not necessarily identified as recreation areas (e.g., hunting on private land or wildlife viewing on conservation lands). It is, therefore, difficult to determine where and at what levels recreational activities are occurring. Further, while data on willingness to pay for various recreation activities are available, information on the relationship between particular levels of noise disturbance or proximity to development and willingness to pay for recreation is generally scarce. Section 8.17 discusses the impacts of CBP's various alternatives on recreational values.

Regional Economic Impacts

Regional economic impacts reflect changes in expenditures (and in turn, their contribution to output, jobs, and wages) associated with reduced participation in recreation in a region. Regional economic impacts may occur when individuals choose a less-preferred substitute site or activity due to the degraded quality of the preferred site. If individuals participate in the same activity (and same level of spending) at an alternative site, regional economic benefits may result at the substitute site. In this sense, expenditures represent a transfer from one group or area to another (i.e., "distributional impacts"). Within a regional economy, levels of expenditures affects revenues, employment, and tax receipts—all of direct concern to residents and proprietors.

Regional economic impact analysis can assess the potential localized impacts of an economic activity, such as recreation. Specifically, such an analysis produces a quantitative estimate of the magnitude of economic activity associated with recreation. Regional economic impacts are commonly measured using regional input/output models, which rely on multipliers that represent the relationship between a change in one sector of the economy (e.g., expenditures by recreationists at local businesses) and the effect of that change on economic output, income, or employment in other local industries (e.g., suppliers of goods and services to those businesses). These economic data generate a quantitative estimate of shifts of jobs and revenues across the local economy.

Regional economic impact analysis provides useful information about the scale and scope of localized impacts. Measures of regional economic effects, however, generally reflect shifts in resource use rather than welfare losses. Thus, these types of effects are reported separately from welfare effects (i.e., not summed).

To quantify the regional economic impacts of changes in recreation levels associated with CBP's actions, additional information is required industry expenditures associated with the various recreation activities. In addition, regional multipliers or an input-output model is required. While both of these requirements may exist, a key piece of information is the specific change in recreation associated with CBP's activities, which, as described, remains difficult to forecast.

Decreased willingness to pay for recreation due to CBP's activities along the border may be temporary due to construction, or sustained due to new roads or infrastructure in pristine wilderness areas. Generally, sites adjacent to the greatest levels of recreation will experience the greatest social welfare impacts of a particular disturbance (noise or development). In addition to recreation levels, the type of recreation is a key factor in determining the magnitude of impact.

Federal and state lands in the WOR Region identified for recreational use account for 2.6 million acres, or 7.9 percent of total land area in the region (Table 4.8-2). Section 4.17.2 profiles Federal recreational sites. The state with the largest area devoted to recreational land use in the WOR region is Washington (1.9 million acres), which includes Olympic National Park. In addition, recreational activities occur in portions of Glacier National Park in Montana that overlap the WOR Region.

Federal and state lands in the EOR Region identified for recreational uses account for 848,000 acres, or 1.2 percent of total land area in the region (Table 5.8-2). Section 5.17.2 profiles Federal recreational sites. The state with the largest area devoted to recreational land use in the EOR region is Montana (514,000 acres), which includes portions of Glacier National Park. This suggests limited recreational activities are likely to occur adjacent to projects in the EOR Region.

Federal and state lands in the Great Lakes Region identified for recreational use account for 605,000 acres, or 1.2 percent of total land area in the region (Table 6.8-2). Section 6.17.2 profiles Federal recreational sites. The states with the largest area devoted to recreational land use are Michigan (214,000 acres) and New York (169,000 acres). About half of the recreation lands in the region are in state recreation areas and state parks.

Federal and state lands in the New England Region identified for recreational use account for 516,000 acres, or 2.0 percent of total land area in the region (Table 7.8-2). Section 7.17.2 profiles Federal recreational sites. The state with the largest area devoted to recreational land use is Maine (370,000 acres). The largest single recreational area in the region is Baxter State Park in Maine. This suggests limited recreational activity is likely to occur adjacent to projects in the New England Region.

Land and Property Value Impacts of Precluding or Degrading Potential Land Uses

Implicit in the value of a parcel of land is the potential of that land for future uses. For example, the value of a parcel of agricultural land within the study area may incorporate the value of agricultural rents (i.e., the commercial present value of the crops or other agricultural inputs) and

the option value for potential future development (i.e., the present value of expected increases in land rents after conversion to an alternative use, such as development) (Capozza and Li, 1994). If either agriculture or development is precluded on the parcel, its value will decrease. This reduction in value becomes a cost to the landowner, with the magnitude of decline dependent upon the type of land use restriction imposed.

Certain CBP activities along the Northern Border may remove land from a particular use and thus reduce its value. This may occur, for example, where CBP purchases land for constructing facilities and other infrastructure. If CBP purchases the land from a willing seller, however, the landowner is compensated for this loss.

CBP's activities may also affect the value of neighboring properties by introducing a community disadvantage, such as noise levels or visual disturbances. If individuals are willing to pay less for a property adjacent to a POE or other CBP site, construction of new infrastructure may impose a negative impact on the surrounding properties.

Finally, changes in property values may have regional impacts in terms of the amount of tax revenue collected by local governments and reinvested in local services. Lower property values should lead to lower assessed values with a corresponding decreases in tax revenue. Also, land purchased by the Federal government would no longer be subject to local property taxes.

Information required to estimate the economic impacts of CBP's activities on property values includes:

- The specific sites at which the identified CBP activities will occur;
- The geographic distribution of developed or developable lands surrounding the sites; and
- The change in willingness to pay for properties associated with the disturbance caused by various CBP activities (i.e., noise or visual disturbance).

The effects of CBP's activities on property values may occur in areas adjacent to existing development. As these areas are also already adjacent to potential noise and visual disturbances, below some threshold, residents may not consider CBP's activities to introduce an incremental disturbance. It is possible, therefore, that impacts are relatively high for properties in more rural areas as these properties may be purposefully sited away from existing development.

Impacts to the Social Fabric of Border Communities

Socioeconomic impacts to lifestyles of border communities may be the most difficult to quantify. This category of impact may occur when individuals' day-to-day activities become more difficult, such as traveling to school, participating in community events across the border, or visiting friends in nearby communities. CBP activities that impede routine crossing or cause increased wait times may affect the social fabric of communities.

For example, in the WOR Region, Point Roberts in Washington State sits on a peninsula of land extending from Canada and is not physically connected to the United States. To attend school in nearby Blaine, students in the community must cross the border at least twice a day, once into

Canada and once back into the United States. Thus, the livelihood of this community depends on accessible and efficient border crossings.

In the Great Lakes Region, the Ambassador Bridge connects Detroit, Michigan with Windsor, Ontario. The POE supports a significant commuter population into the United States from Canada (more than 55 percent of travelers report that they cross the border daily or once a week). Weekend traffic is also significant at this POE in both directions, suggesting that shopping, recreation, and entertainment trips are popular at these times. Thus, the day-to-day activities of these communities also depend upon accessible and efficient border crossings.

The border in the New England Region bisects the communities of Calais, Maine and St. Stephen, New Brunswick (Calais POE). Residents of cross-border communities often have close ties and function as a single community. The fire departments and high schools often cooperate and share resources. The border also bisects the communities of Madawaska, Maine and Edmundson, New Brunswick (Madawaska POE). Thus, the lifestyles of these communities depend on accessible and efficient border crossings. CBP has no plans to construct fencing through cross-border communities under any of the alternatives in this analysis.

To quantify these impacts, information would be required regarding individuals' willingness to pay to avoid lifestyle disruption. This value is site-specific and depends on whether the disruption affects individuals' ability to carry out daily activities (e.g., by increasing travel time) or whether it is associated with the unpleasantness of separation from portions of their community.

This category of impact is particularly relevant to cross-border communities that operate as a single community. Individuals in these communities cross the border relatively frequently to visit friends and family and to engage in day-to-day activities, including accessing places of employment or health care.

Socioeconomic Impacts of Time Delay on Individuals and Trade Activity

Canada is the United States' most important trade partner, accounting for 16.4 percent of the total value of goods imported to and exported from the United States (USDOC, 2009b). Integrated, cross-border supply chains and production processes rely on fast and predictable transit times for raw materials and manufactured goods. The resulting production contributes significantly to the United States' economy in terms of output and employment.

In addition, thousands of people cross the border every day for business or pleasure. Canadians who enter the United States consume goods and services during their visits. For example, they stay in hotels, eat in restaurants, buy gasoline, and shop. This spending forms an important component of regional border economies and can be affected if the time required for crossing the border increases or decreases. The effects of modifying the ease of access in smaller communities straddling the border, where crossings are part of daily, routine activities, are more difficult to value.

Changes in the amount of time required to cross the border, or increased variability and uncertainty regarding likely transit times, can have measurable impacts on the magnitude and cost of cross-border travel and related commerce. Numerous organizations and researchers have

conducted studies of the effect of changes in congestion and associated wait time on economic activity. These studies generally conclude that increases in time delay create disincentives to cross the border and increase shipping and related costs, ultimately affecting economic productivity (Taylor et al., 2003).

Methods to calculate the economic impact of changes in wait time differ depending on the type of entity experiencing the delay.

- For individual travelers, economic impacts of wait time depend on whether the individuals change their behavior. In other words, the impacts depend on whether the individual experiences the wait time associated with the trip, decides on an alternate route or destination, or forgoes the trip altogether. Assuming no change in behavior, the economic impact is equal to the value of the time lost while waiting. If a change in wait time or uncertainty surrounding wait time alters an individual's behavior (e.g., individual does not make trip), economic welfare impacts associated with a loss in utility, as well as regional economic impacts may be associated with lost travel expenditures.
- For freight, longer or uncertain wait times may result in increased costs, including: truck drivers' time; fuel costs; vehicle wear-and-tear; opportunity costs of idle vehicles; opportunity costs of carrying additional inventory to avoid production delays; and inventory and storage, and related security costs. In addition, for certain cargo, such as perishable goods (e.g., food), inputs into ongoing production processes (e.g., auto parts), or goods that are subject to rapidly changing or uncertain demand (e.g., holiday gifts), increased wait times may affect competitiveness and market share. In response, producers may alter their supply chains, by building facilities on the opposite side of the border or changing suppliers, to avoid delays.

The following sections describe the methods used to calculate the economic impacts of changes in wait time for individuals and freight carriers in more detail. In all cases, the effects may be positive or negative, depending on whether CBP's actions shorten or lengthen crossing times. In addition, the likelihood of impacts, such as lost trips or restructuring of supply chains, will depend on the magnitude of the incremental change in wait time relative to existing conditions.

Time Delay Impacts on Individuals

Economic impacts of wait time on an individual depend upon: the purpose of the trip (e.g., business or leisure); and whether the individual changes behavior in response to the change in travel time. If individuals do not change behavior (e.g., continue to cross border and incur wait time), the economic impact is equal to the value of their time. Conversely, time savings that may accrue would be calculated similarly. If, however, individuals forego trips due to increased wait times, or take more trips as wait times decrease, regional economies may also be affected by the resulting changes in travel expenditures.

The following information is required to quantify the total impact of changes in wait time associated with program alternatives:

- The value an individual places on an hour of time spent waiting;
- The specific sites at which construction or modernization activities, routine POE operations, and traffic checkpoints will occur;

- The length of time the activity that's causing temporary time delays will take place (i.e., construction and modernization project and mobile traffic checkpoints);
- The specific increase (or a reasonable range) in hours of wait time;
- The number of individuals experiencing the time delays now and in the future (which may vary with traffic volumes daily or seasonally and annual traffic volume will depend on other factors such as future currency exchange rates);
- The trip's purpose for the individuals crossing the border; and
- The likelihood that the individual will choose to avoid crossing the border at the site experiencing increased wait time, or avoid crossing the border at all (i.e., the elasticity of demand for the trip).

Only the first piece of information is readily available. In 2007, in support of its analysis of the economic impacts of implementing the Western Hemisphere Travel Initiative (WHTI) at land POEs, CBP and the DHS established a methodology for valuing time spent by individuals waiting at border crossing points (USDHS, 2008). This methodology is based on guidance published by the U.S. Department of Transportation (DOT) in 1997 and takes into account more recent research. The approach follows a three-step process:

1. Determine wage rates that are relevant to the valuation of time for business and personal (e.g., leisure) travelers.
2. Estimate per-unit economic impacts associated with increased in-vehicle time as a fraction of the wage rate. DOT estimates values for in-vehicle time as a percentage of the wage rate separately for intercity and local travel, and for business and personal travel.
3. Estimate per-unit economic impacts of wait time (as opposed to the more generic "in-vehicle" time) as a function of the value of in-vehicle time for business and personal travel using a peer-reviewed study published in the transportation literature (Wardman, 2001).

Appendix D of the 2008 WHTI Regulatory Assessment provides a detailed discussion of this methodology (USDHS, 2008). This methodology is used to estimate the value of an hour of time saved or lost (Table 8.10-2). As significant uncertainty exists regarding these estimates, this analysis provides a range of impacts per person-hour of increased wait time.

Table 8.10-2. Estimated Value of Wait Time per Person-Hour in 2009 dollars

Type of Time Affected	Low	Best	High
Personal	$14.07	$16.41	$21.10
Business	$26.99	$33.74	$40.48

Sources: (USDOL, 2009b; USDOL, 2009c).

Notes:

• Per person-hour in 2009 dollars.

• Applying lower time values to regions with lower wages could create a bias favoring the imposition of longer wait times in those areas. To avoid such equity concerns, estimates are for the entire United States rather than by region.

• For personal travel, the value of in-vehicle time is estimated as 60 percent (low), 70 percent (best), and 90 percent (high) of the wage rate. For business travel, in-vehicle time is estimated as 80 percent (low), 100 percent (best), and

120 percent (high) of the wage rate plus benefits. Note that DOT estimates separate wait time values, not shown in this table, for truck drivers at 100 percent of their wage rate.

• A factor of 1.47 from Wardman (2001) is applied to in-vehicle time to estimate the value of wait time.

In addition to the per-person value of an hour of wait time, estimates of the cost of increased time delays requires information about the aggregate number of additional hours spent waiting at border crossings. Although the per-person-hour values in Table 8.10-2 are relatively small, these values could be aggregated across potentially thousands of affected travelers making multiple trips across the border each year.

If a change in wait time or uncertainty surrounding wait time causes individuals to change travel plans (e.g., not take trip), they will not experience the lost value of the hours they spend waiting. However, other types of economic impacts may result.

Welfare impacts may result if an individual modifies travel plans due to changes in wait time at crossings. Individuals may experience a loss in utility from not taking the trip or from taking an alternative second-best trip. It is assumed that the individual's first choice trip is utility maximizing (i.e., that individual's choice to maximize his or her general well-being) and thus any other trip would result in a decrease in utility. Although the individual will experience a decrease in utility, it is generally assumed that an individual will only change behavior if the decrease in utility associated with the second choice trip is less than the impact of the additional wait time. Thus, the welfare impacts of choosing a different trip are most likely less than the value of an increase in wait time.

Regional economic impacts may occur, however, due to a loss in travel expenditures. If an individual chooses to not take a trip, or to travel to a different area, the regional economy of the first-choice destination may suffer a loss, while the economy of the second choice region may experience a corresponding gain. To calculate these losses, one must understand the individual's elasticity of demand for travel, change in price of the trip, purpose to the trip (personal or business), and typical trip expenditure.

To quantify the potential regional impacts of time delay associated with the No Action Alternative, additional information is required regarding:

- Alternative trip destinations if individuals choose not to travel to their first choice site due to the time delay;
- Average regional trip expenditures at the site for business and personal/leisure trips; and
- Regional economic multipliers (or a regional input-output model) to describe how changes in expenditures in a particular economic sector(s) affect the broader regional economy (e.g., business that provide goods and services to the affected businesses).

Generally, POEs with the greatest traffic volumes will experience the greatest impacts of increased or decreased wait times. POEs with the greatest volumes are identified by region below:

West of the Rockies Region

Three POEs in this region experienced more than a million individual crossings in 2009 (Table 4.10-12):

- Blaine (Washington): 6.6 million individual crossings (1.6 percent of total individuals crossing the Northern Border);
- Sumas (Washington): 11.5 million individual crossings; and
- Point Roberts (Washington): 1.3 million individual crossings.

Travel and tourism from British Columbia is a significant contributor to the regional economy of Whatcom County, Washington (which contains the Blaine, Sumas, and Point Roberts POEs) both in terms of regional income (visitors spent approximately $435.5 million in Whatcom County) and employment (the county supported 7,120 travel and tourism jobs in 2009) (DRA, 2009). In the mid-1990s, the county estimated that 30 to 40 percent of retail activity depended on Canadian consumers (WCCP, 2010b). Thus, the regional economy of the county relies on relatively efficient border crossings for visitors from Canada.

East of the Rockies Region

Only one POE in the EOR Region experienced close to a million individual crossings in 2009: (Table 5.10-12) International Falls POE in Minnesota had approximately 957,000 individual crossings (1.6 percent of total individuals crossing the Northern Border).

Great Lakes Region

The POEs in this region account for the majority of individual crossings across the entire Northern Border (Table 6.10-12). Three POEs constitute almost 40 percent of all Northern Border crossings in 2009:

- Buffalo-Niagara Falls (New York): 13.8 million individual crossings;
- Detroit (Michigan): 8.8 million individual crossings; and
- Port Huron (Michigan): 4.0 million individual crossings.

New England Region

Two POEs in this region had over a million individual crossings in 2009 (Table 7.10-12):

- Calais (Maine): 1.4 million individual crossings; and
- Derby Line (Vermont): 1.4 million individual crossings

While the number of individuals crossing is a key factor in identifying sites that may experience relatively great time delay impacts, the relative length of the delay and the purpose of travel (number of individuals traveling for business versus leisure) are also important considerations.

Time Delay Impacts on Trade Activity

The following discussion regarding economic impacts of time delays on freight crossings includes text derived from a report developed under contract to CBP's Office of International

Trade (Robinson, 2009). For simplification, this discussion is framed in the context of the consequences of incremental increases in the time required to cross the border. However, positive economic impacts may result when CBP actions decrease current delays.

Similar to the economic impact of wait time on individuals, the economic impact on freight crossing the border depends on whether the freight carrier, importers, or exporters change their behavior (e.g., choose to transport goods through an alternate POE, alter inventory management practices, identify alternate sources of goods or materials). If a freight carrier crosses at the affected site and experiences a time delay, economic impacts may include an increase in the freight costs per trip, including the costs of the driver's time, fuel, and vehicle wear-and-tear. The freight company may absorb these losses by decreasing profits or reducing other expenditures, or pass them on to the exporting or importing companies through increased prices for the transported goods. When these increased costs are passed on to the importer, the importer may either absorb the cost increases or may, in turn, pass them on in whole or in part to consumers of its products as price increases.

In addition, changes in delivery schedules for transported goods may generate other types of impacts. For example, the importer may experience longer wait times for intermediate products, or increased uncertainty about shipping times and delivery schedules. Increased transportation time may lead to more spoilage (if perishables are involved), or increased inventory carrying costs. In particular, many companies have moved to just-in-time inventory systems, which reduce the costs of capital (i.e., interest charges on borrowed funds), storage, and insurance. Such systems also allow them to tailor their inventory immediately to changing customer or production demands, decreasing costs or increasing sales. These companies rely on timely delivery of goods. Faced with longer shipping times, the companies may be forced to increase their inventory. Losses may be absorbed or passed onto consumers through higher prices.

Like individuals, freight carriers, importers, or exporters may decide to change their behavior in response to a change in wait time. Freight carriers may, for example, change their routes (using a different crossing point) or the timing of their shipments (arriving at the crossing at a less busy time) to avoid crossing delays. Assuming that affected entities will make these adjustments only if the costs are less than the costs of the additional wait, these behavioral changes would decrease the delay costs and reduce the economic impact on other firms and consumers.

If cost increases borne by the carrier are passed onto firms or consumers through increased prices for goods that rely on the transported freight, broader economic impacts to markets may occur. Rather than accept the higher prices, affected firms and individual consumers may substitute alternative goods, or otherwise reduce their need for the more expensive product. If feasible, importers may use an alternative method of transport for the good (e.g., substituting rail for truck transport) or purchase a domestically produced substitute.

Temporary increases in delays at border crossings are unlikely to have lasting impacts on markets for traded goods. Once the project causing the delay is complete, the impacts would most likely end. The magnitude of the potential impacts of time delays on trade depends on the specific length of the time delay and the supply-and-demand relationships in the affected markets. For modest increases in border crossing times (e.g., measured in minutes), the costs borne by the freight companies may dominate the results and any price changes may be too small

to have a measurable effect on importers or markets. Greater delays (e.g., measured in hours or days), however, may further affect firms, consumers, and the overall economy. In the most extreme cases, unexpected and lengthy delays (such as those immediately following the September 11, 2001 attacks or from events such as natural disasters or widespread power outages) can shut down entire production processes.

Those CBP's activities that may cause time delays, however, are most likely to produce either temporary delays or relatively modest increases in border crossing times (minutes as opposed to hours or days). Generally, the POEs with the most freight crossings will experience the greatest economic impacts of time delays. Following is a regional breakdown of the flow of commercial activity flowing through POEs:

West of the Rockies Region

The POEs within the WOR Region account for relatively low percentages of the total trade value by surface transportation between the United States and Canada (Table 4.10-12). The greatest percent of annual trade value in the region in 2009 (4.3 percent or $14.6 billion) took place at the POE in Blaine Washington, At the Blaine POE, machinery and mechanical appliances, electrical machinery and equipment, and vehicles and parts account for the greatest trade volume in terms of value.

In addition, as described in Section 4.10.2.6, one of the top three economic sectors (by annual payroll) in Whatcom County is retail trade ($276 million). Thus, the economy of Whatcom County relies on efficient border crossing for trade activities.

East of the Rockies Region

The POEs within the EOR Region account for relatively low percentages of the total trade value by surface transportation between the United States and Canada (Table 5.10-12). The greatest percent of annual trade value in the region in 2009 occurred at the Pembina POE in North Dakota ($15.2 billion, 4.5 percent of the annual border trade value). At the Pembina POE, machinery and mechanical appliances, and vehicles and parts account for the greatest trade levels in terms of value.

As described in Section 5.10.2.6, three of the top five economic sectors in Pembina County by annual payroll are wholesale trade ($15.7 million), retail trade ($8.6 million), and transportation and warehousing ($7.3 million). Thus, the economy of Pembina County relies on efficient border crossing for trade activities.

Great Lakes Region

Four of the POEs within each of the regions account for significant percentages of the total trade value by surface transportation between the United States and Canada (Table 6.10-12). Together, these POEs account for approximately 63 percent of the total trade value by surface transport between the two countries.

- Detroit (Michigan): The Detroit POE accounts for the greatest total trade value along the Northern Border ($84.7 billion in 2009, 25.1 percent of the total trade value).

- Buffalo-Niagara Falls (New York): This POE accounts for the second greatest total trade value along the Northern Border ($54.5 billion in 2009, 16.7 percent of total trade value).
- Port Huron (Michigan): This POE accounts for the third greatest total trade value along the Northern Border ($52.6 billion in 2009, 15.6 percent of total trade value).
- Champlain-Rouses Pt. (New York): This POE accounts for the fourth greatest total trade value along the Northern Border ($19.2 billion in 2009, 5.7 percent of total trade value).

Detroit and Port Huron are the most active crossing points for commercial trucks (Section 6.10.2.6). The Detroit-Warren-Livonia MSA is a major manufacturing region and home to the Big Three automobile manufacturers. The manufacturing sector is the largest in the region in terms of annual payroll ($12.1 billion). Across the border, Ontario is the largest automobile manufacturing region in North America. The regional economy of the Detroit-Warren-Livonia MSA therefore relies on efficient border crossings.

<u>New England Region</u>

The POEs within the New England Region account for low percentages of the total trade value by surface transportation between the United States and Canada (Table 7.10-12). The greatest percent of annual trade value in the region in 2009 occurred at the POE in Calais, Maine ($2.4 billion, 0.7 percent of annual trade value). At the Calais POE, fish and crustaceans, mollusks, machinery and mechanical appliances, and electrical machinery and equipment account for the greatest trade levels in terms of value.

While the value of goods crossing is a key factor in identifying sites that may experience relatively great impacts of time delay, the relative length of the delay and the nature of the cargo are also important considerations.

8.10.1 NO ACTION ALTERNATIVE

The No Action Alternative is a continuation of the current pace of operations in terms of the types and levels of CBP activities along the Northern Border. This alternative represents the baseline against which CBP may compare the impacts of other alternatives. Overall, the socioeconomic impacts of CBP's No Action Alternative are expected to be moderate and adverse. Both adverse and beneficial impacts associated with temporary construction activities and patrols are expected to be minor and temporary. Adverse impacts due to time delays along the border from POE operations and traffic checkpoints, however, may be sustained and require some adjustment for both individuals and trade activities at specific border crossings. The effects of fencing are likely to be negligible to minor. The No Action Alternative is not expected to affect other socioeconomic resources, such as population demographics.

The following discussion describes how CBP's activities in the No Action Alternative may incur socioeconomic impacts described above.

Small and Large Construction Projects

CBP activities involving construction include repair, upgrade, or expansion of POEs as well as construction of USBP stations, permanent traffic checkpoints, and forward operating bases

(FOBs). Projects may also include construction of fences and other physical barriers, roads, bridges, and culverts.

CBP identifies small construction projects as those that affect less than 1 acre of land or less than a quarter mile of road. The relatively minor footprint and temporary nature of small construction projects makes them unlikely to affect property values. These activities may, however, temporarily degrade the quality of the adjacent land for recreational activities. Social welfare and regional economic impacts associated with small construction projects are expected to be minor, temporary, and adverse as any impacts would be near the project and removed entirely upon project completion. Whether such impacts would occur depends upon surrounding land uses (e.g., proximity of the small construction project to development or recreational activity), as well as the level of disturbance (i.e., noise, traffic backups) associated with the activity.

CBP identifies large construction projects as those affecting more than 1 acre of land or a quarter mile of road. General descriptions of large construction project types that may occur in each of the regions follow.

Construct a USBP Station

This activity requires purchase or lease of approximately 10 acres to develop an office/storage building and 10,000 sf of parking. For USBP stations in remote areas, CBP would also consider construction of a 3,600-sf helipad.

Modernization or Maintenance of an Existing POE or USBP Station

Maintenance and repairs range from minor upgrades or repairs to major modifications, such as demolition of existing structures and construction of new structures. These activities may be either small or large construction projects.

Set Up Permanent Traffic Checkpoints

The total land area required remains uncertain, but should be able to support: a new, 6,000-sf building; less than 1 acre for kennels to support canine units; storage areas for evidence, equipment, and tools; parking; tollbooth-like structures for shelter from weather; detention rooms; a HAZMAT quarantine area to store vehicles; inspection lanes; area for utilities, potable water supply, communications towers, sewage disposal, and solid waste storage; and on-site renewable energy generating sources at some sites.

Construct a New FOB

The total land area required remains uncertain but should support: modular structures or buildings; portable toilet and shower facilities; portable generators; and fuel and water trailers. FOBs are temporary, but required on a regular basis for several days to several weeks, to provide access to temporary checkpoints or patrol operations.

Construct Fences or other Physical Barriers

Fence and barrier construction along the border may require access roads, lighting, and other infrastructure during construction. Depending on the area required, these may be either small or large construction projects.

Access Road Extension

Extensions of access roads greater than a quarter of a mile are large construction projects.

CBP anticipates that under the No Action Alternative 15± large construction projects may be undertaken across each of the regions. These projects are either currently underway or in the planning stages.

Economic impacts of infrastructure construction may result from the construction activity itself or by the changed landscape and land use upon completion of development. Generally, impacts associated with construction activity are temporary and disappear with completion of construction. Such impacts may come from noise pollution and visual disturbance at the construction site. As described, noise pollution may temporarily affect the value of the surrounding area for economic uses during construction. For example, lands adjacent to the construction site that support recreation activities such as camping, fishing, hiking, wildlife viewing, or hunting may be less attractive to recreationists due to higher ambient noise levels. Individuals may, therefore, experience decreased enjoyment of their recreation activity, choose to visit a substitute site, or forgo the activity altogether. These changes in behavior affect social welfare values (i.e., individuals' willingness to pay for the activity) and may cause regional economic impacts if activity levels and associated regional spending decrease.

In addition, construction noise may disrupt day-to-day activities of nearby residential landowners. Residents may change their behavior, for example by spending more time away from home during periods of high noise. Due to the temporary nature of these impacts, however, it is unlikely that the noise would alter the nature of a community or affect residential or commercial property values.

Although the disturbance associated with the construction results in only temporary impacts, establishing a new facility such as a USBP station or FOB may generate sustained, moderate adverse economic impacts to socioeconomic resources. If the property acquired for the new facility is removed from another productive land use, such as agriculture or development, a change in regional economic productivity (e.g., agricultural production or new home construction may be reduced) may result. In addition, proximity to the new facility may negatively affect the value of the surrounding land for other uses such as recreation, as described. If the new facility increases traffic in the region or interrupts a preferred viewscape, the new development may also have a negative effect on neighboring property values.

If CBP purchases land from a private (non-Federal) landowner, the property purchased is no longer taxable. Thus, a decrease in local property tax revenue that supports local school systems results. The magnitude of such tax base impacts depends on both the amount of land no longer generating tax revenue and the property tax rate. It is, therefore, project-specific.

Construction of new facilities may also, however, have a beneficial effect on regional economic activity. First, the construction activity itself may increase regional employment opportunities if the projects involve local construction and development businesses. When projects rely instead on military or National Guard engineering units for construction, individuals would be temporarily relocated to the region and would contribute to the regional economy through spending on retail and service sectors. POE modernization projects may also increase crossings

at a particular site, escalating tourism in the surrounding community and spending at regional service and retail businesses, such as fuel stations, hotels, and restaurants. Increased regional economic activity may, in turn, generate more employment opportunities, population density, and general growth in the surrounding area. POE modernizations or upgrades that add crossing lanes or increase processing efficiency may also decrease wait time and benefit both individuals and trade activity that rely on border crossing.

Large construction projects may also include constructing fences or other barriers in localized areas to keep vehicles and individuals from crossing the border. Constructing a barrier could negatively affect the social fabric of border communities by separating friends and families, or hindering access to their places of work or leisure. Since CBP does not plan to construct fences through cross-border communities, however, these impacts would not occur.

Road and bridge construction may facilitate access to more rural, undisturbed areas, which may have a positive or negative effect on property values or land use activities, such as recreation. For example, while access to remote areas may be improved for recreation, additional noise from traffic may reduce the value of the experience for recreationists who choose more remote areas for their activities. At the scale of current CBP activities, these adverse impacts would be minor to moderate, though long-term. Similarly, providing access to undeveloped areas may open up the area for future development. While this may benefit the regional economy by attracting homebuyers and businesses, existing homeowners who currently enjoy the remote, natural landscape may experience minor to moderate adverse impacts.

In sum, large construction projects could produce moderate adverse impacts if they interrupt productive land use or adversely affect surrounding land uses, as well as moderate beneficial impacts through increased economic activity. Constructing fences or barriers through cross-border communities could cause major impacts. Because CBP does not plan to construct fences through cross-border communities, however, major impacts are not expected. In addition, new or upgraded facilities may decrease delays at the border and bring beneficial impacts to local employment and economic activity.

On-Site Trade and Travel Processing Operations and Checkpoint Operations

Routine activities at POEs include processing visitors and cargo, and other surveillance and inspection activities. CBP defines small POE trade and travel operations as all operations at POEs or fixed checkpoints processing fewer than 10,000 crossings per day. CBP defines large POE trade and travel operations as those processing more than 10,000 crossings per day. Under the No Action Alternative, CBP conducts 20± small operations in the New England and WOR regions; one large operation takes place in the WOR Regtion with none in the New England Region. In the Great Lakes Region, CBP has 10± small and 3 large operations. The EOR Region has 30± small and no large operations under this alternative. In addition, CBP anticipates 100± checkpoint operations per day in each of the four regions.

Implementing inspections and processing crossings increase travel time for visitors crossing into the United States or Canada for business or leisure, as well as for trucks and trains carrying trade goods between the countries. The impact of time delays varies with the length of delay and the purpose of the trip. In the most extreme cases, time delays may affect decisions to cross the border for business or leisure, reducing tourism or regional spending, or decreasing trade

between the countries. Therefore, as the populations and economies of the United States and Canada grow and trade volume increases, the potential exists for moderate adverse impacts from routine inspections and processing activities.

On the other hand, trade and travel processing operations may decrease wait time at the crossing such that these activities improve effectiveness and efficiency in screenings and inspections. In these cases, processing operations will have a beneficial socioeconomic impact.

Whether the operation is small (fewer than 10,000 crossings) or large, is only one factor in determining the magnitude of adverse or beneficial impacts. In addition to the number of crossings, other key variables in estimating the level of impact include: the reason for crossing; current wait times and the magnitude of incremental changes (e.g., minutes, hours); the amount of regional expenditures associated with the crossing; and the value of cargo crossing. Thus, impacts for both small and large processing operations and checkpoint operations could be moderate and adverse or beneficial to socioeconomic resources.

Motorized Ground Operations, Aircraft Operations, and Vessel Operations

Under the No Action Alternative, CBP proposes continued patrolling of the region at the following levels:

- Motorized ground operations (ATVs, snowmobiles, and other vehicles): 800± per day in each region;
- Aircraft operations (manned and remotely-piloted aircraft patrols): approximately 20± each in the Great Lakes and EOR regions and 15± each per day in the WOR and New England regions.
- Vessel operations (waterborne patrols on marine and riverine vessels): approximately 14± in the WOR Region; 5± in the EOR Region; 42± in the Great Lakes Regions; and 16± per day in the New England Region.

ATV and snowmobile patrols are most likely to affect rural areas. Snowmobile patrols traverse terrain not previously accessible and allow CBP to enter remote areas with limited to no human disturbance. Patrolling these areas may increase noise and negatively affect individuals who purposefully engage in recreation away from developed areas. Given the intrusive nature of these vehicles, adverse impacts on the value of recreational lands and surrounding property values could be greater than those for water and air patrols if these patrols are of sufficient number and proximity in sensitive public or private lands. Overall, these impacts could be minor to moderate, depending on the physical context of the local terrain and land ownership.

Aerial and waterborne patrols are anticipated to result in only minor impacts to communities and economies. In developed areas, the surveillance is less likely to be noticed. Conversely, in rural, undisturbed areas, the patrols may introduce some noise pollution. The patrols may, therefore, constitute a disturbance to individuals who recreate or reside in rural areas along the border specifically to avoid the noise and activity levels of more developed areas.

In addition, individuals may consider the patrols disruptive of their day-to-day activities. For example, boaters may experience decreased enjoyment of a boating trip due to waterborne

patrols from increased noise or crowding, or the sense that their activity is being monitored. Given the presence of other boats and aircraft in these areas, and the relatively small amount of activity that CBP's patrols produce, these impacts would likely be negligible. In addition, potential beneficial impacts may result due to the feeling of added security from the patrolling units.

Operation of Nonintrusive Inspection (NII) Systems, Sensors, and Other Technologies

Under the No Action Alternative, CBP anticipates operating NII systems in each of the regions for approximately 1,000 hours per day and sensors and other technologies for approximately 1,500 hours per day. Continued implementation of the NII systems and other technologies supports the detection contraband and prevents it from entering into the United States.

Depending on the current protocol for inspections at particular POEs, these technologies may increase (by adding additional inspections) or decrease (by improved efficiency for existing inspections) wait times at the border. If inspections result in light disturbance along the border, these projects may have an adverse impact on property values or nearby recreation activity. In addition, if remote video surveillance systems (RVSS) are employed, nearby residents, businesses, or recreationists may become negatively affected due to real or perceived privacy issues.

8.10.2 FACILITIES DEVELOPMENT AND IMPROVEMENT ALTERNATIVE

The Facilities Development and Improvement Alternative involves major modernizations or repairs to existing POEs, construction of new USBP stations, or upgrading existing USBP stations to improve CBP's efficiency in operations and response to potential situations along the border. In addition to permanent facilities (i.e., construction of new stations and housing), this alternative includes potential construction of temporary facilities, such as FOBs, and checkpoints, to support law enforcement operations. The socioeconomic impacts of this alternative are most likely moderate and adverse, as well as beneficial, as described below.

According to this alternative, CBP would undertake approximately 30± small construction projects and approximately 20± large construction projects in each of the regions in addition to the No Action Alternative.

Overall, the impacts of the Facilities Development and Improvement Alternative on socioeconomic resources would most likely be moderate. Both adverse and beneficial impacts associated with additional temporary construction activities are expected to be minor and temporary. Large construction projects for new USBP stations and other facilities may remove land from its existing use, however, which may affect regional economic production depending on existing land use. These potential impacts are similar to those for CBP's construction activities.

In general, more infrastructure and facility construction along the border results in increased economic impacts. For example, additional land purchased to site CBP's facilities results in decreased value of that land in its existing use (i.e., decreased agricultural rents from regional crop production). More construction generates more noise, which can degrade recreational activities. These increased impacts are not necessarily proportional to the increase in project

number (i.e., we do not assume a uniform per-project impact). The impact is site-specific and depends on the nature and level of economic activities occurring at and adjacent to the project.

This alternative may also increase beneficial impacts. If CBP modernizations to POEs alleviate traffic congestion, wait times may be reduced and time delay impacts may lessen in the long run. This change would potentially have beneficial impacts on trade and tourism.

8.10.3 DETECTION, INSPECTION, SURVEILLANCE, AND COMMUNICATIONS TECHNOLOGY EXPANSION ALTERNATIVE

The Detection, Inspection, Surveillance, and Communications Technology Expansion Alternative focuses on deploying newer, more effective technologies to support CBP's surveillance and telecommunication activities. Overall, the socioeconomic impacts of the Detection, Inspection, Surveillance, and Communications Technology Expansion Alternative are expected to be moderate (these activities are in addition to the No Action Alternative activities). Increased patrols and use of improved monitoring and surveillance equipment are unlikely to measurably affect wait times at the border, trade volumes, property values, or recreational activities. Beneficial impacts may also accrue to the extent that use of surveillance and inspection technologies increases CBP vehicle-crossing processing efficiency. The following analysis discusses the likely socioeconomic impacts of this alternative.

This alternative continues deployment of, for example, remote sensors, short-range radar, remote and mobile video surveillance, as well as new camera systems and upgrades to existing communications systems. It also increases surveillance and patrols at select border areas.

With this alternative, CBP would undertake an additional 100± small construction projects (e.g., towers and other infrastructure) in each region, increase motorized ground patrols by 1,300± missions per day in each region, increase aircraft surveillance by 30± missions per day in the EOR and Great Lakes Regions and 23± in the WOR and New England Regions, and increase vessel operations by 63± missions per day for the Great Lakes Region, 10± for the EOR Region, 21± for the WOR Region, and 24± for the New England Region. In addition, CBP would increase operation of NII systems by 1,500± hours per day and operation of sensor and other technologies by approximately 2,500± hours per day in each region.

This alternative is expected to have moderate adverse impacts on socioeconomic resources when considered with the impacts of the No Action Alternative. As described above, aerial and waterborne patrols are anticipated to result in only minor impacts to communities and economies, mostly in more pristine areas where patrols introduce temporary and localized noise pollution. These impacts occur while the patrols occur and are unlikely to disrupt the opportunity for any given area to support recreation or other activities in the region. Increased patrols may also feel intrusive to individuals engaged in day-to-day activities.

Deployment of NII systems and other technologies may increase or decrease wait times at the border, depending on the status of inspections at the site. These delays are likely minor relative to other activities affecting crossing time, such as traffic. In addition, increased use of RVSS may generate privacy concerns from neighboring residents, businesses, or recreationists.

8.10.4 TACTICAL SECURITY INFRASTRUCTURE DEPLOYMENT ALTERNATIVE

The Tactical Security Infrastructure Deployment Alternative includes construction of additional barriers at select points along the border to deter and delay cross-border violators. In addition, it includes additional roads and related facilities that would improve CBP's ability to respond to potential cross-border violators quickly and effectively. Overall impacts of increased fencing and other physical barriers along the border, as proposed in this alternative, could have moderate adverse economic impacts (when considered with the activities in the No Action Alternative), depending on where and how the barriers are constructed. As CBP does not plan to construct fences through cross-border communities, minor impacts are expected. Opening additional undeveloped areas by improving or expanding road and trail systems could also have minor beneficial economic impacts through increased economic activity.

Under this alternative, CBP would increase small construction projects related to access roads and fencing by approximately 30± projects and large projects by approximately five projects across each of the regions (above and beyond the No Action Alternative activities). Small projects affect less than 1 acre or a quarter mile and are likely to have only negligible to minor additional impacts on socioeconomic conditions.

Large construction projects may generate minor adverse and beneficial economic impacts. The impact due to barrier construction depends primarily on where the barriers are constructed. Because CBP plans to erect additional fencing in more remote areas where border passage is difficult to control, the impacts are likely to be negligible to minor.

Expanding or improving road and trail infrastructure may result in positive or negative impacts. If remote, pristine areas are valued as such (i.e., increased access is not preferred), individuals may be less willing to pay for property or recreational opportunities if access is increased. However, improved road infrastructure may also facilitate access for recreationists and increase visitation to regions, generating additional regional economic activity.

8.10.5 FLEXIBILE DIRECTION ALTERNATIVE

The Flexible Direction Alternative allows CBP to use a mix of any of the actions in the previous four alternatives on an as-needed basis to respond to evolving threats along the border, allowing the most flexibility in border security actions. For similar reasons to the No Action Alternative, the socioeconomic impact of the Flexible Direction Alternative is most likely moderate and adverse. The activity levels are only one factor in determining the magnitude of socioeconomic impact. The site choice (i.e., existing and surrounding land uses) for the projects and land area disturbed by individual projects are also key factors. Thus, the increased activity of the Flexible Direction Alternative, while greater than that of the No Action Alternative, is most likely to generate moderate adverse impacts. Depending on the site-specific project parameters, however, the socioeconomic impacts may be greater.

Under this alternative, CBP would increase small construction projects by 160± per year, large construction projects by 25± projects, checkpoint operations by 100±, motorized ground patrols by 1,300±, aircraft patrols by 30± missions per day for EOR and Great Lakes and 23± for WOR and New England, and increase vessel operations by up to 63± missions per day for the Great Lakes Region, 10± for the EOR Region, 21± for the WOR Region, and 24± for the New England Region. This alternative also includes increased operation of NII systems by 1,500± hours per

day, and operation of sensor or other technologies by 2,500± hours per day in each of the four regions.

The additional activity levels (beyond the No Action Alternative) of the Flexible Direction Alternative would most likely have an increased socioeconomic impact across the region. Additional land area required for new USBP stations and other facilities increases the production values associated with removing land from its existing use (e.g., decreased agricultural rents if the facility is developed on farmland). The magnitude of this impact depends on the existing land use and the amount of land developed.

Additional construction projects also likely to increase the amount of area affected by noise (thus influencing the property values and recreational activities of more neighboring land parcels). Increased patrolling may open up previously pristine areas to noise pollution.

Beneficial impacts of these activities on socioeconomic conditions would likewise increase. If additional infrastructure and deployed technology increase the speed or ease of border crossing, regional economies and individual travelers may benefit. New facilities may also bring employment opportunities along with increased spending at local businesses. In addition, expanding roads and trails may provide more opportunities for recreation.

8.10.6 BEST MANAGEMENT, MINIMIZATION, AND MITIGATION

CBP seeks to avoid, minimize, repair, and reduce the impacts of its actions on the human environment. It does so with a combination of best management practices (BMPs), siting plans, design strategies, mitigation measures, and monitoring plans best suited to the scale and location of the particular action. Towards that end, CBP could choose from among the following actions to avoid or minimize impacts to communities, regional economies, and cross-border trade. All measures are only relevant to particular projects if they are both practical and feasible.

The following measures may minimize social welfare and regional economic impacts associated with decreased or degraded land uses:

- Siting projects away from recreational areas;
- Applying BMPs related to reducing sound from construction activities (e.g., using sound-reducing equipment); and
- Undertaking construction and patrol activities during off-peak hours or seasons for recreational activities.
- The following measures may minimize impacts to land and property values associated with precluding or degrading potential land uses:
- Siting projects on vacant Federal lands or at abandoned Federal facilities;
- Siting projects on vacant or unproductive lands;
- Acquiring lands through purchase or lease from willing sellers; and
- Developing aesthetically pleasing landscapes (e.g, by revegetating disturbed grounds).
- The following measures may minimize the economic impacts of time delay on individuals and trade activity:

- Engaging in construction or other delay-generating activities during periods of relatively low traffic volumes, to the extent practicable and feasible;
- Constructing additional traffic lanes at busy POEs or checkpoint with the greatest delays; and
- Monitoring how CBP processing procedures at border crossings affect wait times to determine whether the costs of additional wait times outweigh the benefits of implementing processing procedures.

8.10.7 SUMMARY OF POTENTIAL SOCIOECONOMIC IMPACTS

Table 8.10-3 summarizes the socioeconomic impacts of CBP's alternatives.

Table 8.10-3. Summary of Potential Socioeconomic Impacts

Impact-Producing Activity		Level of Impact				
		Negligible Adverse	Minor Adverse	Moderate Adverse	Major Adverse	Beneficial
NO ACTION ALTERNATIVE						
Small construction projects (<1 acre and <1/4 mile: e.g., minor repairs to facilities, parking lot repairs, access road repairs, etc.)			X			
Large construction projects (>1 acre and >1/4 mile: e.g., repairs to facilities, parking lot repairs, access road repairs, etc.)				X		X
Small on-site trade and travel processing operations				X		X
Large on-site trade and travel processing operations				X		X
Checkpoint operations				X		X
Ground operations–motorized			X			
Ground operations–nonmotorized	On-road	X				
	Off-road	X				
Aircraft operations			X			
Vessel operations			X			
Operation of NII systems			X			X
Operation of sensor and other technologies			X			X
OVERALL IMPACT				**X**		

Impact-Producing Activity	Level of Impact				
	Negligible Adverse	**Minor Adverse**	**Moderate Adverse**	**Major Adverse**	**Beneficial**
FACILITIES DEVELOPMENT ALTERNATIVE					
Small construction projects (<1 acre and <1/4 mile)		X			
Large construction projects (>1 acre and >1/4 mile)			X		X
OVERALL IMPACT			**X**		
DETECTION, INSPECTION, SURVEILLANCE, AND COMMUNICATION TECHNOLOGY EXPANSION ALTERNATIVE					
Small construction projects (towers and other infrastructure to mount antennas, etc.)		X			
Ground operations–motorized		X			
Aircraft operations		X			
Vessel operations		X			
Operation of NII systems		X			X
Operation of sensor and other technologies		X			X
OVERALL IMPACT			**X**		
TACTICAL SECURITY INFRASTRUCTURE DEPLOYMENT ALTERNATIVE					
Small construction projects (trench cuts, towers, minor access roads and fences)		X			
Large construction projects (access roads and fences)		X			X
OVERALL IMPACT			X		

Impact-Producing Activity	Level of Impact				
	Negligible Adverse	Minor Adverse	Moderate Adverse	Major Adverse	Beneficial
FLEXIBLE DIRECTION ALTERNATIVE					
Small construction projects		X			
Large construction projects			X		X
Checkpoint operations			X		X
Ground operations–motorized		X			
Ground operations–nonmotorized	X				
Aircraft operations		X			
Vessel operations		X			
Operation of NII systems		X			X
Operation of sensor and other technologies		X			X
OVERALL IMPACT			**X**		

8.11 ENVIRONMENTAL CONSEQUENCES TO CULTURAL AND PALEONTOLOGICAL RESOURCES

This section considers the potential impacts of U.S. Customs and Border Protection's (CBP) alternative actions on cultural and paleontological resources. Action alternatives may have an adverse effect on cultural, historical, archaeological, and paleontological resources, primarily if they involve new construction in previously undisturbed areas; if they entail the rehabilitation or demolition of a property listed or eligible for listing on the National Register of Historic Places (National Register); or if the action introduces visible intrusions in a historic landscape or within or adjacent to a historic district. For descriptions of the regional affected environments for cultural, historical, archaeological, and paleontological resources, see sections 4.11.2 (West of the Rockies Region), 5.11.2 (East of the Rockies Region), 6.11.2 (Great Lakes Region), and 7.11.2 (New England Region).

Cultural resources include both prehistoric and historical archaeological sites, Native American Traditional Cultural Properties, and architectural and other above-ground resources. Procedures for the identification, evaluation, and treatment of cultural resources are contained in numerous Federal and state laws and regulations including, but not limited to, the National Historic Preservation Act of 1966 (NHPA) and the Paleontological Resources Preservation Act of 2009 (PRPA).

CBP actions that could potentially affect cultural resources include expansion of ports of entry (POEs); construction of permanent traffic checkpoint facilities, roads, fences, barriers, remote video surveillance systems (RVSSs), and detection and communication towers; and destructive activities such as tunnel demolition. Impacts to cultural resources could be major if properties eligible for listing on the National Register were affected by a proposed action. The level of impact could range from negligible to major depending on the type of resource identified. Impacts to historic structures or other above-ground objects within the viewshed of a proposed RVSS or communications tower could also range from negligible to major depending on whether the proposed design affects the historical integrity or setting of the historic property (see sections 4.11.3, 5.11.3, 6.11.3, 7.11.3). However, the intent and expected result of NHPA and PRPA consultation and the process of National-Register listing would be to mitigate any adverse impacts as much as possible, consistent with CBP's homeland-security responsibilities (see section 9.11). As a result, direct, indirect, and cumulative impacts to cultural, historic, and archaeological resources across the Northern Border as a whole would not be significant.

The specific components of action alternatives with the greatest potential for impacts on cultural and paleontological resources that could range from minor to major adverse in some cases, or beneficial in others, include:

- Construction, modification or repair of ports of entry (POEs), U.S. Border Patrol (USBP) stations, Office of Air and Marine (OAM) bases, training facilities, and permanent traffic checkpoint facilities;
- Construction of roads, fences, barriers, and related infrastructure;

- Installation of RVSSs;
- Installation of detection and communication towers;
- Remediation of illegal tunnels; and,
- Installation of unattended ground sensors.

In general, CBP's day-to-day operations do not have a direct physical impact on cultural or paleontological resources or produce a permanent visual change in the viewshed of cultural resources and therefore have no impact and have not been carried forward for detailed analysis. CBP's day-to-day operations include, but are not limited to, travel processing; cargo inspections; canine enforcement teams; fraud prevention; aerial surveillance; line-watch operations; ground patrols; and aircraft, watercraft, and vehicle maintenance.

8.11.1 NO ACTION ALTERNATIVE

The No Action Alternative would potentially have minor-to-major adverse impacts on cultural and paleontological resources in some cases and beneficial impacts in others. These impacts would potentially occur from construction of new facilities (USBP stations, etc.), infrastructure (roads, fences, etc.), and communication facilities (towers, etc.) as well as from physical changes resulting from facility, technology, and infrastructure renovations, alterations, and replacements. New construction and physical changes may also affect the view to and from adjacent properties. Physical changes have the potential to remove or destroy the distinctive characteristics (physical components or features) of cultural resources (typically of buildings or structures) that make the resources significant. Physical changes can also change the viewshed of above-ground cultural resources in a way that detracts from the visual aspects of their character and significance.

Construction Projects

Major adverse impacts on archaeological and paleontological resources would potentially occur due to inadvertent damage or destruction during construction of new CBP facilities and infrastructure. Minor adverse impacts could result from construction projects that are within view of cultural resources because these projects may detract from the historic visual quality of the viewshed. Minor adverse impacts would potentially occur on historic properties if CBP implements rehabilitation or maintenance projects that do not use historic-preservation design standards. Beneficial impacts would occur when CBP designs projects that avoid and protect cultural or paleontological resources, retains and reuses historic buildings and structures, and utilizes historic-preservation design standards in renovations.

The exact locations of construction projects are unknown at this time, except that they could take place anywhere within 100 miles of the Northern Border.

8.11.2 FACILITIES DEVELOPMENT AND IMPROVEMENT ALTERNATIVE

As with the No Action Alternative and for similar reasons, the Facilities Development and Improvement Alternative (Facilities Alternative) would potentially have minor-to-major adverse impacts on cultural and paleontological resources in some cases and beneficial impacts in others.

Construction Projects

The emphasis of the Facilities Alternative on replacing or providing new permanent facilities, such as USBP-station housing, and making major modifications to permanent facilities, such as

POEs, would potentially have the most impact of all the alternatives on cultural and paleontological resources.

The exact location of construction projects are unknown at this time, except that they could take place anywhere within 100 miles of the Northern Border.

8.11.3 DETECTION, INSPECTION, SURVEILLANCE, AND COMMUNICATIONS TECHNOLOGY EXPANSION ALTERNATIVE

As with the alternatives above and for similar reasons, the Detection, Inspection, Surveillance, and Communications Technology Expansion Alternative (Detection/Inspection Alternative) would potentially have minor-to-major adverse impacts on cultural and paleontological resources in some cases and beneficial impacts in others.

Construction Projects

Similar to the alternatives above and for the same reasons, both small and large construction projects under the Detection/Inspection Alternative would potentially have minor-to-major adverse impacts on cultural and paleontological resources in some cases and beneficial impacts in others. Communication towers are typically built within or adjacent to CBP facilities; however, some towers have been constructed in remote locations, usually on tops of ridges, to enhance relay of radio transmissions and provide remote-surveillance operations. Many of the towers would require construction of a concrete-block building to house electronic equipment associated with communication operations. In these cases, cultural and paleontological resources may be affected. *Sensors* are small transmitters, consisting of 12-inch plastic cubes, buried approximately two to three feet below ground surface on or near roads and trails in undocumented-alien travel corridors. The sensors are seismic and magnetic, capable of detecting ground vibrations and vehicles. On the average of twice per year, sensor locations may be changed in response to shifts in the patterns of illegal traffic. The impact of installing a single ground sensor is negligible. This activity has the potential to have a minor impact on cultural or paleontological resources in cases where numerous sensors are installed within a limited area.

The exact location of construction projects are unknown at this time, except that they could take place anywhere within 100 miles of the Northern Border.

8.11.4 TACTICAL SECURITY INFRASTRUCTURE DEPLOYMENT ALTERNATIVE

As with the alternatives above and for similar reasons, the Tactical Security Infrastructure Deployment Alternative (Tactical Security Alternative) would potentially have minor-to-major adverse impacts on cultural and paleontological resources in some cases and beneficial impacts in others.

Construction Projects

Because the construction of new roads, fences, and barriers can involve significant ground disturbance, these projects have the potential to result in moderate-to-major adverse impacts to cultural and paleontological resources. Tunnel remediation activities proposed under the Tactical Security Alternative include sealing underground tunnels with steel plates, bricks, or cement at the border; drilling 4-to-6-inch-wide boreholes every 100 feet along the surface to breach the top of the tunnels and fill the tunnels with cement; and restoring the boreholes to their

previous condition. Ground disturbance may occur as a result of these tunnel-remediation methods and from pilot holes drilled to identify tunnel locations. While tunnel construction (carried out illegally, not by CBP) itself has the potential to affect cultural and paleontological resources, the impact of activities required for remediation is negligible. Trail-construction activities proposed under this alternative may not involve significant ground disturbance if they are located within the existing footprint, width, and curvature of a trail and use in-kind materials (except in cases where ground disturbance results from clearing and grading). Unless ground disturbance is avoided, construction of new trails has the potential to affect cultural and paleontological resources; however, in most cases, the impact will be minor.

The exact location of construction projects are unknown at this time, except that they could take place anywhere within 100 miles of the Northern Border.

8.11.5 FLEXIBLE DIRECTION ALTERNATIVE

As with the alternatives above and for similar reasons, the Flexible Direction Alternative would potentially have minor-to-major adverse impacts on cultural and paleontological resources in some cases and beneficial impacts in others.

Construction Projects

Similar to the alternatives above and for the same reasons, both small and large construction projects under this alternative would have the potential for minor-to-major adverse impacts on cultural and paleontological resources in some cases and beneficial impacts in others.

8.11.6 BEST MANAGEMENT, MINIMIZATION, AND MITIGATION

Federal consultation protocols established under the NHPA and PRPA rely extensively on consultation between Federal agencies and contracting parties to identify ways to avoid or minimize adverse impacts to cultural and paleontological resources. When CBP's mission, especially with regard to national security and law enforcement, may adversely affect cultural and paleontological resources, the agency is committed to seeking mitigation strategies that are acceptable to all interested stakeholders while being cost effective and practical. The specific types and degree of mitigation techniques vary considerably state-to-state and project-to-project across a broad spectrum of cultural and paleontological resources. However, the types of impacts to which these resources are subjected generally fall into the land use, aesthetic, and visual categories.

8.11.7 SUMMARY OF POTENTIAL IMPACTS ON CULTURAL AND PALEONTOLOGICAL RESOURCES

Table 8.11-1 summarizes the potential impacts of the five alternatives on cultural and paleontological resources. Activities that involve construction of new facilities, roads, barriers and related infrastructure rise to the level of potential major impacts while most operational activities have a negligible impact. In general, CBP activities have a minor adverse impact on cultural and paleontological resources.

Table 8.11-1. Summary of Potential Impacts on Cultural and Paleontological Resources

Impact-Producing Activity	Level of Impact				
	Negligible Adverse	Minor Adverse	Moderate Adverse	Major Adverse	Beneficial
NO ACTION ALTERNATIVE					
Construction Activities					
Modernize, upgrade, or repair existing POE, USBP station, OAM base, training facility, or permanent traffic checkpoint		X			
Construct a USBP station or permanent traffic checkpoint				X	
Construct roads, fences, barriers, and related infrastructure				X	
Install and maintain unattended ground sensors		X			
Set up permanent traffic checkpoints			X		
Install remote video surveillance systems (RVSSs)		X			
Avoid and protect cultural or paleontological resources; retain and reuse historic buildings and structures; use historic-preservation design standards for renovations					X
Install detection and communication towers			X		
Install and maintain unattended ground sensors	X				
Remediate illegal tunnels	X				
Operational Activities	X				
OVERALL IMPACT		**X**			
FACILITIES DEVELOPMENT AND IMPROVEMENT ALTERNATIVE					
Construction Activities					
Modernize, upgrade, or repair existing POE, USBP station, OAM base, training facility, or permanent traffic checkpoint		X			
Construct a USBP station or permanent traffic checkpoint				X	

Impact-Producing Activity	Level of Impact				
	Negligible Adverse	Minor Adverse	Moderate Adverse	Major Adverse	Beneficial
Construct roads, fences, barriers, and related infrastructure				X	
Install and maintain unattended ground sensors		X			
Set up permanent traffic checkpoints			X		
Install remote video surveillance systems (RVSSs)		X			
Avoid and protect cultural or paleontological resources; retain and reuse historic buildings and structures; use historic-preservation design standards for renovations					X
Install detection and communication towers			X		
Install and maintain unattended ground sensors	X				
Remediate illegal tunnels	X				
Operational Activities	X				
OVERALL IMPACT		**X**			
DETECTION, INSPECTION, SURVEILLANCE, AND COMMUNICATIONS TECHNOLOGY EXPANSION ALTERNATIVE					
Construction Activities					
Modernize, upgrade, or repair existing POE, USBP station, OAM base, training facility, or permanent traffic checkpoint		X			
Construct a USBP station or permanent traffic checkpoint				X	
Construct roads, fences, barriers, and related infrastructure				X	
Install and maintain unattended ground sensors		X			
Set up permanent traffic checkpoints			X		
Install remote video surveillance systems (RVSSs)		X			

Impact-Producing Activity	Level of Impact				
	Negligible Adverse	Minor Adverse	Moderate Adverse	Major Adverse	Beneficial
Avoid and protect cultural or paleontological resources; retain and reuse historic buildings and structures; use historic-preservation design standards for renovations					X
Install detection and communication towers			X		
Install and maintain unattended ground sensors	X				
Remediate illegal tunnels	X				
Operational Activities	X				
OVERALL IMPACT		**X**			
TACTICAL SECURITY INFRASTRUCTURE DEPLOYMENT ALTERNATIVE					
Construction Activities					
Modernize, upgrade, or repair existing POE, USBP station, OAM base, training facility, or permanent traffic checkpoint		X			
Construct a USBP station or permanent traffic checkpoint				X	
Construct roads, fences, barriers, and related infrastructure				X	
Install and maintain unattended ground sensors		X			
Set up permanent traffic checkpoints			X		
Install remote video surveillance systems (RVSSs)		X			
Avoid and protect cultural or paleontological resources; retain and reuse historic buildings and structures; use historic-preservation design standards for renovations					X
Install detection and communication towers			X		
Install and maintain unattended ground sensors	X				
Remediate illegal tunnels	X				

Impact-Producing Activity	Level of Impact				
	Negligible Adverse	Minor Adverse	Moderate Adverse	Major Adverse	Beneficial
Operational Activities	X				
OVERALL IMPACT		**X**			
FLEXIBLE DIRECTION ALTERNATIVE					
Construction Activities					
Modernize, upgrade, or repair existing POE, USBP station, OAM base, training facility, or permanent traffic checkpoint		X			
Construct a USBP station or permanent traffic checkpoint				X	
Construct roads, fences, barriers, and related infrastructure				X	
Install and maintain unattended ground sensors		X			
Set up permanent traffic checkpoints			X		
Install remote video surveillance systems (RVSSs)		X			
Avoid and protect cultural or paleontological resources; retain and reuse historic buildings and structures; use historic-preservation design standards for renovations					X
Install detection and communication towers			X		
Install and maintain unattended ground sensors	X				
Remediate illegal tunnels	X				
Operational Activities	X				
OVERALL IMPACT		**X**			

8.12 ENVIRONMENTAL CONSEQUENCES TO ENVIRONMENTAL JUSTICE AND THE PROTECTION OF CHILDREN

Executive Order (EO) 12898, "Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations," (February 11, 1994) and EO 13045, "Protection of Children from Environmental Health Risks and Safety Risks," (April 21, 1997) each require Federal agencies to identify and address any disproportionately high and adverse effect of its programs, policies, and activities on minority and low-income populations and children. This section considers the potential adverse and beneficial impacts of U.S. Customs and Border Protection's (CBP) alternative actions for environmental justice and the protection of children. For descriptions of the regional affected environments for environmental justice and protection of children, see sections 4.12.2 (West of the Rockies Region), 5.12.2 (East of the Rockies Region), 6.12.2 (Great Lakes Region), and 7.12.2 (New England Region).

Wherever an action may have particular consequences for socioeconomic resources or human health and safety, a potential for environmental-justice impact may exist. Although the actions to be addressed as a part of this analysis are necessarily more localized in nature and can be addressed more effectively at the site-specific level, the potential for certain actions to have environmental-justice effects or consequences for the health and safety of children can be evaluated qualitatively at the programmatic level. The types of CBP action that could produce environmental-justice impacts include:

- Actions that impede or enhance the flow of people and goods across the border that may also have the potential for differential effect where minority or low-income groups are more dependent on international travel for personal or economic reasons than would be the case for the general population;
- Construction of new facilities or the upgrading, expansion, and renovation of existing facilities in minority or low-income communities or in areas where large concentrations of children are present;
- Closure or relocation of existing facilities that may affect social or economic conditions in communities where these populations are present; and,
- Construction and operation of new infrastructure, communications, or surveillance towers that may have the potential to disrupt minority or low-income communities in which they are located.

Where a particular action is not expected to have any effect on the general population or its potential effects are considered to be low for all populations, it is eliminated from further consideration as a part of this analysis of environmental-justice impacts. The following actions would not be expected to have a potential for impact because the primary effect associated with them is potential delay in travel time, which would affect all members of the travelling public equally without respect to minority or low-income status:

- Routine activities at a land port of entry (LPOE);

- Operation of a U.S. Border Patrol (USBP) station;
- Set-up of mobile traffic checkpoints; and,
- Operation of traffic checkpoints.

Other activities would also be expected to have no environmental-justice impact because the potential impact would affect all segments of the population equally; because the overall effect would be negligible for the health and well-being of all local populations; because the overall effect would not be expected to affect the demographic characteristics, economic resources, setting, and character of a community or local neighborhoods; or because the overall effect would not be expected to affect the sense of satisfaction or identity expressed by residents of a local community or immediate neighborhood. These activities include:

- Installation and maintenance of unattended ground sensors;
- Operation of a USBP station;
- Unmanned aircraft system (UAS) remotely piloted aircraft missions;
- Manned aerial patrols;
- Waterborne patrols on Office of Air and Marine (OAM) and riverine vessels;
- Standardization and modernization of the OAM fleet along the Northern Border;
- Motorized and nonmotorized ground operations;
- Mobile surveillance system (MSS) units along the Northern Border;
- Enforcement of the I-68 program for recreational boaters; and,
- Sustaining existing or introducing new partnerships.

However, individual effects may be experienced at the site-specific level where smaller but substantial concentrations of the populations of concern for this analysis may be present in areas close to individual actions proposed under each of the alternatives considered. Approximately 76.9 percent of the population of the U.S. study area (all regions combined) and 76.6 percent of the population of the total Canadian study area live in concentrated population centers.

The potential for differential and disproportionate impacts to minority or low-income populations would increase in those areas where proposed actions under any of the alternatives are located near individual residential communities where populations of concern for environmental-justice effects are found in greater numbers. Site-specific consideration of the potential for human-health-and-safety effects to children is more important in those areas where project actions are located near residential development, schools, parks, and recreational facilities, or in other areas where children are likely to be present, such as churches and shopping areas. Consideration of actions with the potential to impact these populations should be included in subsequent, tiered, site-specific analyses for any of the actions proposed here that may have a potential environmental-justice or human-health effect or may pose a risk to public or worker safety.

There are two general populations of concern for the analysis of environmental-justice effects and the protection of children. One is the traveling public, which may be affected by changes in CBP operational procedures, inspection regimes, or surveillance activity. These changes may result in time delays or otherwise impair cross-border transit for travelers.

The second population includes residents of the border communities or other populations that make use of local community resources like commercial or recreational facilities. Border communities may be influenced by CBP operations, especially those related to construction or other physical changes in the surrounding environment that may have social, economic, or human-health effects for local populations. Populations of concern to the analysis of environmental-justice effects and the protection of children in the regions do not meet the threshold of being either greater than 50 percent or meaningfully greater than the population percentage in the general population or other appropriate unit of geographic analysis. Minority populations in the border communities of the U.S. study area represent a substantially smaller percentage of the total population than is found in the total U.S. population. Border communities in the Canadian portion of the study area are also substantially less diverse than in the Canadian population as a whole. As a result, the border communities of the U.S. and Canadian study areas represented for this Programmatic Environmental Impact Statement (PEIS) are generally less diverse than the nation as a whole.

The percentage of the study-area populations living at or below the poverty level is collectively lower than the national level for communities in the United States and only slightly higher for communities in Canada. Poverty levels for border communities within individual states and provinces are generally equivalent to state, provincial, and national levels, or in some cases, only slightly higher. Percentages of children under the age of 18 are comparable to state, provincial, and national levels. As a result, at the programmatic level of analysis, large concentrations of minority and low-income populations, or populations of children younger than 18 years of age, have not been identified for further analysis in this PEIS.

The actions considered under each of the alternatives presented here would not inherently result in a categorically disproportionate impact to any of the populations of concern. That is, the characteristics of these actions do not specifically target minority or low-income populations for a higher or disproportionate impact than any other population. The generic impact of the actions themselves would be essentially equivalent for all population segments based on the nature of the action itself. However, where minority or low-income populations, or populations of children under age 18, are found to represent disproportionately high percentages of any affected populations, they may be more susceptible to a particular risk or consequence than the general population. The potential for these populations to be displaced, suffer a loss of employment or income, or otherwise experience adverse effects to general health and well-being may represent a potential environmental-justice effect.

Because of the incremental nature of CBP's activities across the Northern Border as a whole, no new potential for environmental-justice effects or increased risks to children would be anticipated under any of the alternatives, beyond those already resulting from currently ongoing program construction and operations. Where particular actions might affect or be affected by ongoing activities at the local level, the analysis of potential environmental-justice or human -

health effects to minority or low-income populations, or populations of children under the age of 18, would necessarily be site specific.

Extensive mitigation measures would not be required under any alternative because the potential risk to human health, especially for populations of children under the age of 18, would be minimized through adherence to all applicable Federal and state safety regulations.

Because of the small, incremental nature of planned CBP activities and the relative absence of impacted populations, adverse effects to minority and low-income populations and children across the Northern Border as a whole would not be significant. Therefore, negligible-to-minor direct or indirect adverse impacts would be expected from all of the alternatives under consideration. Likewise, because of the modest incremental changes involved in all of the alternatives, no significant cumulative impacts would be expected.

8.12.1 NO ACTION ALTERNATIVE

The No Action Alternative would continue CBP's ongoing program at the current level of operations. CBP would maintain its existing facilities and infrastructure and would provide replacement as necessary. No new potential for environmental-justice effects or increased risk to children would be anticipated under this alternative. In general, both the potential beneficial and adverse effects of the No Action Alternative would be experienced equally by all members of the affected border communities, depending on their proximity to the actual location of any proposed action. Minority or low-income individuals would not be likely to experience high or disproportionate effects from the actions to be taken under this alterative solely on the basis of their inclusion as part of the populations of concern. Where particular activities are located in areas with high concentrations of minority or low-income populations, some potential for disproportionate effect may be present. Any adverse effects experienced by these populations would be negligible to minor overall.

Particular activities may pose a higher risk to the health and safety of children, especially those related to construction safety and where human-health effects may be of concern; however, CBP's continuing commitment to the use of best practices in all operations would be expected to minimize any potential for associated impact. In general, in accordance with the analysis following in this section, the overall impact of this alternative to populations of concern for environmental justice would be minor for both beneficial and adverse effects.

Small Construction Projects

Small construction projects, including the expansion and modification of small buildings, communications towers, and security infrastructure such as fencing, along with facility maintenance and repair and upgrades to mechanical systems, would be expected to have negligible effects for environmental-justice populations and the protection of children. In general, construction projects may have the potential to affect local populations living in areas immediately adjacent to the project or in nearby communities. Any direct adverse impacts associated with small-site construction or maintenance operations would be experienced by local residents in relation to their proximity to the actual construction site without regard to their inclusion as populations of concern for this analysis.

Some temporary adverse impacts may be experienced by local populations and site workers during construction. These risks may include dust inhalation, exposure to hazardous chemicals, and construction-related accidents. Increased traffic associated with construction can cause a temporary disruption of local travel during the construction period. Individual residents or households in the local community could also experience a small but beneficial economic impact from increased employment and economic activity within the community as a direct result of construction activities.

Construction sites can be a potential risk to the health and safety of children in surrounding residential neighborhoods. In addition to increasing exposure to human-health risks for especially sensitive populations, construction sites can often be attractive to children as a source of curiosity or a play area, creating a potential safety risk as well. Assuming best practices would be employed by CBP during construction, affected sites would be secured to prevent unauthorized, random access by children.

Because smaller construction projects would have a correspondingly smaller footprint, any adverse impacts to local populations would be limited to individuals living close to the actual site and the workers on the site itself. These impacts would be expected to be experienced by all segments of the affected population equally.

Small construction projects would not be expected to result in disproportionately high or adverse impacts to minorities or low-income populations or increase the human-health-and-safety risks to children. Some potential for isolated concentrations of populations of concern may exist at specific site locations, however. These conditions would be addressed as part of site- specific Environmental Assessments or Environmental Impact Statements at the time these individual projects are evaluated. As a result, the potential effect of small construction projects on minority and low-income populations and children would be expected to be negligible.

Large Construction Projects

Similar to small construction projects, large construction projects, including new facilities, major modifications and modernization of POEs and USBP stations, as well as access roads, security infrastructure, and demolition or closure of existing structures, would have the potential to affect environmental-justice populations and children. Because of the larger scale of these operations (footprint greater than one acre), a larger segment of the general population would potentially experience effects than would be the case for smaller construction projects. The potential for significant concentrations of populations of concern to be present among these populations would also increase. As a result, the potential for impact would be expected to be negligible to minor.

Temporary, short-term adverse impacts similar to those described for small construction projects may be experienced by local populations and site workers during construction. Longer-term effects to individuals and local communities may be associated with potential displacement of local resident populations as a result of land acquisition for new structures or the alteration of the setting and character of the nearby community through demolition of existing structures or creation of visual and other barriers. Increased traffic on local roads during the construction period and during actual operation may result in travel delays for local residents. A negligible-to-minor but longer-term beneficial impact to the local economy may be experienced as a result

of increased economic activity generated in the local community by construction-related employment and expenditures and indirectly by increased retail and other spending in the local community.

Local residents would experience any adverse impacts associated with large construction projects in relation to their proximity to the actual construction site. Although all members of any potentially affected community would be expected to have exposure to benefits associated with these activities, minority and low-income populations could benefit to a greater extent from increased employment and business opportunities that may be generated in the local community.

Although CBP facilities along the American-Canadian border tend to be located in rural, less densely populated places outside of major metropolitan areas, the majority of the population in the border communities lives in larger population centers. Locations where construction is more likely to involve specific minority or low-income neighborhoods, such as urban areas, would increase the potential for impacts. Where construction is removed from settled, urbanized areas, little or no impact would be anticipated.

To the extent that all population segments would experience construction-related impacts equally, minority and low-income populations would not be expected to be adversely affected to any greater extent than the general population as a whole. Except where facilities are located in specific residential areas that contain large minority or low-income populations or where large numbers of children are present, any high or disproportionate impact to populations of concern for environmental justice associated with large construction projects would not be anticipated. However, the increased scale and specific site locations of large construction projects increases the possibility that these concentrations may be present in any local populations. Any potential for effect would be expected to be negligible to minor.

Small On-Site Trade and Travel Processing Operations

Environmental-justice impacts to the traveling public or resident populations in areas where small on-site trade and travel processing operations are carried out would be negligible. This does not mean that the public at large will not experience some effects associated with travel delays or other intrusions. However, there is no reason to expect that minority and low-income populations or children will experience these delays to any greater or lesser extent than would be the case for the general public as a whole. Any changes in processing operations or procedures would not alter the demographic characteristic of the traveling population and would therefore not be expected to increase the proportion of populations of concern in the traveling public at any particular point. At the site-specific level, minority or low-income groups that are more dependent on international travel for personal or economic reasons than the general public may experience greater inconvenience than the general public at large. However, at the programmatic level, these populations are not readily identifiable.

Large On-Site Trade and Travel Processing Operations

Impacts associated with large on-site trade and travel processing operations are similar in kind to those described for small on-site trade and travel processing operations. However, the greater number of crossings per day involved with large -scale processing operations increases the probability that larger numbers of minority and low-income populations may be present within

the traveling public. Any associated environmental-justice impacts would be considered negligible to minor under these circumstances.

8.12.2 FACILITIES DEVELOPMENT AND IMPROVEMENT ALTERNATIVE

The Facilities Development and Improvement Alternative (Facilities Alternative) would maintain CBP's capacity to securely and efficiently carry out its operations and ensure adequate space requirements for current and projected force and checkpoint capacity. CBP would anticipate construction of new USBP stations or modernization or replacement of existing stations under this alternative.

In general, potential beneficial or adverse effects for the populations of concern in this analysis would be negligible to minor, depending on the proximity of these populations to the proposed site of activity and the degree to which these populations are represented in greater proportion than would be found in the general populations of the surrounding communities. Anticipated construction activity under this alternative would increase the possibility that sites selected for new or modernized USBP stations may be close to populations of concern for environmental justice or the protection of children. Changes to trade and travel processing operations may have a minor adverse impact on those minority and low-income populations that are more dependent on international travel for economic or personal reasons. Some minor beneficial impact may be associated with increased employment and business opportunities associated with any anticipated construction projects.

Small Construction Projects

Impacts from construction under this alternative are similar to those described for the No Action Alternative. The number of small construction projects anticipated under this alternative would be expected to increase from the No Action baseline. In general, the effects of small construction projects would be experienced most directly by those individuals living close to any of the proposed projects without regard to ethnic origin or socioeconomic status.

Although the greater level of small construction activity under this alternative might increase the likelihood that populations of concern may be present in the immediate vicinity of selected projects, the effects associated with small construction projects normally do not extend to a large population beyond the immediate site vicinity. As a result, increasing the number of projects would not necessarily increase the potential to affect larger numbers of populations of concern for environmental justice. Environmental-justice effects associated with this alternative would therefore be generally negligible for those circumstances where minority groups and low-income groups are not present.

Environmental-justice and human-health-and-safety effects for the populations of concern under this analysis would be negligible to minor, depending on the proximity of these populations to the proposed construction site and the degree to which these populations are represented in greater proportion than would be found in the general populations of the surrounding communities. The increased level of construction activity anticipated under this alternative would increase the possibility that sites selected for upgraded LPOE and USBP stations may be close to populations of concern for environmental justice or the protection of children. Changes to trade and travel processing operations may have a minor adverse impact on those minority and

low-income populations that are more dependent on international travel for economic or personal reasons. Overall impacts associated with this alternative would be negligible to minor.

Large Construction Projects

Impacts from construction under this alternative are similar to those described under the No Action Alternative. In general, these effects would be experienced by all individuals living in the vicinity of the proposed projects without regard to ethnic origin or socioeconomic status. However, the Facilities Alternative includes an increase in the number of large construction projects undertaken by CBP. Some potential may exist for increased likelihood that populations of concern may be present in the immediate vicinity. Adverse environmental-justice effects associated with this alternative would be generally negligible for those circumstances where minority groups and low-income groups are not present, but may rise to minor where environmental-justice populations are present. A negligible but potentially beneficial impact to the local economy may be experienced as a result of increased economic activity generated by construction-related activity.

Small On-Site Trade and Travel Processing Operations

Effects would be similar to those described under the No Action Alternative. Where existing ports of entry (POEs) are expanded or improved, some beneficial impact to all populations may be anticipated, including those populations of concern for environmental justice. For existing facilities or those not included as a part of this action, a negligible, potentially adverse impact similar to that described under the No Action Alternative may be anticipated.

Large On-Site Trade and Travel Processing Operations

Effects would be similar to those described under the No Action Alternative. Where existing POEs are expanded or improved, some beneficial impact to all populations may be anticipated, including those populations of concern for environmental justice. For facilities not included under this alternative, a potential negligible-to-minor adverse impact similar to that described under the No Action Alternative may be anticipated.

8.12.3 DETECTION, INSPECTION, SURVEILLANCE, AND COMMUNICATIONS TECHNOLOGY EXPANSION ALTERNATIVE

Actions proposed under the Detection, Inspection, Surveillance, and Communications Technology Expansion Alternative (Detection/Inspection Alternative) would emphasize the use of new and additional technologies to carry out CBP's responsibilities. This alternative would have the beneficial effect of reducing the potential for differential impact to environmental-justice populations associated with construction of new facilities proposed under several of the other alternatives considered for this analysis. Potential human-health effects that may be associated with the introduction of new or expanded technologies would not be specific to minority or low-income communities in particular. Overall potential effects associated with this alternative would be generally minor for all populations of concern for environmental-justice analysis.

Reliance on the expansion of existing technologies and the acquisition of new systems would substantially reduce the potential for differential impact to environmental-justice populations associated with construction of new facilities proposed under several of the other alternatives

considered for this analysis. Potential human-health effects that may be associated with the introduction of new or expanded technologies would not be specific to minority or low-income communities in particular. Overall effects associated with this alternative would be generally minor for all populations of concern for environmental-justice analysis. Where towers or other infrastructure elements are located close to large concentrations of minority or low-income populations, an increased concern for adverse impact to populations of concern may be anticipated.

Small Construction Projects

Expansion of surveillance technologies under this alternative would require a substantial increase over the No Action Alternative in small construction projects to provide additional support structures in the form of towers, poles, and antennas. Impacts associated with small construction projects under this alternative would be similar to those described for the No Action Alternative.

Towers and other communications structures may represent a visual intrusion on the setting and character of local communities around the site. These effects would be experienced widely throughout the community by all population segments. Minority and low-income communities may be more susceptible to adverse effects, depending on the location of these facilities. Potential effects would be reduced through the use of existing structures (including buildings) and the sharing of facilities with other agencies.

By reducing the need to acquire additional acreage for new buildings and other large construction projects, this alternative reduces the potential for differential effects on populations of concern for environmental justice that may be associated with these projects. Potential human-health-and-safety effects associated with new construction would also be reduced. Human-health-and-safety effects associated with the acquisition or implementation of new or expanded technologies would not be expected to be specific to any one community within the general population.

As a result, the potential for environmental-justice impacts or impacts to other sensitive populations such as children would be expected to be similar for all populations of concern. To the extent that minority populations are present in larger concentrations in the immediate vicinity of tower sites and in the surrounding communities, a potential for minor adverse impact may exist.

8.12.4 TACTICAL SECURITY INFRASTRUCTURE DEPLOYMENT ALTERNATIVE

Implementation of tactical security measures along the Northern Border of this region would substantially decrease the potential for impacts to environmental-justice populations associated with the construction and modernization of POEs, USBP stations, or surveillance infrastructure. Additional infrastructure may be objectionable to segments of the general public; however, this does not inherently imply disproportionately high or adverse impact to environmental-justice populations as compared to the potential effects on the general population. The effects associated with the Tactical Security Infrastructure Deployment Alternative (Tactical Security Alternative) would be experienced by all populations within the affected area regardless of low-income status or minority identification. Potential effects associated with this alternative would be expected to be negligible to minor, depending on the proximity of minority or low-income populations to the actual site of the infrastructure project.

Although the introduction of additional infrastructure around POEs and in remote areas of the study area may be objectionable to segments of the general public, this approach does not inherently imply disproportionately high or adverse impact to environmental-justice populations as compared to the potential effects on the general population. The effects associated with this alternative would be experienced by all populations within the affected area regardless of low-income status or minority identification.

Residential portions of highly urbanized areas or of larger communities tend to have greater proportions of low-income or minority individuals in their populations than may be true for the general population. As a result, these populations may experience a higher or disproportionate effect from infrastructure projects than other populations. Effects would be expected to be negligible to minor, depending on the proximity of minority or low-income populations to the actual site of the project.

Small Construction Projects

Construction-related impacts associated with small projects such as trench cuts, towers, minor access roads, and fences would be similar to those described for the No Action Alternative. However, physical barriers may require the acquisition of additional land and some new construction activity. Additionally, although much of the Northern Border runs through relatively remote areas, urbanized areas, as well as a number of smaller communities and private landowners, are also present.

Physical barriers represent a visual intrusion to the setting and character of the surrounding community and are often resented by local residents, especially private landowners when such barriers divide private holdings or interfere with the scenic qualities of certain areas. To the extent that minority and low-income neighborhoods are located along the Northern Border, the potential for minor adverse impacts to environmental-justice populations would be anticipated. Where these communities are not present in significant proportions in comparison to the general population, the overall environmental-justice impact would be negligible.

Large Construction Projects

Activities associated with large-scale projects for the construction of access roads, fences, and other barriers would be expected to have impacts similar to smaller-scale efforts. Because of the

larger scale of these operations, effects would be experienced by a larger segment of the population than would be the case for smaller construction projects, increasing the potential for significant concentrations of populations of concern in the affected area to be differentially affected. As a result, the potential for impact would be expected to be minor to moderately adverse, depending on the proximity of populations of concern to the physical barriers created.

8.12.5 FLEXIBILE DIRECTION ALTERNATIVE

The Flexible Direction Alternative combines elements of the other proposed alternatives into a mix of program actions to meet CBP's future requirements as it carries out its responsibilities. Because the actual configuration of program elements that may be implemented is not predictable, the evaluation of effects for environmental justice and the protection of children considers the potential effects that would result from combining all of the action alternatives.

The potential beneficial and adverse effects of this alternative would be expected to be experienced equally by all members of the affected border communities, depending on their proximity to the actual location of any proposed action. Minority or low-income individuals would not experience high or disproportionate effects from the actions to be taken under this alterative solely on the basis of their inclusion as part of the populations of concern. Any potential for differential impact to minority or low-income populations under this alternative is essentially a site-specific consideration based on proximity to the location of the particular action to be taken. Where activities are located in areas with high concentrations of minority or low-income populations, some potential for disproportionate effect may be present. Any adverse effects experienced by these populations would be expected to be negligible to minor overall. Exercise of CBP's best practices in the location and execution of specific operations would be expected to minimize any potential for associated impact to the health and safety of children.

Small Construction Projects

Small construction projects anticipated under this alternative would have the same generic effects for environmental justice and the protection of children as described under the Facilities Alternative. Construction projects in general may have the potential to adversely affect local populations living in areas immediately adjacent to the project or in nearby communities. Any direct adverse impacts associated with small-site construction or maintenance operations would be experienced by local residents in relation to their proximity to the actual construction site.

The level of activity anticipated under the maximum condition for this alternative increases to approximately 160 projects. Because smaller construction projects would have a correspondingly smaller footprint, any adverse impacts to local populations would be limited to individuals living close to the actual site of construction and any workers on the site itself. By increasing the number of individual projects, this alternative might be expected to increase the likelihood that populations of concern may be present in the immediate vicinity of selected projects.

The effects associated with small construction projects normally do not extend beyond the immediate site vicinity. In those circumstances where physical barriers are constructed, they may represent a visual intrusion on the setting and character of the surrounding community that is resented by local residents, especially private landowners. To the extent that these structures

are more likely to be situated in minority and low-income neighborhoods, the potential for minor adverse impacts to environmental-justice populations would be anticipated.

In general, increasing the number of potentially affected individuals does not necessarily increase the probability that populations of concern will be disproportionately affected by activities under this alternative. Environmental-justice effects associated with this alternative would therefore be generally negligible, increasing to minor for those circumstances where minority groups and low-income groups are present in larger numbers at specific sites.

Large Construction Projects

Impacts associated with large construction projects would be similar to those described under the Facilities Alternative. The activity anticipated under this alternative may increase to 25 projects per region. However, it is expected that this would not substantially increase the likelihood that populations of concern may be present in the immediate vicinity of these projects. As with small construction projects, where physical barriers are introduced into the local environment, residents, especially landowners, may experience minor impacts associated with alteration of the setting and character of the local neighborhood or surrounding community.

Where environmental-justice populations are present in greater proportion than is found in the general population at the individual site level, a potential for disproportionately high and adverse effect may be associated with implementation of this alternative. However, in general, this probability would not be substantially increased. Adverse environmental-justice effects associated with this alternative would be generally negligible for those circumstances where minority groups and low-income groups are not present, but may rise to minor where environmental-justice populations are present.

Small On-Site Trade and Travel Processing Operations

Impacts to the traveling public or resident populations in areas where small on-site trade and travel processing operations are carried out would be expected to be negligible for populations of concern to environmental-justice issues or the protection of children. Any travel delays associated with this alternative will not be experienced by minority and low-income populations or children to any greater or lesser extent than by the general public as a whole. Any changes in processing operations or procedures would not alter the demographic characteristics of the traveling population and would therefore not be expected to increase the proportion of populations of concern in the general traveling public at any particular point. At the site-specific level, minority or low-income groups that are more dependent on international travel for personal or economic reasons than the general public may experience greater inconvenience than the general public at large. However, at the programmatic level, these populations are not readily identifiable.

Large On-Site Trade and Travel Processing Operations

Impacts associated with large on-site trade and travel processing operations would be similar to those described for small on-site trade and travel processing operations. However, the higher number of crossings per day associated with large processing operations would likely increase the probability of affecting greater numbers of minority and low-income populations within the

traveling public. Any associated environmental-justice impacts would be considered to be potentially negligible to minor under these circumstances.

8.12.6 BEST MANAGEMENT, MINIMIZATION, AND MITIGATION

CBP seeks to avoid, minimize, repair, and reduce the impacts of its actions on the human environment. It does so with a combination of best management practices (BMPs), siting plans, design strategies, mitigation measures, and monitoring plans best suited to the scale and the location of the particular action. Towards that end, in implementing its proposed action CBP could choose from among the following actions to avoid or minimize environmental-justice impacts or health-and-safety risks to children.

To the extent that CBP employs BMPs in the construction of new facilities and the modernization and management of existing facilities, potential adverse effects to individuals would be minimal for all populations and would not be disproportionately experienced by populations of concern for environmental justice. Extensive mitigation measures would not be required under any alternative.

Potential risk to human health and safety for resident populations, workers, and populations of children in the area of CBP projects would be minimized through adherence to all applicable Federal and state health-and-safety regulations. Where construction sites are located near population concentrations, site safety measures, including barriers and warning signs, would be posted around the site perimeter to deter unauthorized intrusion, especially by children. Vehicles and equipment would be secured when not in use or when the site is unattended.

Continued participation by the general public in the implementation of CBP policies and programs would be expected to minimize any potential for impact to communities in the vicinity of CBP operations. Where CBP introduces structures and physical barriers, such as towers and extensive fencing, in more urbanized areas that may be more likely to contain high concentrations of populations of concern, additional mitigation measures may be required. Efforts to identify and consult with any affected individual property owners or the residents of affected communities would be a part of any mitigation strategy under any of the alternatives proposed. Extensive engagement with these individuals in the planning and execution of CBP programs would be expected to minimize any potential for impact to communities in the vicinity of construction projects. CBP would also ensure that any construction conforms to local planning and zoning ordinances.

8.12.7 SUMMARY OF POTENTIAL IMPACTS

Table 8.12-1 summarizes the potential environmental-justice impacts from all the alternatives.

Table 8.12-1. Summary of Potential Environmental-Justice Impacts from All U.S. Customs and Border Protection Alternatives

Impact-Producing Activity	Level of Impact				
	Negligible Adverse	Minor Adverse	Moderate Adverse	Major Adverse	Beneficial

Impact-Producing Activity	Level of Impact				
	Negligible Adverse	**Minor Adverse**	**Moderate Adverse**	**Major Adverse**	**Beneficial**
NO ACTION ALTERNATIVE					
Small construction projects (<1 acre and <1/4 mile: e.g., minor repairs to facilities, parking lot repairs, access road repairs)	X				
Large construction projects (>1 acre and >1/4 mile: e.g., repairs to facilities, parking lot repairs, access road repairs)		X			X
Small on-site trade and travel processing operations	X				
Large on-site trade and travel processing operations		X			
OVERALL IMPACT		**X**			
FACILITIES DEVELOPMENT AND IMPROVEMENT ALTERNATIVE					
Small construction projects (<1 acre and <1/4 mile: reconstruction or construction of new POEs, USBP structures, parking lot repairs, access road repairs)	X				
Large construction projects (>1 acre and >1/4 mile: reconstruction or construction of new POEs, USBP structures, parking lot repairs, access road repairs)		X			X
New small on-site trade and travel processing operations (new POEs)	X				X
New large on-site trade and travel processing operations (new POEs)		X			X
OVERALL IMPACT		**X**			

Impact-Producing Activity	Level of Impact				
	Negligible Adverse	Minor Adverse	Moderate Adverse	Major Adverse	Beneficial
DETECTION, INSPECTION, SURVEILLANCE, AND COMMUNICATIONS TECHNOLOGY EXPANSION ALTERNATIVE					
Small construction projects (towers and other infrastructure to mount antennas)		X			X
OVERALL IMPACT		**X**			
TACTICAL SECURITY INFRASTRUCTURE DEPLOYMENT ALTERNATIVE					
Small construction projects (trench cuts, towers, minor access roads and fences)		X			
Large construction projects (access roads and fences)			X		
OVERALL IMPACT		**X**			
FLEXIBLE DIRECTION ALTERNATIVE					
Small construction projects		X			
Large construction projects		X			X
Small on-site trade and travel processing operations	X				X
Large on-site trade and travel processing operations		X			X
OVERALL IMPACT		**X**			

8.13 ENVIRONMENTAL CONSEQUENCES TO HUMAN HEALTH AND SAFETY

Many of the routine activities conducted by U.S. Customs and Border Projection (CBP) have the potential to impact human health and safety (HH&S). Such activities include, but are not limited to inspections, interdictions, mission training, use of weaponry, and patrols over land, water, and air. HH&S relates to the health and safety of the general public including vehicle occupants, CBP and station employees, and maintenance personnel. Safety can also refer to safe operations of aircraft or other equipment. In order to improve the health and safety of CBP employees and the general public during intentional destructive acts (IDAs) and routine CBP activities and interdictions, CBP employees go through several weeks of training at the Border Patrol Academy. One of CBP's main purposes is to protect U.S. citizens from IDAs; Appendix R evaluates the human health and safety impacts of IDAs along the Northern Border.

Since the majority of agents perform their jobs in rural areas and respond to potentially dangerous situations by themselves, it is important that every employee receive training. Employees who participate in horse, canine, all-terrain vehicle (ATV), snowmobile, water, or air patrols receive further training. Special units, such as the Border Patrol Tactical Unit (BORTAC) and Border Search, Trauma and Rescue (BORSTAR), also receive additional training. For descriptions of the affected environment for HH&S in each region, see Section 4.13.2 (West of the Rockies), Section 5.13.2 (East of the Rockies), Section 6.13.2 (Great Lakes), and Section 7.13.2 (New England).

Under all alternatives, current operations across the Northern Border would continue to meet CBP's goals of securing the Nation's borders, protecting America from the entry of dangerous people and goods, and preventing unlawful trade and travel. CBP's approach would be consistent across the Northern Border, and though impacts to HH&S would vary with each CBP activity, overall, direct, and indirect impacts to HH&S would range from beneficial and minor to moderate adverse for all alternatives. The biggest risks to HH&S posed by CBP's operations are as follows:

- Radiation exposure at POEs;
- Radio frequency (RF) and electromagnetic (EM) radiation exposure from surveillance towers;
- Accidents from aerial patrols; and
- Pursuit and interdiction activities.

With the continued application of the training, licensing, and regulation requirements for the people and equipment involved in these activities, overall adverse impacts are expected to be minor to moderate, while there are clear, beneficial health and safety impacts to the public from CBP's efficient and successful conduct of these activities.

Because of the minor to moderate and incremental nature of all of the alternatives, the cumulative impacts from CBP and non-CBP actions to HH&S would be the same for all alternatives across the Northern Border. CBP's focus on facilities development under the

Facilities Development and Improvement Alternative could increase the risks associated with building these facilities. However, impacts would still be minor to moderate and adverse, as long as CBP's safety policies, training, and procedures were followed. Major unanticipated health, security, or fire incidents from construction and operating POEs could strain or exceed local responder capacity, causing a minor to moderate adverse impact.

Overall, any adverse impacts would be expected to be minor to moderate, while there are clear beneficial health and safety impacts to the public from CBP's conduct of these activities. Necessary mitigation measures are particular to the specific action as well as to the physical characteristics of the environment selected for the action (see Section 9.12) The variation of mitigation requirements varies greatly along the Northern Border, especially with regard to local and state regulations.

Because of the small, incremental nature of planned CBP activities and the relative absence of impacted populations, adverse effects to Human Health and Safety across the Northern Border as a whole would not be significant. Therefore, minor to moderate direct or indirect adverse impacts would be expected from all of the alternatives under consideration. Likewise, because of the modest incremental changes involved in all of the alternatives, no significant cumulative impacts would be expected.

8.13.1 NO ACTION ALTERNATIVE

Under the No Action Alternative, current operations would continue in order to meet CBP's goals of securing the Nation's borders, protecting America from the entry of dangerous people and goods, and preventing unlawful trade and travel.

Impacts to HH&S vary with each CBP activity described in the analysis. Overall, impacts to HH&S would be both beneficial and minor adverse. The biggest risks to HH&S posed by CBP's No Action Alternative are from radiation exposure at POEs, RF and EM exposure from communication towers, and accidents from aerial patrols and pursuit and interdiction activities. With the continued application of the training, licensing, and regulation requirements for the people and equipment involved in these activities, overall adverse impacts would be expected to be minor to moderate, while there are clear, beneficial health and safety impacts to the public from CBP's efficient and successful conduct of these activities. The activities include:

Construction

Small and large construction under way or in planning would have long-term, beneficial impacts and short-term, minor to moderate, adverse impacts. Improvements to POEs, checkpoints, and USBP Stations would increase the effectiveness of surveillance and intelligence operations along the Northern Border, limiting the number of terrorists and terrorist weapons entering the United States.

Adverse impacts could occur due to construction accidents. Construction workers at any of the construction sites are exposed to safety risks from the inherent dangers of construction sites. The hazards and risks of construction, alteration, and repair of CBP's facilities include falling from rooftops, getting injured by unguarded machinery, being struck by heavy construction equipment, getting electrocuted, and being exposed to silica dust or asbestos (USDOL, no date). The main hazards and risks of CBP constructing roads include pedestrian workers being struck

by traffic, work zone construction vehicles, and heavy construction equipment; and inhalation of asphalt and dust (LHSFNA, 1998). Contractors would be required to establish and maintain safety programs at the construction site and follow current OSHA safety regulations.

Since construction regulations will be followed, adverse impacts from construction-related accidents would be expected to be short-term (during construction) and minor to moderate.

Routine Operations

Routine operations along this region would have both long-term beneficial and short-term, minor to moderate, adverse impacts on HH&S. These routine activities along the border help CBP agents prevent terrorists and terrorist weapons from entering the United States and will continue to do so as long as they are kept in place. Further, these routine operations protect American citizens from IDAs. This beneficial impact is an important component of CBP's mission.

Even though CBP interdictions are intended to ensure the Nation's security while facilitating efficient trade and travel and are proven to have a beneficial impact to HH&S, interdictions place CBP agents and the general public in short-term danger. If an accident or IDA were to occur during the enforcement of the CBP mission, it may result in short-term, adverse impacts. In order to increase the percentage of interdictions along the Northern Border and to reduce the chance of accidents and IDAs, CBP agents go through vigorous training.

CBP's Office of Training and Development is responsible for basic training of USBP agents. All CBP agents receive basic law enforcement education at the Border Patrol Academy in New Mexico where they attend a course in integrated law, physical training, firearms instruction, and driving. At the Academy, CBP's USBP trainees are trained to apprehend violators of the immigration laws, and agents receive training to support CBP's priority antiterrorism mission: preventing terrorists and terrorist weapons from entering the United States (USDHS, 2009b). USBP agents are given the skills to develop activities response plans to IDAs and to hazmat spills, accidental fires, and explosions along the Northern Border (USDHS, 2009b).

CBP's trainees are taught how to conduct interviews, recognize violations of Federal criminal statutes, and operate in the field. Agents also go through firearms training in range safety, survival shooting techniques, judgment pistol shooting, quick point, and instinctive reaction shooting. All USBP agents also receive training in how to properly perform cardiopulmonary resuscitation (CPR) and are equipped with safety devices such as bulletproof vests to minimize risk of violent assaults or gunshots.

The mission of the Border Patrol Tactical Unit (BORTAC) is to respond to terrorist threats of all types anywhere in the world, and conduct training and operations both within the United States and in other countries. The program includes a physical test, pistol qualifications test, swimming, treading water, and drown-proofing. After the testing phase is completed, candidates undergo weeks of intense training in small unit tactics, operation planning, advanced weapon skills, defensive tactics, and airborne operations. Before graduating, candidates must demonstrate the ability to function in a team environment under stress and sleep deprivation (USDHS, 2010b).

The Border Patrol Search, Trauma, and Rescue (BORSTAR) Team is tasked with providing immediate response to the Border Patrol and other local, county, and state agents (USDHS, 2010c). These teams are highly specialized to respond to emergency search and rescue situations anywhere in the United States. Members of the BORSTAR team undergo highly specialized training in physical fitness, medical skills, technical rescue, navigation, communication, swiftwater rescue, and air operations. BORSTAR agents first go through a 5-week Basic BORSTAR Academy and then go through additional training to become specialists in the various disciplines (USDHS, 2010c).

The OAM agents and CBP officers receive similar basic training at Glynco, Georgia at the Federal Law Enforcement Training Center (FLETC). Both OAM agents and CBP officers receive training in executing search warrants, making arrests, using firearms, employing defensive tactics, crime scene, antiterrorism, ethics, interviewing techniques and legal issues. OAM agents also receive training in physical security and asset protection, and driver training. CBP officers receive further training in incident and crises management, inspections, hazardous materials, community first aid and safety, agricultural threats, personal search, and the use of NII equipment. CBP officers may also be trained at different field offices and by CBP's Office of Training and Development in Artesia, New Mexico (USGAO, 2007).

The training USBP and OAM agents and CBP officers receive help to prevent major adverse impacts to HH&S. Minor to moderate adverse impacts could result from unavoidable accidents and IDAs.

Trade and Travel Processing Operations

Beneficial, long-term impacts would result from CBP agriculture inspections reducing the number of diseases crossing the border. Short-term, minor to moderate, adverse impacts would occur if a nonindigenous disease were to be released into the United States.

Agricultural specialists would continue to work at POEs and checkpoints to prevent diseases from entering the United States. CBP personnel participating in agricultural inspections receive training developed by CBP and the U. S. Department of Agriculture (USDA) Animal and Plant Health Inspection Service (APHIS). Dogs play an important part of CBP's agricultural inspections, and CBP agricultural inspectors receive training in the use of dogs to search for agricultural pests. Both CBP and APHIS conduct reviews of agricultural inspections and training to make sure they comply with CBP and APHIS standards (USDA & USDHS, 2007).

To deal with emergency situations, APHIS and CBP have developed a comprehensive plan to respond to a broad range of domestic agro-bioterrorist events. CBP's agricultural inspectors also receive training in agricultural quarantine and inspection activities to minimize an outbreak of disease in the United States (USDA & USDHS, 2007). Accidents are unavoidable and minor to moderate adverse impacts could occur from the accidental release or escape of a disease vector. Beneficial long-term impacts result every time a nonindigenous disease or disease vector is kept out of the United States.

Ground Surveillance and Situational Response Activities

Motorized and Nonmotorized Patrols

Motorized operations range from 2 to 200 miles, averaging 50 miles per patrol. Some 65 percent of patrols are conducted on-road; the other 35 percent are conducted off-road. In each region, there are approximately 350 to 425 motorized operations and 40 to 50 nonmotorized operations per day.

Conduct On-Road Vehicle Patrols—Both beneficial and adverse impacts would result from on-road vehicle patrols. Long-term beneficial impacts occur from the interdictions that result from surveillance. Short-term, minor to moderate, adverse impacts to HH&S could occur during vehicle accidents and injuries. Motorized patrols range from 2 to 200 miles, averaging 50 miles per patrol. Some 65 percent of patrols are conducted on-road; the other 35 percent are conducted off-road. In each region, there are approximately 350 to 425 motorized operations and 40 to 50 nonmotorized operations per day.

During motorized operations there is a potential for accidents and injuries to CBP personnel and the general public. As patrols increase, the risk of accidents increases, although an increase in patrols does not guarantee any specific increase in accidents or injuries. Also, in areas where people are more concentrated (Great Lakes Region), the risk of accidents or injuries is greater. Although an increase in patrols and population increases the risk of an accident or injury, the actual number of accidents and injuries is low. CBP has had only two Border Patrol fatalities due to vehicle accidents along the Northern Border since 1924 (ODMP, 2011a): the first in 1925 (ODMP, 2011b) and the more recent in 1988 (ODMP, 2011c). Nevertheless, since CBP is a law enforcement agency, it is important to note that traffic-related accidents were the number one cause of fatalities for law enforcement officers in 2010 (NLEOMF, no date).

To minimize the risks of accidents and injuries, CBP takes certain steps with its vehicle operators. CBP patrol personnel are trained in the safe and efficient operation of motor vehicles. Training emphasis is on laws of motion, vehicle dynamics, and driver response. Since agents operate vehicles in many different conditions throughout the United States, the safe operation of patrol vehicles under a variety of extreme conditions is important to the accomplishment of CBP's mission.

To graduate from the Border Patrol Academy, trainees have to complete a van/utility vehicle operation, skid control, and emergency response test. Once an intern passes the tests, he or she is trained further in pursuit driving, vehicle stops (low-risk and high-risk), night driving, 4x4 off-road driving, and evasive driving of sport-utility vehicles (SUVs) and vans (USDHS, 2009b).

When conducting on-road vehicle patrols, CBP's agents are sometimes required to engage in emergency driving, including vehicle pursuits. The policy of CBP is that CBP officers and Border Patrol agents engage in emergency driving only when and as long as they determine that the law enforcement benefit of emergency driving outweighs the immediate danger created by such emergency driving. While emergency driving, an officer or agent would continually consider and evaluate critical safety issues and balance the law enforcement need for emergency driving against the immediate and potential danger posed to the general public by the continuation of such emergency driving (USDHS, 2007). To increase the safety of CBP

employees and the general public, CBP agents would follow CBP's emergency driving protocol for employees (USDHS, 2007). A further discussion on CBP's emergency driving is found in "CBP Emergency Driving and Vehicular Pursuits" (USDHS, 2007).

Due to CBP's training and policy, minor to moderate, short-term, adverse impacts to HH&S would occur. Vehicle accidents can be minimized with proper training. Due to an increase in interdictions from vehicle patrols, beneficial, long-term impacts to HH&S would also occur.

Conduct All-Terrain Vehicle Patrols—ATV patrols have both beneficial and minor to moderate adverse impacts to HH&S. Long-term, beneficial impacts would occur when the rate of ATV interdictions increases due to ATV patrols in areas that cannot be patrolled with other vehicles. ATVs can be used for off-road patrols. Short-term, minor to moderate, adverse impacts could result when ATV patrols engage in dangerous interdictions and during harsh weather, low lighting, and tough terrain. During ATV operations, there is a potential for accidents and injuries to CBP personnel and the general public. As patrols increase, the risk of accidents also increases, although an increase in patrols does not guarantee any specific increase in accidents or injuries. To minimize the occurrence of ATV accidents and injuries, CBP takes certain steps with its ATV operators. USBP agents in the ATV unit go through a mandatory rider safety course in how to eliminate ATV-related accidents and agent injuries. The course assumes trainees have no experience driving ATVs, and all personnel are taught the basics of the ATV, principles to maintain control, rider awareness, and how to identify terrain and obstacles. Personnel have to successfully complete the ATV course prior to assignment to the ATV unit (USDHS, 2010d).

Because of the training USBP agents receive, adverse HH&S impacts during ATV patrols would be only short-term and minor to moderate. The training would help reduce the number of accidents caused by ATV patrols.

Conduct Snowmobile Patrols—Snowmobile patrols have both long-term beneficial and short-term, minor to moderate, adverse impacts to HH&S. Long-term, beneficial impacts occur from interdictions that result from snowmobile patrols in areas that cannot be patrolled with other vehicles. During snowmobile operations there is a potential for accidents and injuries to CBP personnel and the general public. As patrols increase, the risk of accidents also increases, although an increase in patrols does not guarantee any specific increase in accidents or injuries.

To minimize the occurrence of snowmobile accidents and injuries, CBP takes certain steps with its snowmobile operators. USBP agents engaging in snowmobile patrols go through additional training to improve rider safety and snowmobile-related accidents and injuries. Short-term, adverse impacts could result when snowmobile patrols are engaging in dangerous interdictions and when accidents occur. No major adverse impact would be expected to occur, because USBP agents are trained to deal with dangerous situations.

Conduct Canine Patrols—Canine patrols have both long-term beneficial and short-term, minor to moderate, adverse impacts to HH&S. Long-term, beneficial impacts occur from interdictions that occur during, or result from, canine patrols.

Short-term, adverse impacts could result when canine patrols are engaging in dangerous interdictions and when accidents occur. Accidents are unavoidable, but to minimize the occurrence of accidents, CBP's officials who conduct canine patrols receive additional training.

CBP's Canine Program is responsible for training canine instructors, canine handlers, and canines to assist CBP in its mission. Canine teams receive training and certification in all aspects of animal behavior as well as in handling, training, and employing a detection canine. Disciplines would include concealed human or narcotics detection, passenger processing narcotic detection, search and rescue, and currency or firearms detection. Canines used as CBP agriculture detector dogs are trained at the USDA's National Detector Dog Training Center in Atlanta, Georgia (USDHS, 2010e).

The amount of training that CBP personnel receive would help reduce the number of accidents caused by canine patrols, but some accidents could occur causing short-term, minor to moderate, adverse impacts.

Conduct Horse Patrols—Horse patrols have both long-term beneficial and short-term, minor to moderate adverse impacts to HH&S. Long-term, beneficial impacts occur from interdictions that occur during, or result from, horse patrols.

Applicants for the horse patrol agent position go through a 2-phase selection process consisting of an oral interview and a riding skills test. Once this is completed, agents are required to attend an 8-week training academy and new agents are trained in horsemanship, anatomy, veterinary care, and trailering (USDHS, 2010d).

Continuing horse patrols would have both beneficial and minor adverse impacts on HH&S. Horse patrols produce interdictions across the Northern Border, but accidents involving CBP personnel and bystanders could still occur. The amount of training that CBP personnel receive would help reduce the number of accidents caused by horse patrols.

Aircraft Operations

Conduct Manned Aerial Surveillance Patrols—Continuing manned aerial surveillance patrols have both long-term beneficial and short-term adverse impacts on HH&S. Interdictions across the Northern Border would continue, having a beneficial impact on HH&S. During manned aerial surveillance operations, there is a potential for accidents and injuries to CBP personnel and the general public. As patrols increase, the risk of accidents also increases, although an increase in patrols does not guarantee any specific increase in accidents or injuries. Accidents involving OAM agents and the general public would have adverse impacts. According to the Officer Down Memorial Page website, CBP has had one fatality involving an OAM pilot along the Northern Border. The pilot crashed in Washington State in 1998 while flying over a rugged area in the Sumas Mountains (ODMP, 2011d).

To minimize the frequency and severity of manned aerial surveillance accidents and injuries, OAM takes certain steps with its aircraft pilots. OAM pilots must have certain qualifications to fly. In order to become a pilot for OAM, agents must pass an FAA Class 1 flight physical and hold a valid FAA commercial pilot's license with an instrument rating and other rating(s) appropriate to the position to be filled (USDHS, 2010a).

Certain flight hours and experience are required for participation in manned aerial patrols. OAM personnel need 1,500 flight hours, 250 hours of pilot-in-command, 100 hours within 12 months prior to hire, 75 hours night or instrument experience, an FAA first class medical certificate, and an FAA commercial pilot certificate with the following ratings: airplane, single-engine or multi-engine land with instrument; or rotor craft helicopter with instrument. Other certificates that meet or exceed the requirements of the commercial certificate would also acceptable (e.g., airline transport certificate) (USDHS, 2010a).

Once the applicant's records are reviewed and found to be sufficient, a formal interview is conducted by a 3- or 4-person panel consisting of a supervisory air interdiction agent, an instructor pilot, and a human resources representative. Instructor pilots then conduct flight evaluations graded to commercial pilot standards to assess basic pilot tasks (USDHS, 2010a).

Because of the skills required to become an OAM pilot, no major adverse impacts would be expected to occur from manned aerial surveillance patrols. Short-term, minor to moderate, adverse impacts could result from accidents.

Conduct Unmanned Aircraft System (UAS) Patrols—UASs are used to support CBP's mission. The following UAS would be used by OAM to support UAS missions at Grand Forks Air Force Base, North Dakota:

- MQ-9 Predator B aircraft; and
- Guardian Predator B.

OAM is guided by the FAA mission for air traffic procedures and airspace issues regarding air transportation security issues to ensure the safety of CBP personnel and the general public. The FAA mission is to ensure the safety and efficiency of the NAS.

Day-to-day operations and maintenance activities conducted for UAS are performed in accordance with the USAF safety regulations, published U.S. Air Force (USAF) technical orders, and standards prescribed by USAF occupational safety and health requirements. For example at Grand Forks Air Force Base in Grand Forks, North Dakota, all required emergency response equipment is available; there are no shortfalls and no waivers are in effect. All Air Force bases that CBP utilizes would be equipped with required fire suppression systems.

Continuing UAS patrols would have both long-term beneficial and short-term, minor adverse impacts on HH&S. UAS patrols produce interdictions across the Northern Border, having a long-term, beneficial impact.

The primary public concern with regard to flight safety is the potential for aircraft accidents. Such mishaps may occur as a result of mid-air collisions, collisions with man-made structures or terrain, weather-related accidents, mechanical failure, pilot error, or bird-aircraft collisions. (USDHS, 2008b).

Under the No Action Alternative, UAS accidents could still occur. From FY 2006 to July 13, 2010, the latest date for which information is available, CBP reported more than 5,000 flight hours. The accident rate was 52.7 accidents per 100,000 flight hours (the standard on which safety data are reported). This accident rate is more than seven times the general aviation

accident rate (7.111 accidents/100,000 flight hours) and 353 times the commercial aviation accident rate (0.149 accidents/100,000 flight hours).

While this accident rate is higher than that of general or commercial aviation, it is important to note that the total reported flight hours are very small in comparison to the 100,000 hour standard typically used to reflect aviation safety data and accident rates.

CBP had five deviations (where the aircraft has done something unplanned or unexpected and violated airspace regulation) in FY 2009 (Kalinowski & Allen, 2010).

To minimize the occurrence and frequency of accidents, several safety measures are taken during UAS patrols. This section addresses ground safety, explosives safety, and flight safety associated with UAS missions and maintenance. Ground safety considers issues associated with human activities, and operations and maintenance activities that support unit operations. One specific aspect of ground safety is antiterrorism/force protection (AT/FP) considerations. Explosives safety discusses the management and use of ordnance or munitions associated with installation operations and training activities. Flight safety considers aircraft flight risks.

Under the No Action Alternative, UAS accidents could still occur. As of April 27, 2011, over 9,800 cumulative FL have been conducted and the CBP UAS program has experienced 3 accidents and 2 incidents. The majority of these accidents were the result of human error, including the first accident in 2006 at the hands of a contract pilot. Of note, there has never been any loss of life or damage to private property as a result of these accidents/incidents.

As a result of terrorist activities, the U.S. Department of Defense (DOD) and USAF have developed a series of AT/FP guidelines that CBP follows. These guidelines address a range of considerations that include access to the military installation, access to facilities on the installation, facility siting, exterior design, interior infrastructure design, and landscaping. The intent of this siting and design guidance is to improve security, minimize fatalities, and limit damage to facilities in the event of a terrorist attack. Many military installations were developed before such considerations became a critical concern. Thus, under current conditions, many units are not able to comply with all present AT/FP standards. However, as new construction occurs, it would incorporate these standards and as facilities are modified, AT/FP standards would be incorporated to the maximum extent practicable.

The Predator B, utilized by OAM, is not equipped for ordnance, nor would it utilize other explosive devices. A range of munitions required for performance of Predator B missions are maintained and stored in accordance with USAF explosive safety directives, and all munitions maintenance is carried out by trained, qualified personnel using USAF approved technical procedures.

No major adverse impacts would be expected to occur. Due to accidents, short-term, minor to moderate adverse impacts would be expected. The safety procedures put in place would help minimize the number of accidents that would occur. Short-term, minor to moderate, adverse impacts would occur because accidents are unavoidable.

Vessel Operations

Conduct Waterborne Patrols—Waterborne patrols have both long-term beneficial and short-term, minor to moderate, adverse impacts to HH&S. Long- term, beneficial impacts occur from interdictions that occur during, or result from, waterborne patrols. Short-term, adverse impacts could result when waterborne patrols are engaging in dangerous interdictions and when accidents occur.

During vessel operations there is a potential for accidents and injuries to CBP personnel and the general public. As patrols increase, the risk of accidents also increases, although an increase in patrols does not guarantee any specific increase in accidents or injuries. Since OAM and USBP agents engage in high-speed pursuit on water, CBP's accident rates may be higher than they are for recreational boating.

To minimize the occurrence of vessel accidents and injuries, CBP takes certain steps with its vessel operators. To become a CBP OAM marine or USBP riverine interdiction agent, one must have additional training, and it is preferred that one have marine/law enforcement experience (USDHS, 2010f).

Because of the training OAM and USBP agents receive, no major adverse impacts would occur. Minor to moderate adverse impacts on HH&S could occur from waterborne patrols. The amount of training that CBP personnel receive would help reduce the number of accidents caused by waterborne patrols.

Use Nonintrusive Inspection Technology— Because CBP uses several different nonintrusive inspection (NII) technologies that have similar impacts, high-energy X-ray imaging scanner (HEXRIS) and gamma-imaging inspection system programs are used as an example for the overall impacts caused by NII technology.

As radiation-producing devices, these systems could have long-term negligible adverse impacts to HH&S. Exposure to high levels of radiation would increase a person's probability of developing cancer and hereditary genetic damage (HPS, 2004). Beneficial impacts would also occur because the use of these technologies results in interdictions across the Northern Border.

Human Exposure—All maintenance personnel who maintain the linear accelerator (linac) and X-ray source components are employees of the equipment manufacturer. By the nature of their jobs, they have the potential to be exposed to a higher level of radiation than the system operators and members of the general public. Maintenance of the linac and X-ray source components have to comply with the EPA, OSHA, and states' (where applicable) strict dose standards for radiation workers. For a more detailed discussion of dose standards, see the Programmatic EA for Deployment and Operation of HEXRIS at Sea and POEs (USDHS, 2010e).

Exposure Pathways—The radiation exposure pathway for all personnel and the general public is created from exposure to scattered radiation from the X-ray source during scanning operations. However, in all cases, the radiation dose does not exceed 0.1 rem in a year (USDHS, 2010e).

Use HEXRIS Technology—The HEXRIS employs advanced high-energy digital X-ray imaging technology that has been used successfully in various industrial applications such as field inspection of structures like bridges and buildings. These systems are subject to review by

radiation protection authorities, but they are not subject to state regulation, because they are operated by a Federal agency.

Under the No Action Alternative, CBP would continue the deployment and operation of HEXRIS at POEs in the United States. Four different HEXRIS models are available for this purpose and are discussed in detail in CBP's Programmatic Environmental Assessment for Deployment and Operation of HEXRIS at Sea and LPOEs (USDHS, 2010g).

HEXRIS is designed so that the radiation dose levels where members of the public will be, for example, work stations, operator control stations, and waiting areas, are below CBP-prescribed limits of 0.1 rem in a year. Detailed radiation surveys, performed by or under the supervision of CBP's Radiation Safety Office, have confirmed that these design criteria have been met. In all cases, exposures were measured using a worst-case scatter in the X-ray beam. A worst-case scatter scenario is not likely to occur; therefore, the estimated exposure levels are conservative by a substantial amount. As an additional precaution, as the HEXRIS are delivered, exposure measurements are made to ensure that the systems are in compliance with exposure limits.

This exposure limit applies to all CBP employees and contractors who work on or maintain HEXRIS but not the linear accelerator (linac) or X-ray source components. This means that system operators are not exposed to a higher radiation dose than the standard established for the general public. Occupational exposure, to the effective radiation dose standard CBP has adopted, is not expected to cause a significant increase in the risk of cancer (USDHS, 2010g).

To meet the threshold radiation dose limit, CBP established controlled areas for HEXRIS. No personnel would be allowed in the controlled areas during scanning operations. Controlled areas are discussed in detail in CBP's Programmatic Environmental Assessment for Deployment and Operation of HEXRIS at Sea and LPOEs (USDHS, 2010g).

During scanning operations, signs in multiple languages are posted at the controlled area boundary to indicate the radiation hazard. Ground guides, which can be items such as jersey barriers, cones, other items, or individuals who provide visual signals (e.g., CBP radiation officers), are positioned at various locations around the controlled area to warn persons of the danger as well as to provide visual references. Ground guides delimit the controlled area. Each system incorporates an infrared safety barrier that stops the forward movement of the inspection system, as well as the production of X-rays should the beam barrier be broken.

In the extreme with respect to radiation exposure, a system operator (or a member of the general public) could be situated at the edge of a controlled area 8 hours a day, every workday of the year (that is to say, 2,000 hours per year) and not receive more exposure than the limits prescribed by the NRC and the states.

The controlled areas ensure that the systems conform to the radiation protection guidelines of reducing the radiation levels to ALARA. In addition, 10 CFR 20.1101(b) requires that: "[t]he licensee shall use, to the extent practical, procedures and engineering controls based upon sound radiation protection principles to achieve occupational doses and doses to members of the public that are as low as is reasonably achievable"(USDHS, 2010g).

Negligible, long-term, and adverse impacts would be expected, because even though radiation exposure is well below the national standard, some exposure would still occur.

Exposures are expected to be well below the maximum levels of exposure set by the NRC, OSHA, the Food and Drug Administration (FDA), and the states to protect the general public (which includes system operators, truck drivers, POE personnel, and other CBP personnel); therefore, the health and safety impacts from radiological exposure would not have a significant major adverse impact. Adverse impacts would be long-term and negligible.

Effects of Irradiation on Food—The CBP's Radiation Safety Office has conducted tests to determine the worst-case scenario of radiation doses to food as a result of implementing the HEXRIS program. The total absorbed dose deposited in food subjected to scanning by a HEXRIS operating at 6.0 MeV (worst case, gantry system) is approximately 0.0015 rem per scan; on the same order as that received by a person hidden in a cargo container. This dose is 240 times less than the average annual background dose in the United States of 0.360 rem.

The FDA at 21 CFR 179.21 requires a label be affixed to each machine stating that no food shall be exposed to X-ray radiation sources to receive an absorbed dose in excess of 50 rem. The HEXRIS absorbed dose is approximately 33,333 times less than this limit.

Maintenance—CBP's personnel do not maintain the linac or the X-ray source enclosure. CBP's personnel periodically maintain the detectors and test the systems using procedures described in the operator's manuals. The manufacturers perform all nonroutine linac and X-ray source maintenance.

Radiation Safety Engineering Controls—HEXRIS incorporates redundant safety controls such as emergency stop buttons at several locations on the systems that allow the entire operation, including X-ray production, to be quickly shut down. In addition, the personnel assigned to operate the systems are specifically trained for safe X-radiation system operations according to standards established by CBP's Office of Training and Development. Training for the system operators consists of lectures, courses, and a written examination in basic radiation physics, radiation safety, and biological effects of radiation, instrumentation, radiation control, and operating procedures during normal and emergency conditions (USDHS, 2010g).

Effects of Irradiation on Persons Hiding in Cargo Containers—The NRC has established the maximum allowable value of radiation dose that may be received by individuals (members of the general public) to be 0.1 rem in a year. Most state regulations also adopt this same standard.

It is possible that people will hide themselves in cargo containers in order to surreptitiously enter the United States. A person concealed in a cargo container that is scanned by a HEXRIS is exposed to X-radiation as a direct consequence of the inspection process.

The CBP's Radiation Safety Officer has conducted testing to determine the dose that a person hidden in a truck or cargo container would experience during a scanning operation. The total absorbed dose from a system operating at 6.0 MeV (worst case, gantry system) is approximately 0.0015 rem per scan, on the same order as that received by food. This dose is 240 times less than the average annual background dose in the United States of 0.360 rem and 66 times below levels

permissible to the general public. Neither cargo container drivers nor any other personnel pass through the beam during scanning operations (USDHS, 2010g).

Assuming 0.0015 rem per scan, to reach the maximum allowable per year radiation dose, a person would have to be scanned over 66 times in a year. Since the chance of this frequency of exposure is remote, it is concluded that radiation from the HEXRIS will have negligible, long-term, and adverse impacts (USDHS, 2010g).

Radiation Safety Exclusion Zones—In order to limit VACIS radiation dose to no more than .00005 rem per hour above typical background/man-made radiation, CBP established radiation safety exclusion zones for VACISII, Mobile VACIS, Rail VACIS and Pallet VACIS. Neither the general public nor CBP personnel are allowed in the radiation safety exclusion zones during VACIS operations. The radiation safety exclusion zones for the four VACIS configurations are established from field measurements conducted by a certified health physicist, and are described further in CBP's Programmatic Environmental Assessment for Gamma Imagining Inspection Systems (USDHS, 2004b).

Use Gamma-Imaging Inspection System Technology—The VACIS® is a family of gamma-imaging systems that provides NII capability to aid CBP in stemming the flow of contraband into the United States. CBP deploys four VACIS® configurations: the VACIS®II, Mobile VACIS®, Rail VACIS®, and Pallet VACIS®.

Since CBP has decided that the upper permissible level of radiation dose for its personnel is the same as that of the general public in unrestricted areas, CBP's inspectors are not designated as occupational radiation workers. CBP chooses the criterion of 2,000 hours per year as the maximum expected exposure time (i.e., 8 hours a day, 5 days a week, 50 weeks a year) for its personnel (which is considered the worst-case exposure regime for any individual, general public, or otherwise). Based on this time of exposure, and based on the public dose criterion of 0.1 rem per year, a typical CBP inspector who is assigned at a gamma-imaging inspection system operational site does not experience a radiation dose greater than 0.00005 rem per hour above typical background/man-made radiation.

Effects of Irradiation on Cargo—The total radiation dose experienced by cargo subjected to VACIS® II scanning is approximately 0.005 mrad (5 µrad) per scan, which is approximately five orders of magnitude less than the typical 360 mrad (360,000 µrad) per year dose experienced as a result of natural and man-made background radiation (USDHS, 2004b). No major adverse impacts of irradiation on cargo would be expected. Negligible, long-term, adverse impacts would result. Although radiation exposure levels are well below the national standards, exposure still occurs.

A CBP memorandum for record from Dr. Siraj M. Khan, Certified Health Physicist, dated 22 November 1999, addresses VACIS® compliance with FDA regulations regarding irradiation of food. This memorandum states:

> Title 21, Part 179, Subpart B, Section 179.21, Paragraph (b) (2) (ii) of the Code of Federal Regulations (CFR) requires that a statement that no food shall be exposed to radiation sources listed in paragraph (a) (1) and (2) of that section so as to receive an absorbed dose in excess of 10 grays (1000 rads) be attached to equipment using these radiation sources.

> The Vehicle and Cargo Inspection System (VACIS®) uses a sealed cesium-137 radiation source for the inspection of trucks, cargo containers, railcars, and other vehicles. A radiation safety survey was performed in 1996 on a prototype VACIS® using a one curie cesium-137 source. Subsequent calculations based on those measurements indicate that the radiation dose to food at the center of the truck is 5 microrad, which is a billion [sic] times less than that allowed by this regulation. Details of these calculations are presented in the technical report entitled Radiation Safety Guidelines for a Contraband Detection System dated November 1996. The radiation dose to food from mobile VACIS® and railroad VACIS® will be about 8 and 10 microrad, respectively, because they use 1.6 and 2 curie radiation sources.
>
> Based on the above discussion, the VACIS® equipment (fixed truck, mobile and railroad) is in full compliance with 21 CFR 179.21.

No major adverse impact would be expected on food. Long-term, negligible, adverse impacts would result; even though radiation exposure levels are well below the national standards, exposure still occurs.

Effects of Irradiation on Persons—As stated, the NRC has established the maximum allowable value of radiation dose that may be received by individuals in unrestricted areas (individual members of the general public) to be 100 mrem (100,000 µrem) per year above typical background/man-made radiation.

CBP conducted testing to determine the dose that a person hidden in cargo would experience during VACIS® scanning operations. As of the 2004 VACIS Programmatic Environmental Assessment, this test had not been completed for the Pallet VACIS® system. The maximum measured doses (µrem per scan) for VACIS®II, Mobile VACIS®, and Rail VACIS ®are 5, 4, and 2.5, respectively.

Assuming the worst-case scenario (i.e., VACIS II® at 5 µrem per scan), to reach the maximum allowable per year radiation dose, a person would have to be scanned 20,000 times per year (which equates to approximately 54 scans per day, every day, for 1 year). Since the chance of this frequency of exposure is extremely remote, it is concluded that VACIS® will have a negligible, long-term, and adverse impact, because some radiation exposure would still be expected.

Source Material Operations

Transportation—The VACIS ®^{137}Cs radiation source has an effective operational life of 15 years, the ^{60}Co source has an effective operational life of 5 years, and the VACIS® configuration (exclusive of radiation source) has an estimated operational lifetime of 30 years. Hence, transportation of the radiation source material separate from the VACIS® equipment may be required only during installation at each VACIS® site, during replenishment operations (transporting in the fresh source, and transporting out the spent source), and when each VACIS® site is decommissioned. In all cases, the shipment of the source material will be in full and total compliance with U.S. Department of Transportation regulations (USDHS, 2004b).

Additionally, the source material will be transported within the Mobile VACIS® equipment as the equipment moves between sites. Though movements of mobile VACIS® will be conducted

at variable intervals, these movements would have no adverse impact on the heavy traffic typically experienced at POEs, because the public will not be exposed to radiation.

In all cases, the marking, packaging, and transportation of the source material in all VACIS® configurations will be in full and total compliance with U.S. Department of Transportation (DOT) regulations 49 CFR Part 172.310 "Class 7 (radioactive) Materials, Marking"; 49 CFR Part 173.471, "Packaging"; and 10 CFR Part 71, "Packaging and Transportation of Radioactive Material."

Installation—VACIS®II and Rail VACIS® components will be shipped individually and assembled where the system is to be used. No radiation exposure to VACIS® personnel or to members of the public will result from either the shipment or assembly of the system, because the radiation source will not yet have been installed in the system. Each $^{137}Cs/^{60}Co$ source will be shipped in a shielded cask to the VACIS® site and will be installed in the VACIS® equipment by the vendor, SAIC. Mobile VACIS® will be shipped to its initial installation site as a unit with the ^{137}Cs source already installed by the vendor, SAIC.

Maintenance—CBP's personnel will periodically perform limited maintenance on VACIS®, such as lubricating the tracks on VACIS®II and replacing small components such as light bulbs on all VACIS® configurations. Whenever this maintenance is performed, the shutter on the $^{137}Cs/^{60}Co$ source shielded container will be kept in the closed position.

Nonroutine maintenance will be performed by the vendor, SAIC. Whenever major disassembly of the VACIS® equipment is required, the $^{137}Cs/^{60}Co$ source will be removed from the system and kept in a shielded storage cask.

Disposal—Each VACIS® installation will generate radioactive waste in the form of either reusable or nonreusable ^{137}Cs radiation source material. The disposal of each form of radioactive waste will follow DOT regulations (USDHS, 2004b).

Effects of Accidents—Under accident conditions associated with handling, storage, and use of the $^{137}Cs/^{60}Co$ source housing, it is unlikely that any person would receive an external radiation dose or dose commitment in excess of the dose to the appropriate organ as specified in Table 8.13-1.

Table 8.13-1. Body Dose Threshold Data

Body Part	Dose (rem)
Whole body, head and trunk, active blood-forming organs, gonads, or lens of eye	15
Hands and forearms, feet and ankles, localized areas of skin averaged over areas no larger than 1 cm2 (0.15 in2)	200
Other organs	50

Indicates lowest dose that will cause negative effects.

Source: (USDHS, 2004b).

The worst accident due to the design of the machine is the open shutter scenario and the inability to close the shutter on the ^{137}Cs source-shielded container. The recommended response plan for this situation can be found in CBP's Programmatic Environmental Assessment for Gamma Imaging Inspection Systems (USDHS, 2004b).

Radiation Safety—VACIS®II, Mobile VACIS®, Pallet VACIS®, and Rail VACIS® all incorporate redundant safety controls, such as emergency shutoff pushbutton controls at several locations on the VACIS® equipment. Additionally, in the event of a power loss, each VACIS® configuration has a safe shutoff mode in which the shutter on the ^{137}Cs/ ^{60}Co source-shielded container automatically closes.

To ensure that no significant major adverse impacts occur, the personnel assigned to operate VACIS® are specifically trained for safe gamma radiation system operations. Training for the VACIS® operators consists of lectures and courses in basic radiation physics, radiation safety, and biological effects of radiation, instrumentation, radiation control, and operating procedures during normal and emergency conditions.

Licensing—CBP holds an NRC materials license for ^{137}Cs/ ^{60}Co sealed sources. The NRC requires that CBP be in full and total compliance with the materials license and all of the 28 conditions specified in the license in addition to all statements, representations, and procedures in the license's application and correspondence as indicated on page 8 of the license. Nuclear Regulation (NUREG)-1556, Volume 4, October 1998, entitled *Program-Specific Guidance About Fixed Gauge Licenses*, will then automatically become a condition of CBP's license.

Because of CBP's officer training, compliance with laws and regulations, and response plans, there would be no significant major adverse impact to humans from exposure to radiation from the VACIS® programs. Exposure levels would remain well below regulation standards of 5 rem in 1 year or 10 rem over a lifetime. Long-term, negligible, adverse impacts would be expected because some radiation exposure is expected.

In conclusion, NII technology would have both long-term beneficial and long-term minor or negligible adverse impacts to the general public and CBP employees. Installing and using NII technology would produce interdictions across the Northern Border for as long as the technology is in place. NII technology gives CBP employees a tool to help locate terrorists and terrorist weapons entering the United States. Since the dose of radiation received from NII technologies is below 5 rem in a year during normal operating procedures, adverse impacts would occur only in abnormal circumstances. These circumstances may arise from stowaways in cargo or from technology malfunctions. If a person were to receive a radiation dose of 5 rem or higher, cancer and hereditary genetic damage could occur (HPS, 2004).

Even though radiation levels are below regulation standards, short-term, negligible, adverse impacts could still occur because individuals would still be exposed to radiation (USDHS, 2004b; HPS, 2004).

Radio Frequency

Use Communication Towers Radio Frequency Identification Technology—Communication towers are another tool that CBP uses to increase the rate of interdictions across the Northern Border. Interdictions have a long-term beneficial impact on human health and safety.

Communication towers are equipped with radio wave and microwave communication systems as well as radar systems to help maintain a secure border. Like any RF transmitter, all of these systems emit RF energy and electromagnetic (EM) radiation; therefore, a potential for short-term, negligible, adverse effects exists.

Equipment components that emit RF energy and EM radiation are commonly mounted along each tower at approximately 80 to 180 feet above ground level, depending on the local terrain. At these heights, it is highly improbable that any individual would come into direct contact with any RF and EM emissions; therefore, human exposure would be highly unlikely and no significant major adverse impacts would be expected. RF-emitting equipment would be installed and operated by qualified workers operating under applicable OSHA standards. Therefore, likelihood of exposure to adverse levels of RF radiation is low. Impacts from environmental exposure to RF and EM emissions would therefore be negligible.

Because RF energy and EM radiation equipment is commonly mounted high enough along each tower, maintenance and operational personnel working within the secure tower site are not exposed to RF energy and EM radiation that exceeds maximum permissible exposure (MPE) limits set by the FCC. Therefore, human exposure for maintenance and operational personnel would be highly unlikely (USDHS, 2008a). Long-term negligible impacts would occur from RF and EM emissions being put into the environment.

While the communication systems and the frequencies in which they would be operated are considered law enforcement sensitive and cannot be disclosed, compliance with FCC regulations is required, and recognized safety standards must be met. Use of the telecommunications radio spectrum is regulated and access is controlled, and rules for its use are enforced because of the possibilities of radio frequency interference between uncoordinated uses. The electromagnetic spectrum is considered a common good, or a natural resource, so it can be adversely impacted by use (USDHS, 2008a).

RF spectrum is scarce, because one use of a portion of the spectrum precludes any other simultaneous use of that portion. Therefore, prior to initial operation of the tower system, CBP's communications tower operators are required to submit an application for certification of CBP's telecommunications equipment and its proposed operating frequencies to the National Telecommunications and Information Administration (NTIA) for approval. The NTIA reviews all Federal agencies' new telecommunications systems and certifies that space on the frequency spectrum will be available for component systems that operate within certain frequency ranges.

This review, approval, and certification process helps ensure that the agencies' communications equipment will not cause frequency interferences with nearby users of other communications equipment (e.g., cell phones, televisions) that use the same or adjacent portions of the frequency spectrum. Therefore, adverse impacts from the RF environment created by the installation, operation and maintenance of the communication and radar systems on the proposed towers

would likely be long-term, negligible, and adverse due to the minimal exposure limits associated with both the type of equipment used and the elevated locations in which they would be positioned (USDHS, 2008a).

Beneficial impacts would be long-term because the continued deployment of the communication towers would likely increase interdictions across the Northern Border and ultimately deter or prevent illegal entry.

Firing Ranges

The use of firing ranges would result in beneficial long-term, impacts and short-term, negligible to minor adverse impacts. Beneficial impacts occur from improving the CBP agent's effectiveness when engaging in interdictions along the border.

Adverse impacts would occur due to lead and noise exposure. CBP agents could be exposed to lead on indoor or outdoor ranges. Lead from outdoor firing ranges could leach into the public's water supply, exposing people to lead poisoning. Exposure levels above 80 µg/dL may lead to serious, permanent health damage (NYDH, 2009). CBP agents could also be exposed to harmful noise levels, causing damage to the inner ear.

To protect CBP agents and officers from lead and noise exposure on firing ranges, current safety procedures follow all Federal regulations. To minimize the leaching of lead into the general public's water supply, procedures pursuant to hazardous waste standards are followed.

Even though agents will not be exposed to lead and noise levels above Federal standards, agents are still exposed to lead and harmful noise levels, resulting in adverse short-term, negligible minor impacts.

8.13.2 FACILITIES DEVELOPMENT AND IMPROVEMENT ALTERNATIVE

The Facilities Development and Improvement Alternative would focus on providing new and permanent facilities such as USBP Stations and POEs to allow CBP personnel to operate more efficiently and respond to situations more quickly.

Under the Facilities Development and Improvement Alternative, CBP would make or initiate major modifications (equivalent to large construction) to existing POEs, if needed to meet operational needs. CBP officers would continue to be allocated to POEs as necessary to meet operational needs to secure trade and travel in accommodation to seasonal traffic pattern shifts. Overall, impacts to HH&S would be both beneficial and minor to moderate adverse. Under this alternative, risks to HH&S are from agricultural inspections, and construction- and work-related accidents. With proper training and adherence to regulations, major adverse impacts would not be expected to occur.

Impacts to HH&S vary with each CBP activity described in the analysis. Overall, impacts to HH&S would be both beneficial and minor to moderate adverse. Construction- and work-related accidents pose the biggest risks to HH&S. However, with the continued application of the training, licensing, and OSHA regulation requirements for the people and equipment involved in these activities, overall adverse impacts would be expected to be minor to moderate, while there are clear beneficial health and safety impacts to the public from CBP's conduct of these activities.

Small and Large Construction Projects

Small and large construction projects would have short-term minor to moderate adverse and long-term beneficial impacts to human health and safety. POEs can take approximately 7 years to design, build, and make fully functional. This includes project planning, financing, approval, and construction. Impacts to HH&S from this alternative would be similar to those already occurring at POEs. Overall, there could be a beneficial impact because interdictions could increase from the presence of a USBP station in an area previously without one, or a modernized building that meets operational needs as they arise. Training of CBP employees would continue and OSHA safety regulations would be followed. An initial short-term increase in construction-related accidents could occur as POEs are modernized; however, across the entire region, this would be minor to moderate and adverse, and over time, construction-related activities would decrease.

Routine Operations

On-site Trade and Travel Processing Operations

Small on-site trade and travel processing operations would increase in this region. This would have a long-term beneficial impact on HH&S. Increasing agricultural inspections would increase the number of nonindigenous diseases discovered at or before the border and stopped from entering the country. Short-term, minor to moderate impacts would occur if a nonindigenous disease were released into the United States. CBP will continue to train employees to minimize adverse effects.

8.13.3 DETECTION, INSPECTION, SURVEILLANCE, AND COMMUNICATIONS TECHNOLOGY EXPANSION ALTERNATIVE

The Detection, Inspection, Surveillance, and Communications Technology Expansion Alternative focuses on deploying more effective Detection, Inspection, Surveillance and Communications technologies in support of CBP's activities. It would include improvements to the identification and inspection technologies used at ports of entry. Overall, impacts to HH&S would be both beneficial and minor to moderate adverse. Under this alternative, the risks to HH&S are from exposure to RF and EM emissions from communication towers; aircraft and vessel patrol accidents; and construction- and work-related accidents. With proper training and adherence to regulations, major adverse impacts would not be expected to occur.

Impacts to HH&S vary with each CBP activity described in the analysis. Overall, impacts to HH&S would be both beneficial and negligible to moderate adverse. Exposure to RF and EM emissions from communication towers and pursuit and interdiction activities during vessel and aircraft patrols pose the biggest risks to HH&S. However, with the continued application of the training, licensing, and OSHA regulation requirements for the people and equipment involved in these activities, overall adverse impacts would be expected to be negligible, while there are clear, beneficial health and safety impacts to the public from CBP's conduct of these activities.

Construction

Small Construction Projects

Small construction projects would have short-term minor to moderate adverse and long-term beneficial impacts to human health and safety. Small projects under this alternative include upgrades and maintenance on towers and other infrastructure to mount antennas. CBP agents would continue to receive training, and all construction projects will follow OSHA regulation requirements. Construction-related accidents could occur. This would be minor to moderate and adverse, but over time, construction-related activities would decrease.

Routine Operations

Aircraft and Vessel Operations

Aircraft and vessel operations would also increase under this alternative. Increasing operations would increase the rate of interdictions and would result in a long-term, beneficial impact to HH&S. Short-term, minor to moderate adverse impacts would also occur due to accidents.

Operation of NII Systems and Operation of Sensor and Other Technologies

An increase in operation of NII systems and operation of sensor and other technologies would result in both negligible adverse and beneficial impacts. This alternative would implement upgraded surveillance and telecommunications systems including but not limited to:

- Remote sensors;
- Short-range radar;
- Remote and mobile video detection, inspection, surveillance, and communications systems;
- New camera systems; and
- Upgrades to stationary communications systems.

These upgrades would improve agent and officer communications systems, and enable USBP and OAM to focus their efforts on identified threat areas and deploy personnel to resolve incidents with maximum efficiency.

Implementing these listed upgrades would have impacts similar to those described in the No Action Alternative. Increasing the use of remote video surveillance systems (RVSS) and mobile surveillance systems (MSS) has the potential to expose greater numbers of individuals to radiation, but the radiation exposure levels of individuals would still be under the requirements of NRC regulations and would not exceed 0.1 rem per year above the typical 0.360 rem per year dose provided by natural background and man-made radiation. Therefore, impacts to HH&S would be negligible and adverse because the risk of exposure is unlikely. In addition, beneficial impacts could occur because the rate of interdictions could increase along the Northern Border.

8.13.4 TACTICAL SECURITY INFRASTRUCTURE DEPLOYMENT ALTERNATIVE

This alternative would focus on constructing additional barriers, such as selective fencing or vehicle barriers, at selected points along the border to deter and delay cross-border violators, as well as access roads and related facilities to increase the mobility of CBP agents for surveillance and response. This alternative would hinder cross-border violators and improve CBP's capability to respond quickly and effectively. Impacts to HH&S would be both beneficial and minor to moderate adverse. Under this alternative, construction- and work-related activities pose risks to HH&S; however, with proper training and adherence to regulations, major adverse impacts would not be expected to occur.

Impacts to HH&S vary with each CBP activity described in the analysis. Overall, impacts to HH&S would be both beneficial and minor adverse. Under this alternative, CBP operations from pursuit and interdiction activities and construction- and work-related accidents pose risks to HH&S. However, with the continued application of the training, licensing, and OSHA regulation requirements for the people and equipment involved in these activities, overall adverse impacts would be expected to be beneficial, while there are clear minor adverse human health and safety impacts to the public from CBP's conduct of these activities and from the unavoidable accidents that could ensue.

Small and Large Construction Projects

The Tactical Security Infrastructure Deployment Alternative would focus on small construction and large construction projects along the border. Small and large construction projects would have short-term minor to moderate adverse and long-term beneficial impacts. Small construction projects will include trench cuts, towers, minor access roads, and small fences (less than 1/4 mile long) at selected points along the border. Large construction projects include access roads and fences (more than 1/4 mile long) at selected points along the border. These projects will deter and delay cross-border violators; some of them, such as building access roads and related facilities, will increase the mobility of USBP agents for surveillance and response to various border violations. Training of CBP's employees would continue and OSHA safety regulations would be followed. The increase in mobility of USBP agents from additional access roads could increase interdictions. In addition, accidents could decrease because vehicle patrols would be conducted on dedicated, less congested, access roads. Though mobility could help decrease accidents, accidents would still occur, resulting in short-term, minor to moderate adverse impacts. Constructing new barriers and fencing has the potential to produce minor temporary increases in vehicle accident levels.

8.13.5 FLEXIBLE DIRECTION ALTERNATIVE

The Flexible Direction Alternative focuses on creating the most effective response to the changing threat environment along the Northern Border. It is impossible to predict what portion or overall mix each of the above directions is likely to be needed at any point in time, and the needed mix is likely to change constantly because the threat environment changes constantly. For analysis purposes, the activities under the Flexible Direction Alternative equal the implementation of the activities of all the other action alternatives. Impacts to HH&S would be both beneficial and minor to moderate adverse. Under this alternative, radiation exposure at POEs, RF and EM exposure from communication towers, and accidents during pursuit and interdiction activities pose the biggest risks to HH&S. With proper training and adherence to regulations, major adverse impacts are not anticipated.

Impacts to HH&S vary with each CBP activity described in the analysis, and impacts to HH&S would result from implementation of all three action alternatives. The biggest risks to HH&S are from radiation exposure at POEs, RF and EM exposure from communication towers, accidents from aerial patrols, and accidents in pursuit and interdiction activities. With the continued use of the training, licensing, and regulation requirements for the people and equipment involved in these activities, overall adverse impacts would be expected to be minor to moderate, while there are clear, beneficial health and safety impacts to the public from CBP's efficient and successful conduct of these activities.

Construction

Small and Large Construction Projects

Small and large construction projects would have short-term minor to moderate adverse and long-term beneficial impacts. Per region, small construction projects would increase to around 160 ± new projects, and large construction projects would increase to around 25 ± new projects. Interdictions would increase, resulting in long-term, beneficial impacts. During these construction projects, short-term, minor to moderate impacts would occur due to construction related projects. OSHA regulations will be followed to minimize any construction-related accidents.

Routine Operations

On-site Trade and Travel Processing Operations

Small on-site trade and travel processing operations would increase in this region. This would have a long-term beneficial impact on HH&S. Increasing agricultural inspections would increase the number of nonindigenous diseases discovered at or before the border and stopped from entering the country. Short-term, minor to moderate impacts would occur if a nonindigenous disease were released into the United States. CBP will continue to train employees to minimize adverse effects.

Ground Operations, Aircraft Operations, and Vessel Operations

Both short-term, minor to moderate adverse impacts and long-term beneficial impacts would result from an increase in ground, aircraft, and vessel operations under this alternative. The number of ground, aircraft, and vessel operations would increase along the border. USBP and

OAM agents would continue to receive appropriate training. This would create long-term, beneficial impacts along the border, because interdictions would increase. Short-term minor and moderate impacts would occur due to accidents. CBP would continue to train USBP and OAM agents to minimize effects.

Operation of NII Systems and Sensors and Other Technologies

An increase in operation of NII systems and operation of sensor and other technologies would result in both negligible adverse and beneficial impacts. This alternative would increase the use of NII systems as well as sensors and other technologies. The increase in these technologies would enable USBP and OAM to focus their efforts on identified threat areas, improve agent and officer communications systems, and deploy personnel to resolve incidents with maximum efficiency.

Fielding these listed upgrades would have impacts similar to those described in the Detection, Inspection, Surveillance, and Communications Technology Expansion Alternative. Increasing the use of NII technology has the potential to expose greater numbers of individuals to radiation, but the radiation exposure levels of individuals would still be within the amount allowed by NRC regulations and would be no higher than 0.1 rem per year above the typical 0.360 rem per year dose. Also, the use of EM- and RF-emitting devices will comply with FCC regulations and safety procedures. Therefore, impacts to HH&S would be negligible and adverse because exposure is unlikely. In addition, beneficial impacts would occur because interdictions would increase along the border.

8.13.6 BEST MANAGEMENT, MINIMIZATION, AND MITIGATION

Necessary mitigation, avoidance, and minimization measures are particular to the specific action as well as the physical characteristics of the environment selected for the action. The application of mitigation requirements varies greatly along the Northern Border, especially with regard to local and state regulations. In general, the following mitigation measures may be implemented in compliance with regulatory authorities.

CBP seeks to avoid, minimize, repair, and reduce the impacts of its actions on the human environment. It does so with a combination of best management practices (BMPs), siting plans, design strategies, mitigation measures, and monitoring plans best suited to the scale and the location of the particular action. Towards that end, in implementing its proposed action CBP could choose from the following actions to avoid or minimize impacts to HH&S:

BMPs for Routine Activities

Health and safety BMPs for routine activities include but are not limited to:

- Develop and implement a health and safety plan to be followed throughout all phases of a project;
- Provide occupational health and safety orientation training to all employees, consisting of basic hazard awareness, site-specific hazard awareness, safe working practices, and emergency procedures;
- Consider public safety during helicopter flights (e.g., avoid populated areas, schools, and areas being crop dusted);

- Conduct daily safety assessment meetings to identify potential safety issues (e.g., site access, construction, work practices, security, transportation of heavy equipment, traffic management, emergency procedures, wildlife encounters, and fire control and management) and measures to mitigate them;
- Provide fire suppression equipment in all vehicles; and
- Use appropriate procedures for storage and transportation of blasting equipment and explosive materials, including appropriate signage indicating its location (IEED, 2010).

BMPs for Radiological Health and Safety

BMPs for radiological health and safety include but are not limited to:

- Incorporating safety warnings and precautions into technical manuals and operator manuals;
- Training operators and scanning operations supervisors in the hazards associated with radiation-producing equipment;
- Incorporating emergency stop buttons on the equipment that allow the system, including X-ray production, to be shut down quickly, if necessary;
- Training operators and scanning operations supervisors in the location and use of emergency stop buttons; and
- Establishing radiation-controlled areas during scanning operations (USDHS, 2004b).

8.13.7 SUMMARY OF POTENTIAL IMPACTS

Table 8.13-2 summarizes the potential impacts of the alternatives on Human Health & Safety.

Table 8.13-2. Summary of Potential Human Health & Safety Impacts

Impact-Producing Activity	Level of Impact				
	Negligible Adverse	Minor Adverse	Moderate Adverse	Major Adverse	Beneficial
NO ACTION ALTERNATIVE					
Small Construction Projects (< 1 acre and < 1/4 mile: e.g., minor repairs to facilities, parking lot repairs, access road repairs)		X	X		X
Large Construction Projects (> 1 acre and > 1/4 mile: e.g., repairs to facilities, parking lot repairs, access road repairs)		X	X		X
Small On-Site Trade and Travel Processing Operations		X	X		X
Large On-Site Trade and Travel Processing Operations		X	X		X
Checkpoint Operations		X	X		X

Impact-Producing Activity		Level of Impact				
		Negligible Adverse	Minor Adverse	Moderate Adverse	Major Adverse	Beneficial
Ground Operations—Motorized			X	X		X
Ground Operations—Nonmotorized	On-Road		X	X		X
	Off-Road		X	X		X
Aircraft Operations			X	X		X
Vessel Operations			X	X		X
Operation of NII Systems		X				X
Operation of Sensor and Other Technologies		X				X
OVERALL IMPACT			**X**	**X**		**X**
FACILITIES DEVELOPMENT AND IMPROVEMENT ALTERNATIVE						
Small Construction Project (< 1 acre and < 1/4 mile: e.g., reconstruction/construction of new POEs, USBP structures, parking lot repairs, access road repairs)			X	X		X
Large Construction Projects (> 1 acre and > 1/4 mile: e.g., reconstruction/construction of new POEs, USBP structures, parking lot repairs, access road repairs)			X	X		X
New Small On-Site Trade and Travel Processing Operations (new POEs)			X	X		X
New Large On-Site Trade and Travel Processing Operations (new POEs)			X	X		X
OVERALL IMPACT			**X**	**X**		**X**
DETECTION, INSPECTION, SURVEILLANCE, AND COMMUNICATIONS TECHNOLOGY EXPANSION ALTERNATIVE						
Small Construction Projects (e.g., towers and other infrastructure to mount antennas)			X	X		X
Aircraft Operations			X	X		X
Vessel Operations			X	X		X
Operation of NII Systems		X				X
Operation of Sensor and Other Technologies		X				X
OVERALL IMPACT			**X**	**X**		**X**

Impact-Producing Activity	Level of Impact				
	Negligible Adverse	Minor Adverse	Moderate Adverse	Major Adverse	Beneficial
TACTICAL SECURITY INFRASTRUCTURE DEPLOYMENT ALTERNATIVE					
Small Construction Projects (trench cuts, towers, minor access roads and fences)		X	X		X
Large Construction Projects (access roads and fences)		X	X		X
OVERALL IMPACT		**X**	**X**		**X**
FLEXIBLE DIRECTION ALTERNATIVE					
Small Construction Projects		X	X		X
Large Construction Projects		X	X		X
Small On-Site Trade and Travel Processing Operations		X	X		X
Large On-Site Trade and Travel Processing Operations		X	X		X
Checkpoint Operations		X	X		X
Ground Operations—Motorized		X	X		X
Ground Operations—Nonmotorized		X	X		X
Aircraft Operations		X	X		X
Vessel Operations		X	X		X
Operation of NII Systems	X				X
Operation of Sensor and Other Technologies	X				X
OVERALL IMPACT		**X**	**X**		**X**

8.14 ENVIRONMENTAL CONSEQUENCES OF HAZARDOUS MATERIALS

A *hazardous waste* is defined by the Resource Conservation and Recovery Act (RCRA) as a solid waste, or combination of solid wastes, that, because of its quantity; concentration; or physical, chemical, or infectious characteristics may:

- Cause or significantly contribute to an increase in mortality or an increase in serious irreversible, or incapacitating reversible, illness; or
- Pose a substantial present or potential hazard to human health or the environment when improperly treated, stored, transported, or disposed of, or otherwise managed.

U.S. Customs and Border Protection (CBP) implements its RCRA requirements consistently across the Northern Border as a whole. For descriptions of the regional affected environments for hazardous materials, see sections 4.14.2 (West of the Rockies Region), 5.14.2 (East of the Rockies Region), 6.14.2 (Great Lakes Region), and 7.14.2 (New England Region).

Across the Northern Border as a whole, direct and indirect impacts from CBP management of hazardous wastes would range from beneficial to minor adverse for all alternatives. Non-CBP actions in close proximity to CBP activities, such as building and road construction and local industry, would add to the hazardous material impacts caused by CBP activities. These actions would produce hazardous waste comparable to that produced by CBP activities. Materials used during construction, demolition, and modernization of buildings and roads would be comparable to those used by CBP.

Only minor increases in the cumulative effects of hazardous materials would occur as a result of construction, maintenance, and operation activities. Across the Northern Border as a whole, the effects of all of the alternatives, when combined with other ongoing and proposed projects in the area, would not be expected to have a significant cumulative effect. Best management practices (BMPs) would be implemented as standard operating procedures during all construction activities and would include proper handling, storage, or disposal of solid and hazardous or regulated materials. The impacts of hazardous waste would vary greatly with each CBP activity described in this analysis, but the overall cumulative impacts would be expected to be short-term, adverse, and minor. This assumes that CBP would continue to follow the appropriate mitigation measures and BMPs to avoid accidental releases and spills of hazardous materials (see section 9.14).

8.14.1 NO ACTION ALTERNATIVE

Under the No Action Alternative, CBP would continue the current level of operations with approximately the same manpower. This alternative would include routine maintenance and repairs of facilities, equipment, and technology (including commercial upgrades of equipment presently in use as these become available). Under this alternative current operation procedures would continue in order to meet CBP's goals to secure the Nation's borders, protect it from the entry of dangerous people and goods, and prevent unlawful trade and travel. Using a risk-based approach, CBP would employ the most effective inspection and scanning technology available at designated POEs, airports, seaports, permanent traffic checkpoints, and international areas in

which CBP would operate to detect and prevent the entry of hazardous materials, goods, and instruments of terror into the United States (USDHS, 2009).

An important component of CBP's goals is to protect U.S. citizens from intentional destructive acts (IDAs). For further information on IDAs, Appendix R evaluates the human health and safety impacts of IDAs along the Northern Border.

Large and Small Construction Projects Currently Under Way or in Planning

When prescribed hazardous-waste management procedures are properly followed, large and small construction projects would cause direct, short-term, and long-term negligible-to-minor adverse impacts and indirect, long-term negligible adverse impacts. Large and small construction projects—such as the construction of pedestrian fences, vehicle fences, or other physical barriers; access and drag roads; bridges; culverts; and low-water crossings—would not generate significant levels of hazardous waste or require construction that could potentially affect hazardous-waste sites. There would be the potential for gas and oil leaks from vehicles and equipment used during construction. Hazardous-material leaks of this scale would result in negligible-to-minor adverse impacts. On a site-specific basis, proposed construction sites would be evaluated to determine if there are any hazardous materials or oil or gas well sites located within or around the project boundary.

Hazardous materials used during construction, maintenance, and repair of POEs would involve special hazards and the production of hazardous waste. The construction of permanent traffic checkpoints, U.S. Border Patrol (USBP) stations, and facilities to support Office of Air and Marine (OAM) and Office of Field Operations (OFO) activities would involve the same hazards. On this scale, a spill or accidental release of hazardous materials would result in direct, short-term, and long-term negligible-to-minor adverse impacts to the immediate area. Soil and water contamination are possible consequences of an accidental release of hazardous materials on a construction site. There would be indirect, long-term negligible adverse impacts due to spill potential of hazardous materials. A spill could migrate off-site or contaminate groundwater that then migrates off-site. Subsequent cleanup of a spill could result in minimal emissions migrating off-site from the treatment and disposal process.

Because of the random nature of illegal dumping along the border areas, it would be difficult to determine the location and quantity of hazardous waste that may be present within a project corridor. If hazardous materials or wastes are present, there would be a potential for exposure to these wastes during construction activities. Construction personnel would be informed about the potential to encounter hazardous wastes that may be present from illegal dumping and the appropriate procedures to use if suspected hazardous contamination is encountered (USDHS, 2008b).

During the duration of a project, the engineer would be notified immediately if a visual observation or odor indicates that materials on sites owned or controlled by CBP are hazardous. CBP would be responsible for testing and removing or disposing of hazardous materials not introduced by the contractor on sites owned or controlled by CBP. The contractor would not be required to test, remediate, or remove hazardous materials that the contractor did not introduce onto the work locations. The engineer would have the authority to suspend the work wholly or

in part during the testing, removal, or disposition of hazardous materials on sites owned or controlled by CBP (TDOT, 2004).

If a visual observation or odor indicated that materials delivered to the work locations by the contractor are hazardous, an approved commercial laboratory would test the materials for contamination. If any of these materials were found to be contaminated, they would be removed, remediated, and disposed of. Testing, removal, and disposition of hazardous materials introduced onto the work location(s) by the contractor would be at the contractor's expense (TDOT, 2004).

Steps would be taken in an effort to reduce the likelihood of spills. Typical requirements regarding the management of hazardous wastes on a construction project include:

- Ensuring that all construction personnel are properly trained regarding management of hazardous wastes;
- Ensuring that construction materials that are potentially hazardous are stored under watertight conditions but are still readily available for use;
- Ensuring that hazardous waste collected from the project is stored and disposed of in a manner that is appropriate for that particular type of waste;
- Ensuring that the contractor is prepared to respond to spills or leaks that occur anywhere on the project site; and,
- Ensuring that failure to clean up spills, or improper storage of hazardous materials, triggers sampling and analysis.

When procedures are properly followed while conducting large and small construction projects, the result would be direct, short-term, and long-term negligible-to-minor adverse impacts on the soil, water, and vegetation. There would be indirect, long-term negligible adverse impacts due to spill potential of hazardous materials and the possibility of a spill migrating off-site or contaminating groundwater that would then migrate off-site. Subsequent cleanup of a spill could result in minimal emissions migrating off-site from the treatment and disposal process.

Checkpoint Operations and Large and Small On-Site Trade and Travel Processing Operations

An accidental release or spill of hazardous materials used while operating checkpoints and large and small on-site trade and travel processing could potentially occur, which would result in direct, short-term, and long-term negligible adverse impacts as well as indirect, long-term negligible adverse impacts. Operational activities at traffic checkpoints and trade and travel processing at POEs would result in the use of fuels, oils, lubricants, and other hazardous materials. Ongoing impacts would be similar to those resulting from current operations because no change would occur in the buildings and facilities currently being used or in the type, frequency, or intensity of operations. There would be direct, long-term negligible adverse impacts under this alternative due to a spill potential of small amounts of housecleaning chemicals stored inside the POE building and the small amounts of gasoline and motor oil stored in sheds. Media, potentially contaminated with these hazardous materials, would be disposed of in accordance with Federal, state, and local regulations. Direct, long-term negligible adverse

impacts under the No Action Alternative exist due to the potential of leakage or spilling of hazardous materials from vehicles parked at the POE or being inspected at the POE, which could include gasoline, diesel, hydraulic fluid, motor oil, transmission fluid, and antifreeze. A slightly increased traffic volume in the long term would result in slightly increased potential spills of this type. Direct, long-term negligible adverse impacts under the No Action Alternative exist due to the presence and potential leakage of dielectric fluid from the pole-mounted transformer.

CBP would continue to recognize the need to develop a safe, uniform, and environmentally sound plan for the processing of this type of merchandise. CBP would be committed to taking all steps necessary to reduce the risk of injury or illness caused by hazardous materials in the workplace. CBP officers would ensure that all hazardous cargo is clearly marked, labeled, packaged, or placarded in accordance with the requirements of all Federal agencies. Hazardous cargo that is leaking or improperly marked, labeled, packaged, and placarded would not be released by CBP. CBP personnel would also ensure that confined spaces, such as shipping containers, truck trailers, and rail cars, have been properly ventilated before conducting an examination of the contents. If properly trained CBP personnel and examination facilities are not available to safely inspect or sample hazardous cargo, the importer/exporter would select a qualified hazardous-material contractor (from a list compiled locally) to perform the examination or sampling under CBP's supervision. All costs incurred would be borne by the importer/exporter (USDHS, 2006a).

If spilled or leaked, cleaning solvents would be harmful to the surrounding environment, including the soil, water, and wildlife. A spill or leak would result in direct, short-term, and long-term negligible adverse impacts to the immediate soil, water, and vegetation. There would be indirect, long-term negligible adverse impacts due to spill potential of hazardous materials. A spill could migrate off-site or contaminate groundwater that then migrates off-site. Subsequent cleanup of a spill could result in minimal emissions migrating off-site from the treatment and disposal process. A spill could migrate off-site or contaminate groundwater that then migrates off-site.

CBP regulates the usage of these materials in an effort to prevent chemical contamination of the surrounding area. To prevent risk of hazardous exposure, CBP agents managing cleaners and solvents would:

- Document all chemicals used to clean a facility, including how many gallons are stored, a short description of how they are to be used, the type of hazard they present, and where they are stored;
- Include material safety data sheets and first-aid information with the documentation for each chemical product;
- Remove chemicals that are inactive, especially products in storage for more than six months;
- Evaluate all chemicals for safer yet equally effective cleaning alternatives;
- Keep cleaning chemicals in their original containers to ensure that the containers are clearly marked and labeled with the manufacturer's instructions for use and safety;

- Have secondary labels on hand for chemicals used from concentrates to reduce the possibility of unlabeled bottles;
- Safely store cleaning chemicals away from direct sunlight, heat, and food items;
- Make sure unauthorized building occupants do not have access to chemicals;
- Store chemicals in well-ventilated areas and store some chemicals separately from others, when required per manufacturers' instructions;
- Use safety posters or safety graphics without words and multilingual chemical-use instructions to overcome language barriers;
- Encourage maintenance personnel to seek medical advice if any irritation or allergic reaction to a cleaning chemical develops; and,
- Continue to monitor the chemical safety program and provide ongoing training (Kauffman, 2006).

Ground, Aircraft, and Vessel Operations

Oil leaked from ground, aircraft, and vessel operations would result in direct, short-term, and long-term negligible adverse impacts and indirect, long-term negligible adverse impacts. Hazardous materials, such as petroleum products, would be used throughout the Northern Border for various functions, including fueling machinery used to conduct on-road vehicle, all-terrain vehicle, snowmobile, and waterborne patrols. If leaked, the environmental effects of motor oil would be a concern for both air and water quality. These products could have effects on the soil, water, and vegetation in the immediate area.

In order to prevent accidental spills and releases of hazardous materials used while conducting manned and unmanned aerial surveillance patrols, CBP would follow proper procedures and perform regular maintenance and inspection of aircrafts. Fuels (e.g., jet fuel, diesel, and gasoline) would be stored in large storage tanks. CBP would give prompt attention to vehicle oil leaks as a means of preventing environmental motor-oil contamination. The hazardous wastes produced from these materials would be tracked to ensure proper identification, storage, transportation, and disposal, and implementation of waste minimization programs (USDHS, 2008a).

Oil leaked from vehicles would result in direct, short-term, and long-term negligible adverse impacts. There would be indirect, long-term negligible adverse impacts due to spill potential of hazardous materials. A spill could migrate off-site or contaminate groundwater that then migrates off-site. Subsequent cleanup of a spill could result in minimal emissions migrating off-site from the treatment and disposal process.

Repair and Maintenance of Nonintrusive Inspection, Surveillance, and Support Equipment

Repairing and maintaining nonintrusive inspection (NII), surveillance, and support equipment would result in direct, short-term, and long-term negligible adverse impacts due to the potential for battery leakage. There would also be indirect, long-term negligible adverse impacts due to spill potential of hazardous materials. A spill could migrate off-site or contaminate groundwater that then migrates off-site. Subsequent cleanup of a spill could result in minimal emissions migrating off-site from the treatment and disposal process.

Used batteries would be handled, managed, maintained, stored, and disposed of in accordance with applicable Federal and state rules and regulations for the management, storage, and disposal of hazardous materials, hazardous waste, and universal waste. To the extent practicable, all batteries would be recycled locally.

Other Activities Common to One or More Operations

Interdiction

There would be indirect, long-term, minor adverse impacts due to spill potential of seized hazardous materials. Interdiction of hazardous materials crossing the border would result in direct, short-term, and long-term minor beneficial impacts. Potential sources of pollution from hazardous wastes could occur in the West of the Rockies Region of the Northern Border from the transboundary movement of hazardous materials/wastes and abandoned or illegal hazardous-waste sites (USDOJ, 2001). When hazardous materials are intercepted at the border, the likelihood of accidental or purposeful releases is greatly reduced.

The seizure of hazardous materials, such as fireworks, explosives, and freon, would be a last resort as a possible enforcement action. In any potential hazmat situation, the involved CBP officer would explore various alternatives to dispose of the violation. In the event that seizure is necessary to force compliance, the seizing officer and the CBP Fines, Penalties, and Forfeitures (FP&F) officer would consider the use of a constructive seizure agreement in consultation with other involved agencies, such as the Consumer Products Safety Commission, Environmental Protection Agency (EPA), or Department of Transportation, to avoid the expense of special storage by national seized-property contractors. If seizure would be necessary to support a criminal prosecution, the FP&F officer would task the national seized-property contractor to provide appropriate storage (Sobel, 2010).

In the event that seizure was performed, all hazardous materials seized by CBP would be logged, stored, and then collected by the national seized-property contractor, who then would be responsible for destroying (incinerating) the seized property or logging it in and sending it to another agency for use as evidence (the more common situation). CBP has a few incinerators, but they are typically used for destroying illegal agricultural materials.

No seized hazardous materials would be stored in CBP permanent or temporary storage facilities. Any hazardous material not constructively seized would be transferred to the custody of the national seized-property contractor. In the case of "administrative custody," where the property would be stored by a vendor of the national seized-property contractor but would not be consigned to the contractor (e.g., firearms and explosives), the original chain of custody Form 6051 would be placed in the seized-property file (Sobel, 2010).

The seized-property specialist would contact the national seized-property contractor to arrange pick-up and processing immediately on receipt of notification by seizing officers of a hazardous-materials seizure that is not released under a constructive seizure agreement (Sobel, 2010).

If CBP, in consultation with any other involved Federal agency, decided to authorize a disposition other than destruction, the disposition would be coordinated and in compliance with the other involved Federal agency to ensure that the disposition would be lawful and safe. The

disposition order would specify any special instructions required by any involved Federal agency (Sobel, 2010).

There would be indirect, long-term minor adverse impacts due to spill potential of seized hazardous materials. A spill could migrate off-site or contaminate groundwater that then migrates off-site. Subsequent cleanup of a spill could result in minimal emissions migrating off-site from the treatment and disposal process.

Operation of Firing Ranges and Armories

The main concern with outdoor firing ranges would be the fate and transport of heavy metals from bullets and bullet fragments accumulating in soil, resulting in direct, short-term, and long-term negligible adverse impacts as well as indirect, long-term negligible adverse impacts. Of these metals, lead would be the predominant contaminant (Scott, 2001). Once leached into the soil, lead could then contaminate groundwater. If new firing ranges would be built or existing ranges undergo remediation, they would follow EPA guidelines for remediation of outdoor firing ranges. The approach proceeds in several steps:

- Munitions fragments would be sifted from the soil and recycled. Doing so would make them exempt from hazardous-waste reporting and management requirements.
- The remaining soil would be sampled and analyzed to determine if the leachable level is at or above the EPA limit of 5 mg/L. If it does not exceed the limits, the soil would be disposed of, reused, or left in place with no further action needed.
- If it exceeds the limit, the soil would be analyzed in layers to determine the extent of the contamination. Layers that do not exceed the limit would need no further action.
- Contaminated soil would be treated or disposed of by placement in a hazardous-waste landfill, on-site stabilization and solidification, and soil washing.

In older firing ranges, designers did not consider the impact of lead on the environment. Newer designs would incorporate technologies to reduce lead pollution (Scott, 2001).

Lead contamination on this scale would result in direct, short-term, and long-term minor adverse impacts. There would also be indirect, long-term negligible adverse impacts due to spill potential of hazardous materials. A spill could migrate off-site or contaminate groundwater that then migrates off-site. Subsequent cleanup of a spill could result in minimal emissions migrating off-site from the treatment and disposal process.

8.14.2 FACILITIES DEVELOPMENT AND IMPROVEMENT ALTERNATIVE

Direct, short-term, and long-term negligible-to-minor adverse impacts and indirect, long-term negligible adverse impacts under the Facilities Development and Improvement Alternative (Facilities Alternative) would be similar to the direct, short-term, and long-term negligible adverse impacts under the No Action Alternative.

This alternative would focus on replacing existing facilities, such as USBP station housing and other facilities, or making major modifications to permanent facilities, such as POEs, to allow agents, officers, and agricultural specialists within CBP to operate more efficiently and respond to situations more quickly. The construction or expansion of facilities would result in short-term

increases in solid and electronic waste from demolition and disposal. Site-specific analysis would be necessary to check for hazardous materials, since construction may affect these materials if present.

Hazardous materials used during the maintenance and repair of buildings, such as POEs, would involve special hazards and the production of hazardous waste. Construction activities would use fuels, oils, lubricants, and other hazardous materials. An accidental release or spill of these substances could potentially occur (USDHS, 2003). A spill could migrate off-site or contaminate groundwater that then migrates off-site. Subsequent cleanup of a spill could result in minimal emissions migrating off-site from the treatment and disposal process.

Steps would be taken in an effort to reduce the likelihood of spills. Typical requirements regarding the management of hazardous wastes on a construction project would be to ensure that

- all construction personnel are properly trained regarding management of hazardous wastes;
- construction materials that are potentially hazardous are stored under watertight conditions but are still readily available for use;
- hazardous waste collected from the project is stored and disposed of in a manner that is appropriate for that particular type of waste;
- the contractor is prepared to respond to spills or leaks that occur anywhere on the project site; and,
- failure to clean up spills, or improper storage of hazardous materials, triggers sampling and analysis activities.

During all construction activities, mitigations would be used, including those listed in sub-section 8.14.6 for the prevention of hazardous-material releases. This protects the environment as well as the workers and citizens in the surrounding area.

Direct, short-term, and long-term negligible-to-minor adverse impacts under the Facilities Alternative would be similar to the direct, short-term, and long-term negligible adverse impacts under the No Action Alternative. Additionally, under the Facilities Alternative, there would be direct, short-term, and long-term negligible adverse impacts due to spill potential from increased amounts of hazardous materials onsite during construction, demolition, repair, and alteration activities. These could be, but are not limited to, diesel fuel, gasoline, paint, adhesives, and solvents. Hazardous materials associated with construction equipment would be used in accordance with Federal, state, and local regulations. Any spills from construction activities would be immediately contained and disposed of properly. Demolition activities would properly dispose of any hazardous materials, incorporate **Leadership in Energy and Environmental Design** criteria, and comply with the Federal Leadership in High Performance and Sustainable Buildings Guiding Principles.

There would be indirect, long-term negligible adverse impacts under the Facilities Alternative due to the potential for spills during the transfer of hazardous materials both on- and off-site, and subsequent processing would result in minimal emissions from the treatment and disposal process.

Impacts would be mitigated by following procedures for proper waste disposal and by complying with Executive Order (EO) 13101, "Greening the Government through Waste Prevention, Recycling and Acquisition," and other applicable guidance and regulations (USDHS, 2006b).

8.14.3 DETECTION, INSPECTION, SURVEILLANCE, AND COMMUNICATIONS TECHNOLOGY EXPANSION ALTERNATIVE

The Detection, Inspection, Surveillance, and Communications Technology Expansion Alternative (Detection/Inspection Alternative) would result in direct, short-term, and long-term negligible adverse impacts and indirect, long-term negligible adverse impacts. The installation of new data infrastructure and technology systems would result in short-term increases in hazardous waste from demolition and disposal. A site-specific analysis to check for hazardous materials would be necessary since construction may affect these materials if present.

This alterative would focus on conducting more surveillance operations and deploying more and better surveillance and communication technologies. It would include either hiring additional USBP and OAM agents, or shifting these agents from other borders, to conduct surveillance and respond to situations. It would include improvements to the identification and inspection technologies used by OFO. It would also include continuing deployment of integrated and upgraded surveillance and telecommunications systems—such as remote sensors; short-range radar; remote- and mobile-video detection, inspection, surveillance and communications systems; new camera systems; and upgrades to stationary communications systems—that would improve CBP's situational awareness and allow it to more efficiently and effectively direct its resources for cross-border violator interdiction.

During construction of new towers and access roads, the potential exists for petroleum, oil, and lubricant (POL) contamination due to storage of POL material for maintenance and refueling of vehicles and fuel storage tanks. On this scale, a spill or accidental release of hazardous materials would result in direct, short-term, and long-term negligible-to-minor adverse impacts of the immediate area. Soil and water contamination is a possible consequence of an accidental release of hazardous materials on a construction site. There would be indirect, long-term negligible adverse impacts due to spill potential of hazardous materials. A spill could migrate off-site or contaminate groundwater that then migrates off-site. Subsequent cleanup of a spill could result in minimal emissions migrating off-site from the treatment and disposal process.

Activities to prevent the accidental release of POL would include primary and secondary containment measures. Cleanup materials such as oil mops would be maintained at each site for appropriate spill response. Drip pans would be provided for power generators and other stationary equipment to capture any POL spilled during maintenance activities or leaks from equipment (USDHS, 2008c). The installation of monopole communication towers would result in negligible adverse impacts. CBP is currently working on the development of spill response plans for POL sites (Sobel, 2010).

All hazardous wastes and materials, including universal waste (such as batteries and fluorescent light bulbs) would be handled in accordance with applicable Federal and state laws and guidelines governing these items.

Repairing and maintaining these systems would result in direct, short-term, long-term negligible adverse impacts due to the potential for batteries to leak. There would also be indirect, long-term negligible adverse impacts due to spill potential of hazardous materials. A spill could migrate off-site or contaminate groundwater that then migrates off-site. Subsequent cleanup of a spill could result in minimal emissions migrating off-site from the treatment and disposal process. Used batteries would be handled, managed, maintained, stored, and disposed of in accordance with applicable Federal and state rules and regulations. To the extent practicable, all batteries would be recycled locally.

Oil leaked from vehicles would result in direct, short-term, and long-term negligible adverse impacts. There would be indirect, long-term negligible adverse impacts due to spill potential of hazardous materials. A spill could migrate off-site or contaminate groundwater that then migrates off-site. Subsequent cleanup of a spill could result in minimal emissions migrating off-site from the treatment and disposal process.

Following procedures for proper waste disposal and complying with EO 13101 and other applicable guidance and regulations would help mitigate potential impacts. With implementation of these procedures and regulations, the Detection/Inspection Alternative would result in direct, short-term, and long-term negligible adverse impacts. There would be indirect, long-term negligible adverse impacts due to spill potential of hazardous materials. A spill could migrate off-site or contaminate groundwater that then migrates off-site. Subsequent cleanup of a spill could result in minimal emissions migrating off-site from the treatment and disposal process.

8.14.4 TACTICAL SECURITY INFRASTRUCTURE DEPLOYMENT ALTERNATIVE

The Tactical Security Infrastructure Deployment Alternative (Tactical Security Alternative) would result in direct, short-term, and long-term negligible adverse impacts and indirect, long-term negligible-to-minor adverse impacts. Only minor increases in the use of hazardous substances would occur as a result of the construction and maintenance of fences and roads. During construction and installation activities, fuels, oils, lubricants, and other hazardous materials would be used. An accidental release or spill of any of these substances could occur. A spill would result in potentially direct, short-term, and long-term negligible-to-minor adverse impacts to on-site soils. However, the amounts of fuel and other lubricants and oils would be limited, and the equipment needed to quickly limit any contamination would be located onsite. There would be indirect, long-term negligible adverse impacts due to spill potential of hazardous materials. A spill could migrate off-site or contaminate groundwater that then migrates off-site. Subsequent cleanup of a spill could result in minimal emissions migrating off-site from the treatment and disposal process.

This alternative would focus on constructing additional barriers, such as selective fencing or vehicle barriers, at selected points along the border to deter and delay cross-border violators, as well as access roads and related facilities to increase the mobility of Border Patrol agents for surveillance and response. This alternative would hinder cross-border violators and improve CBP's capability to respond quickly and effectively.

POLs would be stored at temporary staging areas to maintain and refuel construction equipment. However, these activities would include primary and secondary containment measures. Cleanup materials such as oil mops would also be maintained at the site to allow immediate action in case

an accidental spill occurs, in accordance with the project's Spill Prevention, Control, and Countermeasures Plan (SPCC). Drip pans would be provided for power generators and other stationary equipment to capture any POL spilled during maintenance activities or leaks from equipment. Sanitary facilities would be provided during construction activities, and waste products would be collected and disposed of by licensed contractors. No gray water would be discharged to the ground.

Oil leaked from vehicles would result in direct, short-term, and long-term negligible adverse impacts. There would be indirect, long-term negligible adverse impacts due to spill potential of hazardous materials. A spill could migrate off-site or contaminate groundwater that then migrates off-site. Subsequent cleanup of a spill could result in minimal emissions migrating off-site from the treatment and disposal process.

8.14.5 FLEXIBLE DIRECTION ALTERNATIVE

The Flexible Direction Alternative would result in combinations of alternatives for CBP to choose from in an effort to adapt to changes in threat levels. Hazardous-material impacts would vary depending on the chosen mix of security measures. Choosing this alternative would allow CBP to follow any of the above alternatives based on what it judges to be most effective to respond to the changing threat environment. It is impossible to predict what portion of the overall mix each of the above directions is likely to be needed at any time, and the needed mix is likely to change constantly because the threat environment changes constantly. Therefore, CBP is assessing the maximum scope of impact that might result from selecting this alternative as the sum of the impacts that would result from full implementation of all three action alternatives. This would result in direct, short-term, and long-term negligible-to-minor adverse impacts due to spill potential of hazardous materials. There would also be indirect, long-term negligible-to-minor adverse impacts for the same reason. A spill could migrate off-site or contaminate groundwater that then migrates off-site. Subsequent cleanup of a spill could result in minimal emissions migrating off-site from the treatment and disposal process.

8.14.6 BEST MANAGEMENT, MINIMIZATION, AND MITIGATION

CBP seeks to avoid, minimize, repair, and reduce the impacts of its actions on the human environment. It does so with a combination of BMPs, siting plans, design strategies, mitigation measures, and monitoring plans best suited to the scale and location of a particular action. Towards that end, in implementing its proposed action CBP could choose from among the following actions to avoid or minimize impacts resulting from hazardous or regulated materials and waste.

Mitigations would be implemented as standard operating procedures during all construction activities and would include proper handling, storage, or disposal of solid and hazardous or regulated materials (USDHS, 2008c). To minimize potential impacts from hazardous and regulated materials, all fuels, waste oils, and solvents would be collected and stored in tanks or drums within a secondary containment system that consists of an impervious floor and bermed sidewalls. The refueling of machinery would be completed in accordance with accepted industry and regulatory guidelines, and all vehicles would be required to have drip pans during storage to contain minor spills and drips. Although a major spill would be unlikely to occur, any spill of reportable quantity would be contained immediately within an earthen dike, and the application of an absorbent (e.g., granular, pillow, sock) would be used to absorb and contain the spill.

Lead pipe or lead-painted metal would be removed before renovation or demolition or separated from the demolition waste pile. They could also be recycled as scrap metal. Lead in batteries or fluorescent lamps that could be recycled or disposed of as universal waste has less stringent management requirements than waste that can be disposed of as dangerous waste. High-intensity discharge lamps with regulated amounts of lead could not be disposed of as universal wastes. They would be managed as dangerous wastes (ECY, 2010).

All waste oil and solvents would be recycled. All nonrecyclable hazardous and regulated wastes would be collected, characterized, labeled, stored, transported, and disposed of in accordance with all Federal, state, and local regulations, including proper waste manifesting procedures. To ensure oil pollution prevention, a SPCC plan would be in place prior to the start of construction activities, and all personnel would be briefed on the implementation and responsibilities of this plan as is typical in CBP/Secure Border Initiative projects. A spill of any petroleum liquids (e.g., fuel or material listed in 40 CFR 302, Table 302.4) of a reportable quantity would be cleaned up and reported to the appropriate Federal and state agencies (USDHS, 2008c).

EPA's mitigations for outdoor firing ranges call for reclaiming lead and recycling it into new shot and bullets. This would reduce the amount of virgin lead that would have to be mined. CBP would implement strategies to help prevent lead contamination. Probably the most promising pollution prevention strategy for both indoor and outdoor firing ranges is the development of the "green bullet." Rather than lead, this new bullet is a slug made from tungsten and tin. Tungsten is a non-toxic metal with a higher density than lead. The material can easily be pressed into shape to replace many small caliber bullets (Scott, 2001).

8.14.7 SUMMARY OF IMPACTS

Table 8.14-1 summarizes the potential impacts on the human environment of CPB activities involving hazardous and otherwise regulated materials.

Table 8.14-1. Summary of Potential Impacts of Hazardous and Otherwise Regulated Materials

Impact-Producing Activity	Level of Impact				
	Negligible Adverse	Minor Adverse	Moderate Adverse	Major Adverse	Beneficial
NO ACTION ALTERNATIVE					
Small construction projects (< 1 acre and < 1/4 mile: e.g., minor repairs to facilities, parking lot repairs, access road repairs)		X			
Large construction projects (> 1 acre and > 1/4 mile: e.g., repairs to facilities, parking lot repairs, access road repairs)		X			
Small on-site trade and travel processing operations	X				
Large on-site trade and travel processing operations	X				

Impact-Producing Activity	Level of Impact				
	Negligible Adverse	Minor Adverse	Moderate Adverse	Major Adverse	Beneficial
Checkpoint operations	X				
Ground operations—motorized, onroad	X				
Ground operations—motorized, offroad	X				
Ground operations—nonmotorized	X				
Aircraft operations	X				
Vessel operations	X				
Operation of NII systems	X				
Other Activities Common to One or More Operations (Interdiction, Firing Ranges, Armories)		X			X
OVERALL IMPACT		**X**			**X**
FACILITIES DEVELOPMENT AND IMPROVEMENT ALTERNATIVE					
Small construction projects (< 1 acre and < 1/4 mile: reconstruction or construction of new POEs, USBP structures, parking lot repairs, access road repairs)		X			
Large construction projects (> 1 acre and > 1/4 mile: reconstruction or construction of new POEs, USBP structures, parking lot repairs, access road repairs)		X			
New small on-site trade and travel processing operations	X				
New large on-site trade and travel processing operations	X				
OVERALL IMPACT	**X**	**X**			
DETECTION, INSPECTION, SURVEILLANCE, AND COMMUNICATIONS TECHNOLOGY EXPANSION ALTERNATIVE					
Small construction projects (towers and other infrastructure to mount antennas)	X				
Ground operations—motorized, onroad	X				

Impact-Producing Activity	Level of Impact				
	Negligible Adverse	Minor Adverse	Moderate Adverse	Major Adverse	Beneficial
Ground operations—motorized, offroad	X				
Ground Operations—nonmotorized	X				
Aircraft operations	X				
Vessel operations	X				
Operation of NII systems	X				
Operation of sensor and other technologies	X				
OVERALL IMPACT	**X**				
TACTICAL SECURITY INFRASTRUCTURE DEPLOYMENT ALTERNATIVE					
Small construction projects (trench cuts, towers, minor access roads, and fences)		X			
Large construction projects (access roads and fences)		X			
OVERALL IMPACT	**X**	**X**			
FLEXIBLE DIRECTION ALTERNATIVE					
Small construction projects		X			
Large construction projects		X			
Small on-site trade and travel processing operations	X				
Large on-site trade and travel processing operations	X				
Checkpoint operations	X				
Ground operations—motorized, onroad	X				
Ground operations—motorized, offroad	X				
Ground operations—nonmotorized	X				
Aircraft operations	X				
Vessel operations	X				
Operation of NII systems	X				
Operation of sensor and other technologies	X				

Impact-Producing Activity	Level of Impact				
	Negligible Adverse	Minor Adverse	Moderate Adverse	Major Adverse	Beneficial
Other Activities Common to One or More Operations (Interdiction, Firing Ranges, Armories)		X			X
OVERALL IMPACT	**X**	**X**			

8.15 ENVIRONMENTAL CONSEQUENCES TO UTILITIES AND INFRASTRUCTION

This section analyzes potential adverse and beneficial impacts to utilities and infrastructure from current and potential future U.S. Customs and Border Protection CBP activities in each of the four regions.

Utilities and infrastructure refer to the systems of public works, utilities, and transportation networks that provide the basic framework for a community. Utilities include water, power supply, and waste management. Transportation networks are discussed separately in Section 8.16, Roadways and Traffic, which follows this section. Infrastructure consists of the systems and physical structures that enable a population in a specified area to function. Infrastructure is wholly man-made with a high correlation between the type and extent of infrastructure and the degree to which an area is characterized as urban or developed. For descriptions of the regional affected environments for utilities and infrastructure see Sections 4.15.2 (West of the Rockies), 5.15.2 (East of the Rockies), 6.15.2 (Great Lakes), and 7.15.2 (New England).

Across the Northern Border as a whole, all alternatives are likely to continue to use the same facilities, technologies, activities, and infrastructure that are in use or currently planned by CBP. Any long-term, adverse, direct, and indirect impacts to utilities and infrastructure from the No Action Alternative, the Facilities Development and Improvement Alternative, and the Tactical Security Infrastructure Deployment Alternative would be negligible; impacts under the Detection, Inspection, Surveillance, and Communications Technology Expansion Alternative and the Flexible Direction Alternative would be minor. Electricity is provided to most CBP facilities by a grid system, and drinking water and sewage treatment are provided by municipal piping systems or on-site wells and septic tanks. Overall, the projected demand on these systems due to construction or modernization of CBP's facilities would not be expected to exceed their capacities. Infrastructure maintenance, repair, and alterations at existing CBP facilities would follow best management practices (BMPs) as well as CBP's policy to mitigate adverse impacts through a sequence of avoidance, minimization, and compensation measures. Given the minor increase in demand on utilities required for the continued and proposed CBP activities, the capacities of the existing systems are likely adequate to meet current and foreseeable future demand.

Although no significant adverse impacts were identified through the analysis of this section that would require mitigation measures to reduce impacts to non-significant levels, CBP would use efficiency-increasing BMPs to mitigate or minimize impacts to utilities and infrastructure. The following activities are expected to have no impacts to utilities and infrastructure because their footprint is too small or indirect to cause any noticeable change or degradation of existing uses:

- Construction of pedestrian or vehicle fences or other physical barriers;
- Construction (extensions, upgrades, or repairs) of access roads, fences, drag roads, bridges, culverts, and low-water crossings;

- Ground surveillance and situational response activities (motorized and nonmotorized, use of unattended ground sensors (UGS) and other technology);
- Aircraft surveillance and situational response activities; and
- Maritime surveillance and situational response activities.

The current and proposed CBP activities that would cause an increase in demand would produce impacts below the significance threshold, since the capacities of existing utility systems would be adequate to meet current and foreseeable demand. All direct and indirect adverse impacts to utilities would be negligible to minor for the five alternatives across the Northern Border. Beneficial impacts would occur because replacement systems would invariably be more efficient. Similarly, the cumulative impacts of CBP activities under all alternatives, when analyzed in conjunction with non-CBP activities, would be negligible to minor due to the incremental, increased demand on utility resources. Beneficial impacts would occur from the addition of electrical and fuel supplies.

8.15.1 NO ACTION ALTERNATIVE

Under the No Action Alternative, CBP would (1) continue the current level of operations at facilities in use or currently planned, and (2) continue to maintain and repair facilities, technology, and infrastructure at their current level as described in Section 2.3. These activities would not strain the capacity of existing utility resources and would have negligible adverse and beneficial impacts. The discussion of utilities and infrastructure in each of the four regions is driven by the types of impacts to utility resources that CBP's actions have produced in the past and could produce in the future. The types of CBP actions that could produce utility impacts include:

- No more than 20 small construction projects, currently under way or in the planning phase that are close to or already under construction; including repairs and maintenance or minor modifications to existing POEs and U.S. Border Patrol (USBP) stations, utility system upgrades, small additions to Office of Air and Marine (OAM) facilities, and technology support infrastructure.
- No more than 15 large construction projects, including modification to POEs and construction or modernization of USBP stations already in the planning phase and close to or already under construction;
- About 30± small, on-site trade and travel processing operations;
- About 100± checkpoint operations per day;
- Operation of nondestructive inspection and detection technologies (NII) for 1,000± hours per day; and
- Operation of sensor and other technologies for 1,500± hours per day.

Long-term adverse and beneficial impacts to utilities and infrastructure from the No Action Alternative would be negligible. Electricity is provided to most CBP facilities by a grid system, and drinking water and sewage treatment are provided by municipal piping systems or on-site wells and septic tanks. Overall, the projected demand on these systems due to construction of small or large CBP facilities would not be expected to exceed their capacities.

Infrastructure maintenance, repair and alterations, and modifications at existing CBP facilities would follow a suitable combination of BMPs, siting plans, design strategies, mitigation measures, and monitoring plans to lessen the severity of impacts (as described below in Section 8.15.6), and thus would have a negligible impact on utility resources. Site-specific analysis would be conducted for any given project to ensure that it would not cause utility overstrain.

Small Construction Projects

Repairs and Maintenance or minor modification to Existing POE and USBP Stations

Repairs and maintenance or minor modification to existing facilities are routine, and as such would not strain the existing capacities of utility resources and have negligible adverse and beneficial impacts. These repairs and maintenance activities could include replacement of individual utility systems, such as replacement of a septic system; construction of a new potable water well with new piping, pumps, treatment systems, and storage tanks; relocation of electrical and telephone lines (transferring them underground); construction of on-site renewable energy-generating sources; and construction of sidewalks, entrances, and structures.

Interim repairs and alterations (R&A) to address immediate, emerging needs of an existing POE might be undertaken as needed until new construction is completed.

R&A may include, but is not limited to, upgrades to meet electrical capacity and local code compliance; provision of a back-up generator capable of covering all short-term power requirements, full emergency power capacity, and adequate HVAC; provision of vehicle control systems; upgrades of interior space; and updates to information systems and data connectivity. Routine repairs, maintenance, modifications, alterations, and upgrades of utility systems are not expected to increase demand on water, energy, or wastewater systems and thus would have a negligible adverse and beneficial impact on utility resources. Impacts would be beneficial when on-site renewable energy-generating sources are constructed and utility systems are replaced to be more efficient.

Small Additions to OAM Facilities

Since small additions to OAM facilities would not strain existing utility capacities, impacts would be negligible adverse and beneficial. OAM leases facilities from military and commercial airfields and airports, as well as marina berths. It leases commercial space from government agencies, such as the United States Coast Guard, or commercial marinas. A construction program is not likely to be implemented in the future in leased space, and small additions to OAM facilities should not strain utility capacities. These small additions would be limited to interim R&A to address immediate, emerging needs of an OAM facility until new construction is completed.

R&A may include, but is not limited to, upgrades to meet electrical capacity and local code compliance; provision of a back-up generator capable of covering all short-term power requirements, full emergency power capacity, and adequate HVAC; provision of vehicle control systems; interior space upgrades; and updates to information systems and data connectivity. R&A made to OAM facilities are not expected to increase demand on utility capacities, so impacts would be negligible and adverse and beneficial (when utility systems are upgraded to be more efficient).

Technology Support Infrastructure

Construction of technology support infrastructure such as RVSS and radio communication towers in each of the four regions would not strain existing energy and communication resources; so impacts would be negligible. Construction of communication towers would include installation of underground and overhead power lines to connect to commercial electrical grid power. Construction of communication towers would also include installation of battery back-up power systems for telecommunication equipment including microwave transmission, surveillance cameras, and radar dishes on towers. Such technologies require grid power, and generators with propane fuel tanks as secondary back-up generators; use of these fuel sources would increase demand for energy resources and fuel needed for generators.

In the past, CBP has followed BMPs as well as its own policy to mitigate adverse impacts through a sequence of avoidance, minimization, and compensation. If BMPs and mitigation measures are implemented, capacities of energy and communication systems would not be exceeded; thus, adverse impacts would be negligible. Beneficial impacts would occur where on-site renewable energy-generating sources are constructed and utility systems are replaced to be more efficient.

Large Construction Projects

Construct a New USBP Station

Construction of completely new USBP stations in new locations, which are already underway or are advanced in the planning process, would increase demand on electrical, water, wastewater, and fuel supply capacities; but by following the prescribed design and construction standards, negligible adverse impacts are expected on utility resources. Construction would include installation of about 0.1 miles of underground or overhead power and telephone lines, an emergency generator with a diesel or propane tank, approximately four propane tanks for HVAC, and exterior lighting, as well as provision of a potable water supply and sewage disposal. In urban areas, new USBP stations would connect to the municipal water supply and municipal sewer system. In rural areas, construction of a new facility would include installation of an on-site potable well, including pipes and storage tanks, as well as installation of an on-site septic tank and associated drainage field. Most construction includes the use of diesel fuel for primary or emergency electricity.

The location of the new station would be compliant with the U.S Border Patrol Facilities Design Guide (Design Guide) to Incorporate Leadership in Energy and Environmental Design (LEED) Certified Construction standards, as well as with the siting criteria that support operation requirements of the stations, such as "availability of utilities (water, sewage, power, and communications)." Therefore, construction of these facilities would be expected to create only negligible impacts to utility resources (USDHS, 2003c).

Major Modifications to POEs and USBP Stations

Major modifications to POEs and USBP stations, either already underway or in the advanced planning stage, follow the POE Guide and Design Guide; so impacts to all utility resources are expected to be negligible. Major modifications of existing POEs and USBP stations include modernization, which can range from renovations and alterations to complete facility

replacements. Upgrades could include several or all of the following: adding electrical capacity; replacing water treatment systems; updating infrastructure and telephone and data connectivity; and increasing lighting around the building and inspection areas.

Major POE and USBP station modification projects may include demolition of existing structures and construction of new structures on essentially the same site for POEs, or on a different site for USBP stations. This could include installing about 0.1 miles of underground or overhead power and telephone lines, and replacing a communication tower or septic system as well as connecting to the municipal water supply, where possible, or constructing a new potable well, with piping, pumps, treatment systems, and storage tanks.

Construction of a new ancillary building would require additional propane tanks for HVAC and emergency generators. When possible, construction of a new ancillary building would include establishment of on-site renewable energy-generating sources. All modernized POEs are expected to maintain current staffing levels and hours of operation, so no measurable increases in POE utility consumption would be expected. All impacts to utility resources are expected to be negligible adverse and beneficial, since the POE Guide and Design Guide prescribe more sustainable and energy-efficient utilities, which would create long-term and beneficial impacts by increasing the capacity and operating efficiency of utility infrastructure.

Small On-Site Trade and Travel Processing Operations

Continued operations at the 30± POEs or fixed checkpoints in each of the four regions with fewer than 10,000 crossings per day would be expected to cause negligible adverse impacts on utility resources. POEs are generally connected to local county or municipal sewer, water, and electrical utility systems. Many of these facilities have an on-site emergency electric generator with diesel fuel tanks; the tanks must be refilled as needed. Where municipal utilities are unavailable, POEs are equipped with their own septic systems, water supply wells, and generators. Operations might include pumping septic tanks once every three months to two years, depending on a tank's remaining capacity, and providing treatment twice a year. Facilities that use propane or natural gas for HVAC, or that use propane or diesel-powered emergency generators and store the fuel in on-site tanks, would refill tanks as needed. Based on analyses of impacts produced at comparable POEs, processing operations would produce negligible adverse impacts (USDHS, 2010a).

Large On-Site Trade and Travel Processing Operations

Continued operations at the four POEs with more than 10,000 crossings per day, located in the Great Lakes and West of the Rockies regions, would be expected to create negligible impacts. Large POEs are generally connected to county or municipal sewer, water, and electrical utility systems. Some are also equipped with telecommunication facilities, antennas, and other telecommunications equipment to support radio communications. Based on analyses of impacts produced at comparable POEs, and given the current level of demand on utilities, processing operations will not exceed utility capacities and therefore produce negligible, adverse impacts (USDHS, 2010b).

Operation of NII Systems

Continued operation of nonintrusive and nondestructive inspection and detection technologies (NII) would not strain the existing capacity of energy resources, so impacts are expected to be negligible. NII systems include large-scale, X-ray and gamma-ray imaging systems and radiation detection technology, such as gamma-imaging inspection systems and personal radiation detectors, radioactive isotope identifiers (RIIDS), and high-energy X-ray imaging scanners (HEXRIS). To process people, all POEs are linked to the Integrated Automated Fingerprint Identification System (IAFIS) and Advance Passenger Information System (APIS). CBP prepared a programmatic environmental assessment for the introduction of the gamma-imaging inspection system in 2004, and concluded that "sufficient public service utility capacity will exist at POEs to adequately handle operation of VACIS® (Vehicle and Cargo Inspection System, a gamma-imaging inspection system) installations" (USDHS, 2004). Thus, continuing with approximately 1,000 hours of operation per day in each of the four regions would have a negligible impact on utility resources.

Operation of Other Technologies

Operation of other inspection technologies would not strain the capacity of current energy resources and are expected to have negligible impacts. Technologies would include remote video surveillance, electronic sensors, or other X-ray type equipment that use gamma ray technology to examine contents of vehicles. Continuing approximately 1,500 hours of operation per day would not be expected to increase energy demand and would therefore have a negligible impact.

Checkpoint Operations

The 100 or so checkpoint operations anticipated per day are not expected to strain existing electrical, water, wastewater, and fuel resources, and they would have negligible impacts on utilities. Traffic checkpoints involve inspections of interior-bound conveyances including passenger vehicles (e.g., cars, trucks, vans, buses) and container and similar cargo trucks. Checkpoints, in some cases, include temporary support buildings to provide office and holding space, as well as lights, signage, and other support equipment. Set-up and maintenance of mobile traffic checkpoints consist of a small number of USBP vehicles used by agents to drive to the location. Each location includes a portable water supply and rest facility, and some may also require lighting if operated at dusk or at night. Mobile traffic checkpoints are temporary installations; thus, impacts to utilities would be short term, negligible, and adverse.

8.15.2 FACILITIES DEVELOPMENT AND IMPROVEMENT ALTERNATIVE

The Facilities Development and Improvement Alternative would focus on providing for current and projected space needs that would enable USBP agents to operate more efficiently and respond to situations more quickly. The overall staffing levels of officers would change as needed to meet the purpose of the expanded and new facilities beyond those already planned and discussed in the No Action Alternative. Included also in this alternative is the construction of new semipermanent and temporary facilities, such as FOBs, necessary to support CBP law enforcement agents and officers as they carry out operational duties.

Since CBP seeks to reduce and avoid impacts through a sequence of avoidance, minimization, mitigation, and compensation measures; modifying and constructing permanent and temporary

facilities would not cause existing utility capacities to be exceeded. This alternative would create long-term, minor, and adverse impacts to utility systems for each region. In addition, beneficial impacts would occur where on-site renewable energy systems and more efficient utility systems are constructed.

Site-specific analyses would be conducted for any given project to ensure that it would not cause utility overstrain. The increased demands from the Facilities Development Alternative would add long-term, minor, and adverse cumulative impacts to utility supplies serving project sites.

Small Construction Projects

The construction of no more than 30 small projects slated to take place in each region over the next five to seven years (beyond those 20 or so already planned) would have negligible impacts to utilities, similar to those discussed in the No Action Alternative but not necessarily more severe. More repairs and maintenance and modifications to existing POEs and USBP stations, small additions to OAM facilities, and construction of technology support infrastructure would not be expected to strain existing utility capacities. Following BMPs, design strategies, mitigation measures, and monitoring plans to avoid or lessen adverse impacts wherever possible should mean that the expected increase in demand on utilities will not exceed their maximum supply capacities; therefore, impacts would be negligible and adverse. Impacts would also be beneficial when water, wastewater, and energy systems are replaced or upgraded to be more efficient.

Large Construction Projects

The construction, or major modification of roughly 20 CBP facilities (beyond the 15 or so already planned) to take place in each region over the next five to seven years would have impacts similar to those discussed under the No Action Alternative, though impacts would be more severe since this alternative includes an increase in overall staffing levels to meet the purpose of the expansion or new facility.

Construction of completely new USBP stations in a new location, in addition to those discussed in the No Action Alternative, would increase demand on electrical, water, wastewater, and fuel supply capacities. However, compliance with the Design Guide to incorporate LEED Certified Construction standards, as well as the siting criteria would ensure the ample availability of utility system capacities. It is assumed that the new structures would be constructed in close proximity to those they are replacing, utilizing existing infrastructure to transport water, natural gas, and electricity to the site.

Major modifications to CBP facilities would have impacts similar to those discussed in the No Action Alternative, producing beneficial impacts where outdated utility systems are made more efficient. This alternative proposes to achieve LEED certification, which aims to reduce the demand on such utilities. Given the negligible to minor increase in demand on utilities required for the proposed construction and modernization activities, the capacities of the existing systems should be adequate to meet current and foreseeable future demand.

Construct Permanent and Temporary Facilities

Included also in this alternative is the construction of permanent and temporary facilities, such as FOBs, housing (where local housing stock may not be readily available), and temporary checkpoints. Such construction would increase short-term demand for utility resources.

Since FOBs are by definition self-contained, stand-alone sites that CBP establishes in remote areas, construction would typically include carrying portable supplies of potable water, generators, and waste disposal by truck, by horse, and, if necessary, by helicopter where motorized vehicles are not allowed. FOBs provide living and office accommodations for USBP agents operating remotely; agents also camp as necessary.

The setup and maintenance of mobile traffic checkpoints consist of a small number of Border Patrol vehicles used by agents to drive to the location. Each location includes a portable water supply and rest facilities, and some may also require lighting if operated at dusk or at night. Mobile traffic checkpoints are temporary installations; thus, impacts to utilities would be short-term, minor, and adverse.

8.15.3 DETECTION, INSPECTION, SURVEILLANCE, AND COMMUNICATIONS TECHNOLOGY EXPANSION ALTERNATIVE

Under this alternative, future changes in the program would focus on deploying more effective surveillance and communications technologies in order to process visitors and cargo more rapidly. This would create the need for additional support infrastructure in the form of poles and towers in many locations, and would produce negligible impacts to energy and fuel resources.

The greater use of technological and communications security tools would have negligible to minor impacts on energy resources. CBP shares use of existing towers with other law enforcement agencies to the extent possible, which would reduce the expected increase in energy and water demand. Even when new construction or new deployments are required, the minor energy, water, and waste demands would be well within existing capacities. Site-specific analysis would be conducted for any given project to ensure it would not cause utility overstrain. Therefore, the cumulative as well as overall impact to utility resources would be negligible.

Small Construction Projects

The construction of approximately 100 additional support infrastructure elements (in the form of poles and towers) beyond those already planned in the No Action Alternative would increase demand on energy and fuel and have negligible to minor adverse impacts on utilities. Technologies requiring grid power, and generators and propane fuel tanks as secondary back-up generators, would increase demand for energy and fuel. To the extent practicable, CBP would use existing structures—buildings and towers of appropriate heights, or towers shared with other law enforcement agencies—for mounting antennas and RVSSs, to reduce the overall impacts of tower and pole construction. This would reduce impacts to energy and fuel resources, resulting in negligible to minor adverse impacts.

Operation of NII Systems

Increasing the total hours of operation of NII technology to 1,500 hours per day across the region could increase energy demand over that of the No Action Alternative and cause minor impacts.

Site-specific analysis would be necessary at a given location to determine local transmission constraints, but a net increase of 500 hours of operation would be expected to produce only minor impacts to utility resources.

Operation of Sensor and Other Technologies

Increasing the total hours of operation to a maximum of 2,500 hours of operation per day for technologies such as remote video surveillance, electronic sensors, gamma-imaging inspection system machines, or other X-ray equipment that uses gamma ray technology to examine contents of vehicles could increase the demand on energy resources and produce minor impacts. While a net increase of zero hours of operation would produce negligible impacts to energy resources, as discussed in the No Action Alternative, a net increase of 1,000 hours of operation would produce adverse but minor impacts to energy.

8.15.4 TACTICAL SECURITY INFRASTRUCTURE DEPLOYMENT ALTERNATIVE

The Tactical Security Infrastructure Deployment Alternative would focus on constructing about 30 additional trench cuts, towers, minor access roads, and fences—beyond those already planned—at selected points in each of the four regions. This alternative includes the construction of no more than five access roads and fences longer than a quarter of a mile, none of which would impact utility resources.

The operational activities included in the Tactical Security Infrastructure Deployment Alternative would have negligible direct, indirect, and cumulative impacts to utility resources, as supply capacities would remain virtually unaffected. Since the construction of towers, discussed above as having negligible impacts, is the only action in this proposed alternative that would impact utility resources differently than would the No Action Alternative, impacts to utility resources would be negligible.

8.15.5 FLEXIBLE DIRECCTION ALTERNATIVE

The Flexible Direction Alternative would include the full implementation of all three action alternatives; it therefore represents the maximum envelope of impact that might result. The activities carried out under this alternative would never exceed the sum of the activities of the other alternatives, whose ceiling would be defined as: 160± small construction projects, 25± large construction projects, around 100 total checkpoint operations per day, 1,500 hours of operation per day of NII systems, and 2,500 hours of operation per day of sensor and other technologies in each region. These aggregate actions would produce minor impacts to utility resources and would produce the greatest impact to utility resources of the four alternatives.

Long-term adverse impacts to utilities and infrastructure from the Flexible Direction Alternative would be minor and adverse. Even with the increased demand on utilities required for the Flexible Direction Alternative, the capacities of existing systems are likely to be adequate to meet current and foreseeable future demand. Site-specific analysis would be conducted for any given project to ensure that it would not cause utility overstrain. This alternative would produce long-term, minor, and adverse cumulative impacts, since current utility supply capacities would not be exceeded.

Small Construction Projects

Construction of no more than 160± small projects, beyond those already planned, could produce minor impacts to all utility resources. This might include more repairs and maintenance to existing POEs and USBP stations, small additions to OAM facilities, and construction of technology support infrastructure, and would have minor impacts on energy and fuel resources. Following BMPs to avoid or lessen adverse impacts wherever possible for all small construction projects should mean that the expected increase in demand to utilities will not exceed their maximum supply capacities; therefore impacts would be minor.

Large Construction Projects

Impacts from construction of fewer than 25± additional large construction projects would likely produce minor impacts to utilities. There would be efficiency gains from constructing new systems using CBP sustainability parameters, but overall demand would still likely increase due to the volume of new sources of demand. Since the capacities of the existing systems would still be expected to be adequate to meet current and foreseeable future demand, adverse impacts would be minor.

Operation of NII Systems

As discussed in the Detection, Inspection, Surveillance, and Communications Technology Expansion Alternative, a net increase of 500 hours of operation would produce minor, adverse impacts to utility resources.

Operation of Sensor and Other Technologies

As described in the Detection, Inspection, Surveillance and Communications Technology Expansion Alternative, a maximum net increase of 1,000 hours of operation would increase demand on energy resources. Increasing the total hours of operation to 2,500 would produce adverse and minor impacts to energy.

8.15.6 BEST MANAGEMENT, MINIMIZATION, AND MITIGATION

CBP seeks to avoid, minimize, repair, and reduce the impacts of its actions on the human environment. It does so with a combination of BMPs, siting plans, design strategies, mitigation measures, and monitoring plans best suited to the scale and the location of the particular action. Although no significant adverse impacts were identified through the analysis of this section that would require mitigation measures to reduce impacts to non-significant levels, CBP could choose from among the following actions to avoid or minimize impacts to utilities and infrastructure:

- Use strategies that in aggregate use at least 20 percent less potable water than the indoor water-use baseline calculated for the building, after meeting fixed performance requirements under the Energy Policy Act of 1992 (USDHS, 2010a).
- Use water-efficient landscape and irrigation strategies, including water reuse and recycling, to reduce outdoor potable water consumption by at least 50 percent over that consumed by conventional means (USDHS, 2010a).
- Maintain existing facilities and infrastructure, replacing those facilities and infrastructure as needed to sustain current operations in accordance with BMPs, working with

government agencies to comply with the respective regulations and avoid adverse impacts wherever possible. Wherever reasonable and possible to do so, lessen unavoidable adverse impacts through cooperative efforts with the appropriate agencies (Grone, et al., 2006).

- When constructing new, individual utilities, like replacing a septic system; implement green building strategies to achieve a minimum "Certified" rating under the LEED New Construction and Major Renovation Version 3.0, and comply with Federal Leadership in High Performance and Sustainable Buildings Memorandum of Understanding (Grone, et al., 2006).

8.15.7 SUMMARY OF POTENTIAL IMPACTS

Table 8.15-1 summarizes the potential impacts of CBP's alternatives on utility resources.

Table 8.15-1. Summary of Potential Utility Impacts

Impact-Producing Activity	Level of Impact				
	Negligible Adverse	Minor Adverse	Moderate Adverse	Major Adverse	Beneficial
NO ACTION ALTERNATIVE					
Small Construction Projects (< 1 acre and < 1/4 mile: e.g., minor repairs to facilities, parking lot repairs, access road repairs)	X				
Large Construction Projects (> 1 acre and > 1/4 mile: e.g., repairs to facilities, parking lot repairs, access road repairs)	X				X
Small On-Site Trade and Travel Processing Operations	X				
Large On-Site Trade and Travel Processing Operations	X				
Checkpoint Operations	X				
Operation of NII Systems	X				
Operation of Sensor and Other Technologies	X				
OVERALL IMPACT	**X**				

Impact-Producing Activity	Level of Impact				
	Negligible Adverse	Minor Adverse	Moderate Adverse	Major Adverse	Beneficial
FACILITIES DEVELOPMENT AND IMPROVEMENT ALTERNATIVE					
Small Construction Projects (< 1 acre and < 1/4 mile: reconstruction/of new POEs, USBP structures, parking lot repairs, access road repair)	X				
Large Construction Projects (> 1 acre and > 1/4 mile: major modification to POEs or USBP structures, construction of new USBP station, parking lot repairs, access road repairs)	X				X
Small On-Site Trade and Travel Processing Operations	X				
Large On-Site Trade and Travel Processing Operations	X				
OVERALL IMPACT		**X**			**X**
DETECTION, INSPECTION, SURVEILLANCE, AND COMMUNICATIONS TECHNOLOGY EXPANSION ALTERNATIVE					
Small Construction Projects (towers and other infrastructure to mount antennas)	X	X			
Operation of NII Systems	X	X			
Operation of Sensor and Other Technologies	X	X			
OVERALL IMPACT	**X**	**X**			
TACTICAL SECURITY INFRASTRUCTURE DEPLOYMENT ALTERNATIVE					
Small Construction Projects (trench cuts, towers, minor access roads and fences)	X				
OVERALL IMPACT	**X**				

Impact-Producing Activity	Level of Impact				
	Negligible Adverse	Minor Adverse	Moderate Adverse	Major Adverse	Beneficial
FLEXIBLE DIRECTION ALTERNATIVE					
Small Construction Projects		X			
Large Construction Projects	X				X
Small On-Site Trade and Travel Processing Operations	X				
Checkpoint Operations	X				
Operation of NII Systems		X			
Operation of Sensor and Other Technologies		X			
OVERALL IMPACT		**X**			

8.16 ENVIRONMENTAL CONSEQUENCES TO ROADWAYS AND TRAFFIC RESOURCES

8.16.1 INTRODUCTION

This section outlines the potential adverse and beneficial impacts of U.S. Customs and Border Protection's (CBP) alternative actions on transportation resources within the region. Effects would be less than major unless the activity would need to establish new roads or permanently close existing roads.

The Northern Border study area contains many locations that could experience impacts to transportation as a result of implementation of any of the alternatives. The United States relies heavily on a vast transportation network to expedite the flow of goods and people to and from Canada. Providing efficient border crossing, while providing the highest level of security and safety for all motorists, is of utmost importance. Over the past decade, many POEs have received technological and highway safety-related upgrades. States and municipalities maintain roadways leading to the borders to allow for tourism and trade in their areas.

CBP's activities affecting roadways and traffic include enforcement of customs, immigration, and agriculture regulations at American borders, and CBP has primary responsibility for preventing unlawful entry into the United States while ensuring the safe and efficient flow of goods and people. For the Northern Border as a whole, these activities are focused around the POEs, but construction activities, the operation of other facilities, and patrol activities could have some effects on transportation resources. For descriptions of the regional affected environments for roadways and traffic, see Sections 4.16.2 (West of the Rockies), 5.16.2 (East of the Rockies), 6.16.2 (Great Lakes), and 7.16.2 (New England).

Across the Northern Border as a whole, all of the alternatives could potentially cause significant adverse effects to transportation resources in two specific situations: (1) the establishment of a new road, or (2) the permanent closure of an existing road or POE. However, other CBP activities are specifically designed to increase traffic throughput at POEs, to speed border crossings, or to reduce the number of on-road and off-road CBP patrols. These activities have beneficial effects on transportation resources and for all of the alternatives across the Northern Border as a whole, would result in only minor adverse direct and indirect effects to transportation resources. Notably the vast majority of CBP's activities along the Northern Border are relatively small, diverse, and not concentrated in any area. Mitigation measures available to further reduce adverse impacts involve timing construction and operational activities to avoid peak roadways and traffic conditions (see Section 8.16.6). CBP's activities would not be expected to combine with one another or with other concurrent activities to create cumulative adverse effects on transportation resources. As a result, except for the two exceptions outlined above, CBP's activities would not contribute appreciably to cumulative effects on transportation or traffic.

Several CBP activities are specifically designed to increase traffic throughput at POEs, to speed border crossings, or to reduce the number of on-road and off-road CBP patrols. These activities,

described in detail in Chapter 2, would have a beneficial effect on transportation resources. Therefore, they have not been carried forward for detailed analysis. These activities include:

- Operation of NII systems; and
- Operation of Sensor and Other Technologies.

8.16.2 NO ACTION ALTERATIVE

The No Action Alternative would have short-term minor and potentially long-term major adverse effects to transportation resources. Short-term minor effects would be primarily due to construction projects. Long-term minor effects would be primarily due to motorized ground, aircraft, and vessel patrols. The potential for long-term, major, adverse effects would only exist in cases where CBP's activities included either the establishment of a new road or the permanent closure of an existing road.

The No Action Alternative would have the potential for major adverse effects to transportation resources. Either the establishment of a new road or the permanent closure of an existing road may have a major adverse effect. If these activities become necessary, additional site specific would be required to determine the necessary level of NEPA and the actual level of effects. All other activities outlined under the No Action Alternative would have no more than minor adverse effects to transportation resources in the short- and long-term.

Under this alternative, CBP would continue the current level of operations and would continue to maintain and repair existing facilities, technology, and infrastructure. Effects related to all currently planned projects have already been addressed or are being addressed in separate NEPA documents. The vast majority of activities:

- Would not increase permanent roadway traffic (i.e., on-road automobile and truck traffic);
- Would not reduce the level of service (LOS) at nearby intersections or roadway segments to an unacceptable level;
- Would not contribute to a violation of any local, state, and Federal laws and design guidelines; and
- Would not interfere appreciably with public transit, rail, air, or pedestrian travel.

8.16.3 FACILITIES DEVELOPMENT AND IMPROVEMENT ALTERNATIVE

The Facilities Development and Improvement Alternative would have short-term minor and potentially long-term major adverse effects to transportation resources. Short-term effects would be primarily due to additional construction projects. Long-term effects would be due to the operation of new or modified facilities that may need to establish new roads or permanently close existing roads.

The Facilities Development and Improvement Alternative would have short-term minor and potentially long-term major adverse effects to transportation resources. Short-term effects would be primarily due to construction projects. Long-term effects would be due to the operation of new or modified facilities that may result in the establishment of new roads or permanent closure

of existing roads. If these activities become necessary, additional site specific analysis would be required to determine the necessary level of NEPA and the actual level of effects.

Construction Projects

Traffic congestion would increase as a result of additional construction vehicles and traffic delays near both large and small construction sites. These effects would be temporary and would end with the construction phase. The condition of the roadway infrastructure surrounding construction activities would normally be sufficient to support any increase in construction vehicle traffic. In addition, temporary road closures or detours to accommodate utility system work could be expected, creating short-term traffic delays. Such effects would be reduced by minimizing construction vehicle movement during peak traffic hours and placing construction staging areas where they would least interfere with traffic. All construction vehicles would be equipped with backing alarms, two-way radios, and "slow moving vehicle" signs when appropriate. Because of their temporary nature, effects from these activities would be minor.

Although the actual construction of a new facility would have only minor effects, the establishment of both large and small facilities would have the potential for major adverse effects to transportation resources. These effects may be in the form of rerouted traffic to areas where it was previously absent, reducing the LOS at intersections or roadway segments to unacceptable levels near the new facility. Depending on the location, rerouted traffic could interfere appreciably with public transit or pedestrian travel. Local, state, and Federal laws and design guidelines would need to be carefully examined and followed during any activity of this nature. At this time, CBP is uncertain about exactly where and when new facilities would be established. If a new facility is planned, subsequent NEPA analysis would be conducted to determine the specific effects.

Once established, ongoing operation of a new or upgraded facility would have negligible long-term effects on transportation resources. In general, the ability of CBP to accommodate more inspections and reduce congestion and accidents has allowed the facilities to remain in step with the natural background growth in cross-border traffic. Regardless of the location selected, additional through lanes, upgrades in transportation infrastructure, and security processing points would have net beneficial effects on traffic. All upgrades would fully comply with local, state and Federal laws and design guidelines as outlined in Appendix S-1. Minor adverse effects to pedestrian and off-road traffic would be expected with restricted access points to and from the facility. Individuals would likely be required to traverse greater distances and possibly backtrack to areas adjacent to the border outside the facility.

Impacts would be greater if facility reconfigurations directly increase the number or types of vehicles crossing the border, require the closure or elimination of major thoroughfares or freeways servicing the area, or would not meet either the state or Federal guidelines for roadways. During the final design stage, traffic analysis would be conducted to ensure all roadway segments and intersection adjacent to the facility would function at an adequate LOS.

8.16.4 DETECTION, INSPECTION, SURVEILLANCE, AND COMMUNICATIONS TECHNOLOGY EXPANSION ALTERNATIVE

The Detection, Inspection, Surveillance, and Communications Technology Expansion Alternative would have short- and long-term minor adverse effects on transportation resources.

In addition to activities outlined in the No Action Alternative, these effects would be primarily due to additional small construction projects and additional motorized ground patrols and aircraft and vessel operations.

Construction Projects

As with the Facilities Development and Improvement Alternative, both small and large construction projects would have short-term minor effects to transportation resources under the Detection, Inspection, Surveillance, and Communications Technology Expansion Alternative. The establishment of both large and small facilities would have the potential for major adverse effects to transportation resources. These effects may be in the form of rerouted traffic to areas where it was previously absent, reducing the LOS at intersections or roadway segments to unacceptable levels near the new facility. Depending on the location, rerouted traffic could interfere appreciably with public transit or pedestrian travel. At this time, CBP is uncertain exactly where and when new facilities would be established. If a new facility is planned, subsequent NEPA analysis would be conducted to determine the specific effects.

Ground Operations——Motorized

Conducting additional motorized ground operations along the Northern Border within this region would have long-term minor adverse effects to transportation resources. For ease of discussion, these activities have been separated into three distinct areas: (1) on-road vehicle patrols, (2) ATV patrols, and (3) snowmobile patrols.

On-road Vehicle Patrols

On-road vehicle patrols would normally originate at the USBP Station or POE. Regardless of location, effects would be more noticeable on surface streets near the facility than on other roadways. If the facility supported 50 agents, the agents would commute to the station, for a total of 100 additional one-way inbound trips each day. These trips would occur over three shifts, resulting in approximately 33 additional one-way trips per shift. Once at work, all agents would be on patrol, equating to an additional 33 one-way trips per shift. Agents do not normally return to the station until the end of the patrol unless detainees are returned for processing. This occurs approximately 20 to 25 times per month. Therefore, the total daily commute and work-related trips would be approximately 66 additional one-way trips per shift (approximately 198 trips per 24-hour period), with an additional 40 to 50 one-way trips each month.

The additional vehicles outlined in this alternative represent a negligible increase in the total traffic volume, regardless of the type of roadway or the location of the new USBP station. This small increase in traffic would not normally affect the capacity of any of nearby roadway or intersections adjacent to the site. In addition, this limited activity would have no impact on public transit or air traffic in any area. In the final design stages, facilities would be designed to include ample parking and to meet all local, state, and Federal design guidelines. These effects would be minor, and moderate changes in the size of the facility or number of personnel would not substantially change the level of effects under NEPA.

ATV Patrols

Conducting ATV patrols would have long-term negligible adverse effects on transportation resources. These effects would be due to a relatively small number of ATVs used along the

Northern Border in this region. USBP owns and operates only a limited number of ATVs for surveillance in this region; each has the ability to make several patrols per day. These activities are widespread, occur mainly in remote areas, and make up only a small fraction of off-road operations within the study area. Even with the additional operations, this limited number of trips would not interfere with the ability of utilized trails and other off-road areas to serve their primary functions, nor would they have any measurable effect on on-road or off-road traffic within this region.

Snowmobile Patrols

Conducting snowmobile patrols would have long-term negligible adverse effects on transportation resources. These effects would be due to the use of a relatively small number of snowmobiles within this region. USBP owns and operates only a limited number of snowmobiles for surveillance within this region; each has the ability to make several patrols per day. These activities are widespread, occur mainly in remote areas, and make up only a small fraction of off-road operations within the study area. Even with the additional operations, this limited numbers of operations would not interfere with the ability of trails and other off-road areas to serve their primary functions, nor would they have any measurable effect on on-road or off-road traffic within this region. Therefore, the effects from snowmobile patrols on transportation resources would be less than major.

Because of their limited nature, additional on-road, ATV, and snowmobile patrols would have a less than major effect on transportation resources.

Aircraft Operations

Conducting additional aircraft patrols along the Northern Border within this region would have long-term negligible adverse effects on transportation resources. Aircraft patrol activities are separated into two distinct areas: (1) manned aerial surveillance patrols, and (2) unmanned aircraft (UAS) missions.

Manned Aerial Surveillance Patrols

Conducting additional manned aerial surveillance patrols would have long-term negligible adverse effects on transportation resources. These effects would be caused by a relatively small number of aircraft operations at airports and air installations. Under this alternative, OAM would continue to own and operate only a limited number of aircraft for surveillance, each able to make several patrols per day. Even with the increase in operations under this alternative, these activities make up only a small fraction of air operations at the airport and air installations at which these aircraft are based, and make up only a tiny fraction of the total aircraft activity within the region. These limited numbers of operations would not interfere with the ability of the airports and air installations to perform their primary functions, nor would they have any measurable effect on the overall air operations in this region.

Unmanned Aircraft System (UAS) Missions

Conducting additional UAS missions would have long-term negligible adverse effects on transportation resources. These effects would be due to a relatively small number of UAS operations at airports and air installation. Under this alternative, OAM would continue to own and operate only a limited number of UASs for surveillance in this region, each able to travel for

days during a single flight. Even with the increase in operations under this alternative, these activities make up only a small fraction of air operations at the installations used to deploy the UASs, and make up only a tiny fraction of the total aircraft activity within the region. These limited numbers of operations would not interfere with the ability of an air installation to perform its primary functions nor would they have any measureable effect on the overall air operations in this region.

Vessel Operations

Conducting additional waterborne patrols would have long-term negligible adverse effects on transportation resources. These effects would result from a relatively small number of additional watercraft used in waterways along the Northern Border within this region. CBP OAM owns and operates only a limited number of marine vessels for surveillance in this region, each able to make several patrols per day. These activities make up only a small fraction of marine operations in the waterways adjacent to POEs and OAM facilities where they are berthed, and make up only a tiny fraction of the total watercraft activity within the study area. These limited numbers of operations would not interfere with the ability of the facilities utilized to perform their primary functions nor would they have any measurable effect on the overall marine operations along the waterways within this region.

8.16.5 TACTICAL SECURITY INFRASTRUCTURE DEPLOYMENT ALTERNATIVE

The Tactical Security Infrastructure Deployment Alternative would have short-term minor and potentially long-term major adverse effects on transportation resources. In addition to activities outlined in the No Action Alternative, these effects would be primarily due to additional construction projects and the potential for the establishment of new roads.

The Tactical Security Infrastructure Deployment Alternative would have short-term minor and potentially long-term major adverse effects on transportation resources. In addition to activities outlined in the No Action Alternative, these effects would be primarily due to additional construction projects and the potential for the establishment of new roadways.

Construction Projects

As with the Facilities Development and Improvement Alternative, both small and large construction projects would have short-term minor adverse effects. Establishment of new roads would have the potential for major adverse effects to transportation resources. These effects may be in the form of rerouted traffic to areas where it was previously absent, reducing the LOS at intersections or roadway segments to unacceptable levels near the new facility. Depending on the location, rerouted traffic could interfere appreciably with public transit or pedestrian travel. Local, state, and Federal laws and design guidelines would need to be carefully examined and followed during any activity of this nature. At this time, CBP is uncertain exactly where and when new facilities would be established. If a new roadway is planned, subsequent NEPA analysis would be conducted to determine the specific effects. Notably, under this alternative, new trails, fencing, barriers, and trench cuts are unlikely to have any ongoing long-term effects on roadways or traffic.

8.16.6 FLEXIBILE DIRECTION ALTERNATIVE

The Flexibile Direction Alternative would have short-term minor and potentially long-term major adverse effects to transportation resources. Short-term effects would be primarily due to additional construction projects. Long-term effects would be due to operation of new or modified facilities that may establish new roads or permanently close existing roads. At this time, CBP is uncertain as to exact locations or timing for the establishment of new facilities.

As with the No Action Alternative, the Flexibile Direction Alternative would have the potential for major adverse effects to transportation resources. Either the establishment of a new road or the permanent closure of an existing road may have major adverse effects; subsequent NEPA analysis would be conducted to determine the specific effects. If these activities become necessary, additional site specific analysis would be required to determine the necessary level of NEPA and the actual level of effects.

Construction Projects

As with the Facilities Development and Improvement Alternative, both small and large construction projects would have short-term minor adverse effects.

As with the Facilities Development and Improvement Alternative, and for similar reasons, operation of an upgraded POE could have the potential for long-term major adverse effects on transportation resources. The establishment of both large and small facilities would have the potential for major adverse effects to transportation resources. These effects may be in the form of rerouted traffic to areas where it was previously absent, reducing the LOS at intersections or roadway segments to unacceptable levels near new facility. Depending on the location, this may interfere appreciably with public transit or pedestrian travel. At this time, CBP is uncertain exactly where and when new facilities would be established. If a new facility is planned, subsequent NEPA analysis would be conducted to determine the specific effects.

Motorized Ground Patrols

As with the Detection, Inspection, Surveillance, and Communications Technology Expansion Alternative, conducting additional motorized ground patrols along the Northern Border in this region would have long-term minor adverse effects.

Aircraft Operations

As with the Detection, Inspection, Surveillance, and Communications Technology Expansion Alternative, conducting additional aircraft patrols along the Northern Border in this region would have long-term minor adverse effects.

Vessel Operations

As with the Detection, Inspection, Surveillance, and Communications Technology Expansion Alternative, conducting additional waterborne patrols would have long-term minor adverse effects.

8.16.7 BEST MANAGEMENT, MINIMIZATION, AND MITIGATION

No mitigation would be required for USBP activities that would have less than major effects on transportation resources. The following BMPs could be taken to avoid or minimize the impacts of CBP's projects on transportation:

- Minimize construction vehicle movement during peak traffic hours;
- Place construction staging areas where they would least interfere with traffic;
- Equip construction vehicles with backing alarms, two-way radios, and "slow moving vehicle" signs when appropriate;
- Coordinate with local, state, and Federal transportation authorities when planning access or use of public roadways;
- Follow all local, state, and Federal planning guidelines and regulations when maintaining or upgrading roadway infrastructure; and
- Comply with all traffic regulations when operating on-road, nonroad, and off-road vehicles.

8.16.8 SUMMARY OF POTENTIAL IMPACTS

Table 8.16-1 summarizes the comparison of impacts to transportation resources from the various alternatives.

Table 8.16-1. Summary of Potential Impacts to Transportation Resources

Impact-Producing Activity	Level of Impact				
	Negligible Adverse	Minor adverse	Moderate Adverse	Major Adverse	Beneficial
NO ACTION ALTERNATIVE					
Small construction projects		X			
Large construction projects		X			
Checkpoint operations		X			
Ground operations—motorized		X			
Ground operations—nonmotorized	X				
Aircraft operations		X			
Vessel operations		X			
Operation of NII systems					X
Operation of sensor and other technologies					X
OVERALL IMPACT		**X**		**X**	
FACILITIES DEVELOPMENT AND IMPROVEMENT ALTERNATIVE					
Small construction projects		X			

Impact-Producing Activity	Level of Impact				
	Negligible Adverse	Minor adverse	Moderate Adverse	Major Adverse	Beneficial
Large construction projects		X			
OVERALL IMPACT		**X**		**X**	
DETECTION, INSPECTION, SURVEILLANCE, AND COMMUNICATIONS TECHNOLOGY EXPANSION ALTERNATIVE					
Small construction projects (towers and other infrastructure to mount antennas, etc.)		X			
Ground operations—motorized		X			
Ground operations—nonmotorized	X				
Aircraft operations		X			
Vessel operations		X			
Operation of NII systems					X
Operation of sensor and other technologies					X
OVERALL IMPACT		**X**			
TACTICAL SECURITY INFRASTRUCTURE DEPLOYMENT ALTERNATIVE					
Small construction projects		X			
Large construction projects		X			
OVERALL IMPACT		**X**		**X**	
FLEXIBLE DIRECTION ALTERNATIVE					
Small construction projects		X			
Large construction projects		X			
Checkpoint operations		X			
Ground operations—motorized		X			
Ground operations—nonmotorized	X				
Aircraft operations		X			
Vessel operations		X			
Operation of NII systems					X
Operation of sensor and other technologies					X
OVERALL IMPACT		**X**		**X**	

8.17 ENVIRONMENTAL CONSEQUENCES TO RECREATION RESOURCES

The purpose of classifying recreational areas is to understand the various types and potential for impacts that U.S. Customs and Border Protection (CBP) actions could produce more fully. For this reason, the analysis below discusses the impacts in the context of low-, medium-, and high-use recreation areas. This section considers the potential adverse and beneficial impacts of CBP's alternative actions on recreation. It is unlikely that a new USBP station will be constructed within a national park, national forest, wildlife refuge, or recreation area, so this action will not be analyzed for impacts.

The Northern Border includes a wide range of recreational resources—from urban parks to the most rugged designated wilderness terrain in the continental United States. CBP conducts its activities with full awareness of and sensitivity to the recreational values on the lands it is charged with protecting. It does not manage recreational lands; therefore, both the nature and limitations of its activities must be developed in partnerships with recreational landowners.

Impacts on recreation would occur if a CBP activity eliminated areas of important or unique recreational opportunities or facilities, degraded the quality of the recreational experience in such areas, or limited access to recreational areas through physical or administrative restriction. A wide variety of recreation areas exist along the Northern Border on both the U.S. and Canadian sides, including U.S. national parks (NP), national forests (NF), national wildlife refuges (NWR), and national recreation areas (NRA) along with Canadian national park reserves, provincial parks, protected areas, and natural areas. While significantly more recreation areas exist in the western half of the continent, there are recreational areas in each Northern Border region. For descriptions of the regional affected environments for recreation see sections 4.17.2 (West of the Rockies [WOR]), 5.17.2 (East of the Rockies [EOR]), 6.17.2 (Great Lakes), and 7.17.2 (New England).

Continuing CBP activities would have minor to moderate impacts on recreation due to the wide range of CBP's actions across the entire Northern Border. These impacts would tend to be higher in low-impact use areas and lower in high-impact use areas due to pre-existing development and different visitor expectations. The actions with the most significant adverse impacts include construction of a new USBP station, installation of monopole towers if these towers disrupt a scenic vista, and construction of facilities to support OAM operations. Actions with minor impacts include installation and maintenance of unattended ground sensors, manned and unmanned aircraft missions, and canine patrols. Actions that could have beneficial impacts include construction of new roads, bridges, culverts, or low-water crossings and enforcement of the I-68 program. Continued strengthening of partnerships, communication, and discussion with knowledgeable personnel in recreation areas can ensure that the placement of new infrastructure, patrol routes, and other actions would have a lower impact. Minimizing the amount of development, traffic, and disruption in previously undisturbed areas are key for minimizing recreation impacts.

Considering current use patterns in the affected area and consulting with appropriate land managers can mitigate the negative impacts of developments patrols and other CBP actions (see

Section 9.17). Due to the minimal to moderate, but incremental, nature of CBP's impacts to recreation, as well as their widely dispersed nature, the cumulative impacts to recreation across the Northern Border would be negligible.

8.17.1 NO ACTION ALTERNATIVE

Actions that may potentially have minor to moderate impacts are large construction projects, communications towers, motorized patrols, and waterborne patrols. Actions that could potentially have negligible to minor impacts are small construction projects, on-site travel processing operations, non-motorized patrols, manned and unmanned aircraft operations, and use of sensor technologies. The operation of NII systems may result in beneficial benefits to recreation. While several other non-CBP actions in the four regions could have recreation impacts, it is unlikely that CBP activities in the No Action Alternative will produce major cumulative impacts.

Small Construction projects

Some small construction projects could have minor impacts during the construction period. Small construction projects will temporarily increase traffic carrying supplies and equipment. If this traffic moves along little used access roads in low-impact recreational use areas, it could disturb the solitude of the recreational area. However, most traffic heading towards POEs and USBP stations is likely to be on more major roads in medium- to high-impact use areas. POEs within protected land are on high-impact use areas already, so the noise and visual disturbance of repairs and maintenance are unlikely to alter the recreation experience.

If other small construction projects occur in low-impact use areas, the noise, visual disturbance, and human traffic could have a minor impact on the quality of the recreational experience or limit access to recreational areas. This impact is likely to be negligible in medium- or high-impact areas where human development, noise, and light are already present.

Access road extensions and repairs could have minor beneficial impacts by increasing or improving entry to recreational areas. As with other construction projects, however, noise, traffic, light, and human development have the potential to degrade the quality of recreational experience temporarily in low-impact use areas and some medium-impact use areas. These impacts are likely to be far less noticeable in high-impact use areas.

Small construction projects that include technology infrastructure, such as radio communications towers, could affect recreation in more permanent ways (in addition to the impacts from construction already described). It is unlikely that a new radio tower will dramatically limit the ability of visitors to access the recreation space, except for the small fenced-off footprint immediately surrounding the tower. The most important impact to recreation from technology infrastructure is disruption of a scenic vista.

Section 8.9.3 discusses the visual impact of towers on scenic vistas. Many recreational users seek uncluttered vistas as part of the recreational experience of hiking, camping, photography, and other activities. A tower without camouflage that disrupts a striking and undisturbed scenic vista may have a major impact in any type of recreation area. For example, in Mount Rainier NP (WOR Region) and Cuyahoga Valley NP (EOR Region), backcountry users highly value scenic views; a tower could degrade or destroy this nature-focused and solitary experience. In other

examples, Kootenai National Forest (WOR Region) and White Mountain National Forest (New England Region) are both medium- to high-impact use areas and have many developed campgrounds and several lookouts and cabins. A tower that degrades a relatively pristine view from one of these campgrounds, lookouts, or cabins could cause a major impact on visitors' experiences if the tower blocks the pristine view shed. If a previously intact scenic vista is interrupted, the impact could be moderate to major

If power lines are placed underground and interactions with sensitive habitat or avian migration are reduced, this activity should not have a major impact.

If recommendations in Section 8.9.3 are followed regarding the siting (at least 1.5 miles from areas designated for visual sensitivity) and camouflage of towers, impacts on scenic vistas would drop to minor or negligible. If tower siting provided access to previously unavailable parts of a recreation area (e.g., new trails), some benefits for visitors would result.

Security infrastructure, such as fencing, could have impacts at a few locations in the WOR Region. Generally, a fence running directly along the border of a national park, forest, wildlife refuge, or recreation area is unlikely to cause major impacts on recreation since most parks terminate at the border. However, some parks are contiguous with Canadian parks and some recreational activities, such as backcountry hiking and camping, can cross the border occasionally. In WOR Region, Glacier NP in Montana and Waterton Lakes NP in Alberta, Canada are managed collaboratively. Additionally, the North Cascades NP and Okanogan NF in Washington are contiguous with Skagit Valley, EC Manning, and Cathedral Provincial parks in British Columbia. A fence could restrict or limit access to recreational areas or trails in the low-impact use areas of these parks.

Additionally, fences in some locations could potentially change scenic vistas and limit visitors' ability to enjoy natural landscapes. Fences that disrupt animal movement through habitats could also lessen opportunities for visitor observation or make hunting of wildlife less productive. Overall, fences in low-impact use areas could produce a moderate impact by degrading the visitors' experience of unperturbed wilderness. Fences in medium- and high-impact use areas could have different impacts if they restrict access to specific recreational areas used by more people. Impacts in these areas could be minor to moderate.

In summary, small construction projects are likely to have minor impacts on recreation, depending on their location and how construction materials are transported. Construction of access roads could bring beneficial impacts. Impacts caused by construction of communications towers would be minor to moderate, depending on whether a viewshed is obstructed. The impact to recreation of fencing installation could be minor to moderate. Under the No Action Alternative, small construction projects would continue at their current level, estimated at less than 20± projects in each of the four regions. If these projects are fairly evenly distributed over the border and generally avoid designated recreation areas, the overall impact of these projects on recreation in all four regions is likely to be minor given the size and extent of recreation areas.

Large Construction Projects

Large construction projects could produce greater impacts and affect a wider array of recreation areas than small projects. The acquisition of new property for LPOE or USBP station expansion

and modernization in recreational sensitive areas could eliminate hiking, camping, and other recreational uses within the site footprint, and limit or degrade recreational use outside the footprint. Construction and installation of necessary support infrastructure, such as water, sewage, and electrical supply lines, could further limit recreational acreage. Existing hiking trails, campsites, and areas designated for specific activities, such as skiing or hunting, might need to be adjusted or relocated. Light, noise, and traffic during facility operation would also limit camping near the POE.

The different stages of modernizing an LPOE located within a larger area having recreational use may impose several other potential impacts to recreation. In the WOR Region, for example, most of Glacier NP in Montana is undeveloped and valued for its wild character. Overall, the park is characterized as a low-impact use area. However, the Chief Mountain POE is located within the park. The area within visual range of the LPOE would not be considered a low-impact use area and visitors do not expect a solitary wilderness experience near this portion of the park so these impacts are likely to be minor. Modernization efforts would not cause a major disruption or change the quality of the nearby area for recreation users in low-impact use areas.

As another example, the Eastport Land POE sits within the Kootenai NF, Idaho. The developed campgrounds and other recreational facilities are located in other parts of this forest. No campgrounds or other destinations exist near the POE. An increase in traffic, noise, and lighting during and after construction may have some minor temporary impact on recreation activities and users in the outer vicinity. Overall, impacts in recreation areas of this type are likely to be minor or negligible.

In the EOR, Great Lakes, and New England Regions, no POEs are located within Federal protected areas.

Impacts are also likely to be negligible for high-impact use areas, where recreation activities also coexist with the LPOE.

If modernization requires heavy use of roads that traverse recreational land or results in an expansion of the land size or light or noise effect of the LPOE, minor impacts on the recreation experience could result. Such an impact would likely occur if the POE is close to a recreation area, such as the Morgan-Loring POE near the Charles M. Russell NWR (New England Region).

Small and Large POE Trade and Travel Processing Operations

While several existing LPOEs are located in or adjacent to national parks and forests, it is unlikely that continuing trade and travel processing operations at any of these sites would have a major impact on recreation. CBP works with park and forest personnel to minimize any operational impacts on recreational use. Such coordination, communication, and partnership activities would continue.

Processing actions may increase both wait times and traffic, which could limit or delay southbound visitors' access to recreation areas. Visitors may experience increased frustration particularly if wait times are sufficiently great to have a notable impact. However, CBP works with local recreation managers and uses technology and methods to ensure efficient processing. Assuming that all measures are taken to minimize wait times, the impact is likely to be

negligible. If wait times are very long (exceeding 30 minutes), these operations could have a greater impact.

Off-site Trade and Travel Processing Operations

CBP estimates that it could establish 80 and 100 checkpoints in the WOR Region. It is highly unlikely that CBP would establish a permanent traffic checkpoint within a national park, forest, wildlife refuge, or recreation area. It is possible that a security situation could require establishment of a checkpoint on roads leading to and from one of these recreation areas, which would impede or delay traffic flow. The impacts could be similar for all types of recreational areas, though they would be felt more severely in areas with high visitor numbers or fewer roads in and out of the park. While minor traffic delays entering or leaving a recreation area would diminish the visitor experience slightly, this impact would be negligible to minor unless traffic wait times are excessive (greater than ~20 minutes), in which case the impact could become moderate due to visitor frustration. If traffic checkpoints were set up in locations that could affect recreational users, CBP would work with park or forest personnel to alert visitors to the security situation to the greatest extent appropriate.

CBP could set up a mobile traffic checkpoint on a road to a recreation site on the border. In most areas like this, paved roads offer access to recreational activities. Additionally, several sites, such as Colville NF (WOR Region), Montezuma NWR (Great Lakes Region), or White Mountain Forest (EOR Region) have major scenic highways and scenic driving is a major recreation activity. A checkpoint on one of these byways could disrupt the visitor experience in a moderate way by increasing traffic and wait time. The noise and traffic associated with the checkpoint could potentially disrupt recreational experiences nearby, such as a backcountry camping, though this impact would be minor and short term. Additionally, increased traffic associated with a roadblock checkpoint could limit access to recreation areas and could degrade visitor experience.

Impacts from wait times would be proportional to the amount of traffic towards the site, so they could range from minor to moderate. They are not expected become more severe in all but the most extreme cases, where a high-impact use area must be blockaded during a peak recreational travel period. Depending on the distribution, density, and proximity of the 80 to 100 checkpoints projected for the WOR Region, impacts from checkpoints could be slightly higher.

Ground Operations–Motorized

Motorized patrols, such as with ATVs and snowmobiles, could affect recreation in the WOR Region in various ways. Currently, 350 to 425 motorized patrols per day are projected across the WOR Region; 800 motorized patrols per day are projected across each of the other three regions.

CBP conducts ATV patrols in areas authorized by the land manager for ATV use. As numbers of off-road riders have increased, ATV and off-highway vehicle (OHV) riders have developed higher levels of frictions with border regulations (Proescholdt, 2007). Controversy between sub-groups of hunters (those who use ATVs while hunting and those who do not) have already occurred, so it is likely that the use of ATVs in normally quiet backcountry areas would disturb hikers, hunters, and campers who value the quiet, solitary nature of their recreation. These conflicts and controversy are likely to continue.

CBP actions are not likely to cause major impacts unless ATV patrols expand outside areas where ATV use is popular, or CBP deploys a large number of ATVs compared to the ATVs already in common use. Many high-impact use areas already allow use of OHVs, ATVs, and snowmobiles, so ATV use by CBP is not inconsistent in those areas. If CBP patrols significantly increase the number of ATVs in a park, minor to moderate impact could result. For example, if a park currently has 5,000 visitors using ATVs in a month, an additional 50 ATV patrols could be considered a moderate change and cause moderate impact. Adding three ATV patrols would be negligible to minor. Potential beneficial impacts may result from the feeling of added security due to the presence of patrolling units.

Overall, the impact of ATV patrols will vary from moderate to major in low- and medium-impact use areas to minor or negligible in high-impact use areas. Table 8.17-1 compares the numbers of registered ATVs in each state.

Table 8.17-1. Registered All-Terrain Vehicles by State, 2009

State	Number of Registered ATVs
West of the Rockies Region	
Idaho[1] (2009)	98,283
Montana[2] (2011)	60,000±
Washington[3] (2011)	390,060
East of the Rockies Region	
Minnesota[4] (2005)	350,000
Montana[2] (2011)	60,000±
North Dakota[5] (2007	22,737
Great Lakes Region	
Michigan	NA
Minnesota[4] (2005)	350,000
New York[6] (2009)	12,747
Ohio	NA
Pennsylvania	NA
Wisconsin[7] (2009)	275,400
New England Region	
Maine[8] (2007)	63,467
New Hampshire	NA
New York[9] (2009)	12,747
Vermont	NA

(Iverson, 2010; Hargrove, 2011; Mitchell, 2011; North Dakota Parks and Recreation Department, 2007; ATVMinnesota, 2005; Wisconsin Department of Natural Resources; Maine DIFW, 2008; New York Department of Motor Vehicles, 2010; No date available for Michigan, Ohio, Pennsylvania, New Hampshire or Vermont).

Snowmobiling is a popular activity in state and national recreational areas along the Northern Border, especially in the WOR Region. Snowmobile registrations (2009) in this region ranged from 50,000 in Idaho to 23,440 in Montana; in the EOR Region, they ranged from 277,290 in Minnesota to 21,000 in North Dakota; in the Great Lakes Region, they ranged from 301,805 in Michigan to 19,500 in Ohio; and in the New England Region, they ranged from 146,662 in New York to 41,000 in Vermont (International Snowmobile Manufacturers Association, No Date). Unless the security situation requires it, CBP only conducts snowmobile patrols in areas authorized for their use. Snowmobiles are similar to ATVs, but do not move as quickly or create quite as much noise, so their impact could be slightly less. While visitor numbers may be lower in the winter, many park visitors enjoy snowshoeing and cross-country skiing in the winter, so snowmobile use could impact these recreation activities.

In some medium-impact use areas, such as Little Pend Oreille NWR in Washington or Lewis and Clark NF in Montana, snowmobile riding is already permitted in certain areas. Other medium-use areas, such as Nisqually NWR, also in Washington, do not permit motorized vehicles. In low-impact use areas such as Moosehorn NWR (New England Region), snowmobile riding is not permitted in any areas. Other areas, including private, local, and state recreation areas, permit snowmobile use. Therefore, impacts will vary widely from area to area. Expanding snowmobile trails or areas would have a larger impact on recreation.

Conducting snowmobile patrols in permitted areas is unlikely to have a large impact. Increased snowmobile traffic could place added stress on trails or snowmobile recreation, but would not represent a new or inconsistent use. The impact in these types of areas would be minor or negligible.

Table 8.17.2 shows the number of registered snowmobiles per state across the Northern Border.

Table 8.17-2. Registered Snowmobiles per State, 2009

State	Number of Registered Snowmobiles
West of the Rockies Region	
Idaho	50,000
Montana	23,440
Washington	31,532
East of the Rockies Region	
Minnesota	277,290
Montana	23,440
North Dakota	21,000
Great Lakes Region	
Michigan	301,805
Minnesota	277,290
New York	146,662
Ohio	19,500

State	Number of Registered Snowmobiles
Pennsylvania	45,270
Wisconsin	232,320
New England Region	
Maine	98,600
New Hampshire	73,625
New York	146,662
Vermont	41,000

Source: (American Council of Snowmobile Associations, 2010).

CBP attempts to minimize the impacts of its vehicle patrols in recreational areas. Patrols in recreation areas would likely either use paved roads and scenic byways (if available) or 2-tracks through unpaved terrain. On paved roads, this would not represent a different or inconsistent use, and would therefore have minimal impact. When patrols use two-tracks, they could disrupt the solitary nature of backcountry recreation and increase noise. These impacts are likely to be minor in low-impact use areas, since the patrols would follow establish tracks in previously disturbed areas. If tracks run near campgrounds or popular hiking trails, disturbance impacts would be greater.

In a medium-impact use area, impacts could be greater due to a higher volume of visitors and a greater concentration of campgrounds and established trails. In a high-impact use area, impacts are likely to be similar if two-tracks are located near campgrounds, cabins, or lodges. Impacts in medium-and high-impact use areas could be minor to moderate.

Ground Operations–Nonmotorized

CBP conducts a variety of nonmotorized patrols, including those on foot and those using horses and dogs. Approximately 150± nonmotorized ground patrols are projected for this alternative for each of the regions.

It is unlikely that canine kennels would be established in existing protected areas. The dogs are very highly trained to focus on specific tasks. Canine patrols are used in rough terrain near and between POEs. Of the limited use and the training the animals receive, it is anticipated that the impact in recreationally protected areas would be negligible.

Many recreation areas of all types allow horseback riding in remote areas with many trails for horseback use. Recreation areas generally have regulations regarding feeding and tacking animals. There are several areas in the regions classified as low-impact use areas—such as Dungeness NWR (WOR), Moosehorn NWR (New England Region), Medicine Lake NWR (EOR) or Iroquois NWR (Great Lakes Region)—that do not allow horseback riding due to more delicate ecology and a desire to limit human interference with habitat. Horseback patrols in these areas would likely not be permitted for other reasons as they would interfere with recreation experiences by changing the solitary, natural experience for visitors.

Horseback patrols in areas that already allow recreational animal use would have a negligible impact since visitors expect this use and CBP patrols would not significantly increase the number of horses on trails. The small increase in animal use and traffic may put some extra stress on trails and may contribute to crowding during peak times on popular trails. This impact is likely to be negligible or minor. The use of horses in more remote areas is not likely to disturb or degrade backcountry experiences, since horses are relatively quiet and are more consistent with natural scenery.

Foot patrols are likely to have even less impacts than either horse or canine patrols. In low-impact use areas, frequent foot patrols could result in less solitude for a small number of visitors. However, this impact is likely to be negligible in all types of recreation areas.

Collectively, these types of patrols also provide a beneficial use in that Border Patrol agents offer a law enforcement presence that tends to reduce crime in the recreational areas. In some cases, Border Patrol agents may assist the recreational law enforcement officers in crowd control or during emergencies.

It is projected that 150± patrols will be used for each of the four regions. These patrols will be spread across a large area, so they are unlikely to cause major impacts in recreation areas.

Aircraft Operations

Additional aircraft patrols could result in noise that disrupts or degrades quiet recreational activities such as camping, hiking, boating, or horseback riding. Currently, approximately 15± aircraft in both the WOR and New England Regions, 20± aircraft in the EOR region, and 15 aircraft vehicles in the Great Lakes Region are projected for continuing operations under the No Action Alternative. Frequent aircraft could visually disrupt the solitary nature of backcountry recreational areas. This impact would be highest in low-impact use areas, but would be negligible to minor due to the small number of aircraft distributed across a large region. Section 8.9.3 contains a more detailed discussion of visual impacts related to aircraft. These impacts could also affect recreation if aircraft support facilities are very close to or within recreation areas in which light and noise emissions and developments might disturb recreation, especially in low-impact use areas. Section 8.6.3 contains a discussion of noise from unmanned aircraft systems (UASs).

Both medium- and high-impact use areas would incur less impact from aircraft operations since visitors are less likely to expect completely quiet and solitary experiences. Other noise-generating activities consistent with high- or medium-impact use sites would contribute to higher ambient noise levels. Seeing aircraft in flight is a common in developed areas, so the visual impact would also be negligible.

The impacts on recreation of manned aircraft missions would be similar to unmanned aircraft missions. Impacts will vary in intensity dependent on altitude, noise level of the aircraft, and frequency of patrols. This impact would be minor in any recreation area if visitors or recreational areas are within the visual or auditory envelope of patrolling aircraft.

Vessel Operations

Several recreation sites, such as Cascades NP in Washington (WOR), Superior National Forest in Minnesota (EOR), and Huron-Manistee National Forest (Great Lakes), lie along marine borders or contain islands, such as the Apostle Islands National Lakeshore. Very few recreation sites in the New England Region have marine borders or contain islands. State, local, and private recreation areas may contain marine recreation areas. Vessel patrols near these areas could disturb water-related recreational activities, such as boating, kayaking, and water sports, and is more likely to be an issue in pristine areas with little water traffic. For example, Dungeness National Wildlife Refuge lies along the Dungeness Bay (WOR). Additional motorized patrols in wilderness areas could disturb the quiet, solitary nature of the experience and disrupt wildlife, lessening opportunities for wildlife observation. Waterborne patrol operations could also require access restrictions to recreation areas, limiting visitor experiences. Potential beneficial impacts may occur from a feeling of added security due to the patrolling units.

In this alternative, no more than 14± OAM vessel operations are projected for the WOR Region, 5± operations are anticipated in the EOR Region, 42± vessels would be used each day in the Great Lakes Region, and 16± vessels per day in the New England Region. The impacts of marine patrols on medium- and high-impact use areas would likely prove negligible, given the relatively few OAM patrol boats compared to recreational boats already on the water. As context, Table 8.17-3 provides the number of recreational boats registered in each of the WOR states along the Northern Border.

Table 8.17-3. Recreational Vessel Registration by State (2009)

Border State	Recreational Vessel Registration 2009
West of the Rockies Region	
Idaho	90,501
Montana	83,394
Washington	269,845
East of the Rockies Region	
Minnesota	811,775
Montana	83,394
North Dakota	51,609
Great Lakes Region	
Michigan	811,670
Minnesota	811,775
New York	479,161
Ohio	424,877
Pennsylvania	337,747
Wisconsin	626,304

Border State	Recreational Vessel Registration 2009
New England Region	
Maine	109,169
New Hampshire	95,402
New York	479,161
Vermont	30,480

Source: (USDHS, 2010).

Operation of NII Systems

Any actions, such as operating inspection technologies, with the potential to increase wait times at POEs could likewise produce delays for visitors in reaching recreational sites. CBP continually makes efforts to ensure that technology speeds up visitor and cargo processing, rather than increases delays. Such efforts could affect recreation beneficially by allowing easier access to recreation areas while reducing criminal activities.

Operation of Sensor and Other Technologies

In low-impact use areas, such as wilderness and backcountry areas of national forests, national parks, or other areas of solitude (e.g., Bend National Wildlife Refuge in Montana, Ottawa National Forest, White Mountain National Forest), an increase in vehicle traffic due to deployment of MSS or towers maintenance vehicles could increase noise, light, and vehicle and human traffic which could disrupt and degrade hiking, skiing, camping, or hunting experiences. Such disruptions may also disturb wildlife, lessen opportunities for wildlife observation, or degrade hunting. Overall, the impact of implementing sensor technologies in low-impact use areas could range from minor to moderate, depending on the number and placement of towers, and the use of trucks and other systems in relation to vistas and areas of solitary recreation.

Deploying technology in medium-impact use areas could incur impacts similar to those in both low- and high-impact use areas. Visitors to the park's more developed campgrounds and recreation areas are less likely to notice a relatively minor increase in traffic and noise. However, visitors to the less developed sections of the park or forest may have their experience degraded or disrupted by any of the described causes.

The impact in high-impact use areas would be less, because these areas already have signficant human vehicle and foot traffic and support recreational activities that produce noise and light. For example, Lake Roosevelt National Recreation Area (WOR and EOR regions) has boating facilities, campsites, visitor stations, trails, and paved and unpaved roads. While some less developed areas exist in this NRA, most visitors can reasonably expect to see and hear other people and machines. Disruption of scenic vistas by a tower, however, could still have a minor to moderate impact.

When unattended ground sensors are installed, CBP access by foot, truck, or ATV could create small amounts of noise or disturbance, and disturb or degrade the solitary nature of backcountry recreation. This issue is more likely in low-impact use areas, but this impact is likely to be temporary and negligible to minor, or nonexistent in more heavily trafficked areas.

In conclusion, small construction projects are likely to have negligible to minor impacts on recreation. Communication towers have the largest potential impact within this category of actions. Large construction projects could have minor to moderate impacts.

On-site trade and travel processing operations at both small and large POEs would have negligible to minor impacts on recreation if access to recreation is slowed or diminished. Overall, adverse impacts of off-site trade and travel processing operations are likely to be minor, even in low-impact use areas.

The impacts of motorized patrols, including ATVs, snowmobiles, and vehicles would be negligible to minor in areas where this use is already permitted and where infrastructure, such as paved roads or trails, is already developed. Impacts could be moderate to major if patrols were extended to previously unauthorized areas. Impacts of nonmotorized patrols, such as canine, horseback, and foot patrols, will be negligible to minor.

Manned and unmanned aircraft operations could result in minor impacts to recreation if visitors or recreational areas are within the visual or auditory envelope of patrolling aircraft. The impact of waterborne patrols could be minor to moderate in low-impact use recreation areas, depending on patrol locations and frequency, and negligible to minor in medium-impact and high-impact use areas.

The operation of NII systems may have a beneficial impact on recreation. Finally, the use of sensor technologies in most protected area would be negligible, with the potential for minor impacts in low-impact use areas.

Overall, the No Action Alternative, in which actions continue at current levels, is likely to have negligible to minor adverse impacts on recreation. While several other non-CBP actions in the WOR Region could have recreation impacts, it is unlikely that CBP activities in the No Action Alternative will produce major cumulative impacts.

8.17.2 FACILITIES DEVELOPMENT AND IMPROVEMENT ALTERNATIVE

The Facilities Development and Improvement Alternative could have slightly higher recreation impacts than the No Action Alternative, due primarily to the increase in large construction projects. However, this increase depends largely on the location of these projects. If new projects are not within or very close to protected recreation areas, impacts would not be substantially greater than for the No Action Alternative.

Small Construction Projects

In the Facilities Development Alternative, fewer than 30± additional new small construction projects are anticipated for each of the four regions. Whether this increase could change the impact on recreation will depend on the type of construction projects and their locations.

Certain types of small construction projects affect recreation more than others. For example, radio towers can obstruct scenic vistas, and construction of sheds or other buildings in low-impact use areas may disturb solitary and natural recreation experiences causing minor to moderate impacts. However, other small construction projects, especially those in medium-impact or high-impact use areas have negligible to minor impacts. Considering the size and

extent of recreation areas in each of the four regions, it is unlikely this small increase in small construction projects would have a significantly greater impact that those anticipated in the No Action Alternative. The impact would remain minor.

Large Construction Projects

In this alternative, fewer than five new large construction projects are anticipated, in addition to the 15± projects anticipated in the four regions currently in progress or planned. The overall impact of large construction projects under current levels could be minor to moderate. Depending on the location of new large construction projects, impacts for this alternative range from minor to moderate.

In conclusion, the Facilities Development Alternative may have slightly higher recreation impacts than the No Action Alternative, due primarily to the increase in large construction projects. However, this increase depends a great deal on the location of these additional projects. If new projects are not within or very close to protected recreation areas, impacts will not be substantially greater than the No Action Alternative. Accounting for this range of possibilities, the impact of the Facilities Development and Improvement Alternative on recreation is expected to be minor to moderate.

8.17.3 DETECTION, INSPECTION, SURVEILLANCE, AND COMMUNICATIONS TECHNOLOGY EXPANSION ALTERNATIVE

Increases in actions, such as tower construction and vessel operation, could have moderate adverse impacts on recreation. The operation of NII systems is likely to prove beneficial, and impacts from aircraft operations would likely produce minor impacts.

Small Construction Projects

The Detection, Inspection, Surveillance, and Communications Technology Expansion Alternative anticipates 100 additional small construction projects, especially projects involving communications towers. At current levels, the impact of small construction projects is predicted to be minor. However, towers may have a moderate to major adverse impact if they disturb scenic vistas. The increase from 20 to 120± projects, with towers making up the majority of additional projects, could result in increased impacts—impacts felt by more visitors than the No Action Alternative. The greater number of towers in this alternative could, therefore, have a moderate impact on recreation.

Ground Operations

This alternative includes 1,300± motorized patrols per day. This rise from 800± patrols per region in the No Action Alternative could have similar increases in impacts. These impacts could disturb the quiet, solitary experience of recreation, especially in low- and medium-impact use areas. The impact will be lower in areas that already permit motorized vehicles. Overall, this impact may be minor to moderate and adverse.

This alternative also includes 200± nonmotorized ground patrols. While this increase in patrols may contribute to slightly greater disturbances of quiet, solitary experiences, the foot, horse, and canine patrols are generally not very disruptive to recreation. Therefore, the impact from nonmotorized patrols is likely to be negligible to minor.

Aircraft Operations

This alternative represents an increase from approximately 15 aircraft operations per day to about 23 operations per day in the WOR and New England regions and an increase from about 20 aircraft operations per day to around 30 per day in the EOR and Great Lakes regions. The addition of eight more patrol operations each in the WOR Region and New England regions and 10 more each per day in the EOR Region and Great Lakes regions could increase the noise and visual disturbance in each region, especially if patrols on recreation. Overall, impacts to recreation are expected to be minor from this alternative.

Vessel Operations

In the Detection, Inspection, Surveillance, and Communications Technology Expansion Alternative, 21 vessel operations (WOR), 10± vessel operations (EOR), 63± vessel operations (Great Lakes), and 24± vessel operations (New England) are anticipated in each region—an increase from the 14 (WOR), 5± (EOR), 42± (Great Lakes) and 16± (New England) operations in the No Action Alternative. The additional vessel patrols could increase impacts depending on the location of the patrols. While the impact of waterborne patrols in low-impact use areas or areas that currently do not allow motorized boat use could be moderate, the overall impact of vessel operations in this alternative is expected to be negligible to minor.

Operation of NII Systems

If the increased use of this technology results in shorter wait times at ports of entry, an increase in hours of operation of NII systems could have a minor beneficial impact on recreation.

Operation of Sensor and Other Technologies

In this alternative, the operation of sensor, MSS, and other technologies would increase from less than 1,500 individual 1-hour operations per day to approximately 2,500 individual 1-hour operations per day. In the Detection, Inspection, Surveillance, and Communications Technology Expansion Alternative, impacts are expected to range from minor to moderate, depending on the location, previous disturbance, and level of activity associated with the sensors. The increase could result in a higher level of activity or increase the need for maintenance or more sensors, which could heighten the impact to a moderate level.

In conclusion, increases in actions such as tower construction and vessel operation in this alternative could have moderate adverse impacts on recreation. While the operation of NII systems is likely to be beneficial and impacts from aircraft operations are not likely to change dramatically, the overall impact of this alternative on recreation could be moderate and adverse.

8.17.4 TACTICAL SECURITY INFRASTRUCTURE DEPLOYMENT ALTERNATIVE

The impacts of this alternative are not likely to be greater than those of the No Action Alternative. There are some exceptions—fences dividing cross-border recreation areas and towers that disrupt scenic vistas—but the overall impacts of this alternative are expected to remain minor.

Small Construction Projects

This alternative will have an increase of fewer than 30± small construction projects in each region, with a focus on physical barrier such as fences, trench cuts, and access roads. As noted,

physical barriers are unlikely to affect recreation except in a few specific locations in each region where recreation areas are contiguous across the border. Roads may improve access to recreation areas, providing a beneficial impact. Additionally, some towers may be built. The visual impact of towers to recreation has already been discussed. Some minor to moderate temporary impacts may result, especially in low-impact use areas, during the construction period for all types of projects. Overall, the impact of small construction projects in this alternative is not likely to rise above minor levels.

Large Construction Projects

Fewer than five new large construction projects in each region are anticipated under this alternative. The construction of both access roads and fences will create temporary minor to moderate adverse impacts due to noise, traffic, and visual disturbances. The roads may increase recreation access and have beneficial impacts. Overall, the impact of large construction projects in this alternative is likely to be minor.

In conclusion, the actions associated with this alternative overall are not predicted to add to the recreation impacts of the No Action Alternative. Some exceptions exist , such as fences across contiguous borders or towers which disrupt scenic vistas, but the overall impacts of this alternative are expected to be minor.

8.17.5 FLEXIBLE DIRECTION ALTERNATIVE

This alternative includes the previous discussed alternatives. Maximizing the activities of all three alternatives together would likely produce the highest level of impact discussed in previous alternatives, leading to moderate impacts on recreation. The location of specific actions will greatly influence impacts to recreation. Overall, this alternative is expected to have moderate impact in medium-impact and high-impact use areas and moderate to major impacts on low-impact use areas. If the increased activity levels in this alternative concentrated near a valued recreation site, the recreation impacts could become major.

Small Construction Projects

The Flexible Direction Alternative encompasses all three of the other alternatives, with actions anticipated at their maximum possible level. Impacts, therefore, would likely be the maximum level of impact of the other alternatives. Adding all three alternatives together would likely produce moderate impacts on recreation.

In conclusion, this alternative contains all actions and their corresponding impacts from all other alternatives and represents the maximum possible activity level for each. Therefore, the overall impact level must be at least as high as the alternative with the highest level of impact—the Detection, Inspection, Surveillance, and Communications Technology Expansion Alternative. The location of specific actions will greatly influence exactly how this alternative affects recreation. Overall, this alternative is expected to have moderate impacts in medium-impact and high-impact use areas and moderate to major impacts on low-impact use areas. If the increased activity levels proposed in this alternative concentrated near a valued recreation site, the recreation impacts could become major.

8.17.6 BEST MANAGEMENT, MINIMIZATION, AND MITIGATION

Consideration of current use patterns in the affected area and consultations with appropriate land managers could minimize the adverse impacts of construction projects, towers, vessel operations and patrols and other actions. CBP seeks to avoid, minimize, repair, and reduce the impacts of its actions on the human environment. It does so through a combination of best management practices, siting plans, design strategies, mitigation measures, and monitoring plans best suited to the scale and location of the particular action. Towards that end, CBP could choose from the following actions to avoid or minimize impacts to recreation in implementing its proposed action:

- Decisions about traffic routes and timing of construction should consider hiking trails, camping and hunting areas, along with seasonal use patterns.
- Projects that require acquisition of new land should account for proximity to recreation areas such as campgrounds, visitor centers, horse stables and avoid them where practicable.
- Minimizing development, traffic, and disruption in previously undisturbed areas is critical for minimizing recreation impacts. Other actions that result in construction, traffic, or noise should be considered in planning to minimize cumulative impacts on any recreation area.
- Continued strengthening of partnerships, communication, and discussion with land managers of recreation areas can ensure that the placement of new infrastructure, patrol routes, and other actions would have minimal impact.

8.17.7 SUMMARY OF POTENTIAL IMPACTS

Table 8.17-4 shows the impacts of each action on recreation.

Table 8.17-4. Summary of Potential Recreation Impacts

Impact-Producing Activity		Level of Impact				
		Negligible Adverse	Minor Adverse	Moderate Adverse	Major Adverse	Beneficial
NO ACTION ALTERNATIVE						
Small construction projects (<1 acre and <1/4 mile: e.g., minor repairs to facilities, parking lot repairs, access road repair)			X			
Large construction projects (>1 acre and >1/4 mile: e.g., repairs to facilities, parking lot repairs, access road repairs)			X	X		
Small on-site trade and travel processing operations		X				
Large on-site trade and travel processing operations		X				
Checkpoint operations			X			
Ground operations—motorized		X	X	X		
Ground operations—nonmotorized	On-road	X				
	Off-road		X			
Aircraft operations			X			
Vessel operations			X			
Operation of NII systems						X
Operation of sensor and other technologies		X	X	X		
OVERALL IMPACT			**X**			

Impact-Producing Activity	Level of Impact				
	Negligible Adverse	Minor Adverse	Moderate Adverse	Major Adverse	Beneficial
FACILITIES ALTERNATIVE					
Small construction project (<1 acre and <1/4 mile: reconstruction or construction of new POEs, USBP structures, parking lot repairs, access road repairs)		X			
Large construction projects (>1 acre and >1/4 mile: reconstruction or construction of new POEs, USBP structures, parking lot repairs, access road repairs)		X	X		
New small on-site trade and travel processing operations (new POEs)	X				
New large on-site trade and travel processing operations (new POEs)	X				
OVERALL IMPACT		**X**			
DETECTION, INSPECTION, SURVEILLANCE, AND COMMUNICATIONS TECHNOLOGY EXPANSION ALTERNATIVE					
Small construction projects (towers and other infrastructure to mount antennas, etc.)			X		
Ground operations—motorized			X		
Ground operations—nonmotorized	X				
Operation of NII systems					X
Operation of sensor and other technologies			X		
OVERALL IMPACT			**X**		
TACTICAL SECURITY ALTERNATIVE					
Small construction projects (trench cuts, towers, minor access roads and fences)		X			
Large construction projects (access roads and fences)		X			
OVERALL IMPACT		**X**			

Impact-Producing Activity	Level of Impact				
	Negligible Adverse	**Minor Adverse**	**Moderate Adverse**	**Major Adverse**	**Beneficial**
FLEXIBLE DIRECTION ALTERNATIVE					
Small construction projects			X	X	
Large construction projects		X	X		
Small on-site trade and travel processing operations	X				
Large on-site trade and travel processing operations	X				
Checkpoint operations		X	X		
Ground operations—motorized			X		
Ground operations—nonmotorized		X			
Aircraft operations		X			
Vessel operations			X		
Operation of NII systems					X
Operation of sensor and other technologies			X		
OVERALL IMPACT			**X**		

8.18 CUMULATIVE IMPACTS

8.18.1 INTRODUCTION

Cumulative effects to the environment develop from past, present, and reasonably foreseeable future actions. This PEIS covers a large area potentially impacted by the activities and alternatives. This cumulative effects analysis is intended to provide U.S. Customs and Border Protection (CBP) decision makers and readers with an understanding of reasonably foreseeable projects and the types of activities that could contribute to additional resource impacts should CBP adopt any aspects of the alternatives presented. The following cumulative impacts discussion discusses non-CBP projects and ongoing activities that could contribute to increased impacts on environmental resources. Specific geographic areas within the study area with the potential for cumulative resource impacts are identified in detail in most cases. When a specific resource requires future consideration based on imminent increases in impacts, however, the analysis provides more discussion of potential additive impact concerns that may need to be addressed in future NEPA documentation for future projects that may contribute to ongoing impacts.

8.18.2 AIR QUALITY

For the purposes of this PEIS, CBP determined that there were a few categories of ongoing activities across all Northern Border regions with air emission impacts for consideration in cumulative effects analysis. These activities are similar to CBP operations in type and range of operation and/or type and area of resulting air quality impacts. These include ongoing vehicular traffic in the Northern Border regions and recreational use of all-terrain vehicles, off-road vehicles, and snowmobiles. Due to CBP's presence in and around national, state, and other forested areas, forestry and logging operations share the same spatial extent as CBP activities with emissions to the air. Similarly Federal, state, and local road repair and construction activities also contribute to air emissions.

Within the regions, several additional ongoing activities and proposed or underway projects beyond CBP's control have potential cumulative impacts to air quality.

In the West of the Rockies (WOR) Region, the West Pine Zone pre-commercial thinning and prescribed fire (Washington), the Line Creek Coal Mine Expansion, the McNab Aggregate Mine, the BP Cherry Point Cogeneration Project, and the Sumas Generating Station all will have notable contributions to air emissions ranging from particulates to greenhouse gasses.

In the East of the Rockies (EOR) Region ongoing activities such as mineral mining, wind farms and energy parks, as well as cattle and hog farming, emit dust, methane, and other naturally occurring gases and combustion byproducts into the air. New projects with potential for regional air quality impacts include the Hartland Wind Farm, the Highwood Generating Station, Mon Dak Power Facility, Bakken Pipeline, Keystone XL Pipeline, Vantage Pipeline, St. Louis County Union Depot and Northern Lights Express, Willmar Municipal Utility, Corncob Co-combustion Plant Modification, Goodhue County Wind Project, and Polymet Land Exchange for mining on national forest lands.

In the Great Lakes Region, air emission sources include ongoing vessel traffic, and projects such as the Bruce to Milton Transmission Reinforcement, the Darlington New Nuclear Power Plant,

the Hammond Reef Gold Mine, and Marathon Copper (open-pit) Mine, as well as the Port Granby Long-Term Low-Level Radioactive Waste Management, the Lewis County Water/Wastewater Implementation Project, the Curt Manufacturing Facility, and the Alberta Clipper Project.

In the New England Region, ongoing mining for sand, gravel, cement, peat, stone, and clay contributes to particulate emissions as well as combustion product emissions from mining equipment.

Minor short- and long-term cumulative effects would be expected. Impacts on air quality would be primarily due to the construction and operation of CBP's facilities, as well as field activities. A wide range of other activities along the Northern Border that produce some amount of air pollutants would, of course, occur within each region across the Northern Border as a whole. Every state takes into account the effects of all past, present, and reasonably foreseeable projects, activities, and associated emissions during the development of their state implementation plan under the Clean Air Act. As noted above, estimated emissions generated by CBP's activities for all alternatives would be de minimis—so limited that they would not interfere with timely attainment of the NAAQS. Therefore, implementation of any of the proposed alternatives would not contribute appreciably to any adverse cumulative air quality impacts. Thus, impacts across the Northern Border as a whole would not be significant, and no air quality mitigation measures would be required.

Like the No Action Alternative and for similar reasons, the Facilities Development and Improvement Alternative (Facilities Alternative); the Detection, Inspection, Surveillance, and Communications Technology Expansion Alternative (Detection/Inspection Alternative); the Tactical Security Infrastructure Deployment Alternative (Tactical Security Alternative); and the Flexible Direction Alternative would have minor adverse cumulative effects on air quality. No large-scale project or proposals have been identified that when combined with CBP activities would threaten the attainment status of any region, impede the timely attainment of the NAAQS in a nonattainment area, or lead to a violation of any Federal, state, or local air regulation. Therefore, cumulative effects to air quality would be minor.

8.18.3 BIOLOGICAL RESOURCES

Under all of CBP's proposed alternatives, the overall cumulative effect of projected CBP activities is less than major when considered with similar non-CBP activities and other activities with the potential for effects on wildlife and vegetation. General area construction can serve as a good comparative example of the potential for impacts to biological resources of an activity in combination with similar non-CBP activities. The volume of CBP's construction and maintenance activities represents a small fraction of total ongoing construction and maintenance. Cumulative impacts are possible due to the nature and frequency of these projects if they occur in the same geographic region. However, these incremental additive impacts are expected to be minimal in comparison to initial direct and indirect impacts. Similarly, in the construction of a new, unimproved dirt road (under the Tactical Security Alternative), the incremental contribution of CBP activities to projected potential impacts from other activities to biological resources is generally minimal.

In the WOR Region, the Kittitas Valley Wind Power Project, the Desert Claim Wind Power Project, the Teanaway Solar Reserve Project, the Satsop Combustion Turbine Project, the BP Cherry Point Cogeneration Project, and the Sumas Generating Station all have the potential for impacts to biological resources. Areas to watch might include CBP activities such as future tower construction that might combine with wind and solar projects to impact bat and bird migration behavior. Also, increased activity around and within areas such as the North Cascades National Park (Washington) or Kootenai National Forest (Idaho) could have cumulative impacts on Grizzly Bear habitat and behavior. Currently, no major projects with potential effects on biological resources are known to be planned for those areas.

In the EOR Region, the Polymet Land Exchange (Minnesota), the Southern Lights Project (North Dakota), and the Quintana Capital Group Pipeline (North Dakota), along with the Langdon (North Dakota) and Goodhue County (Minnesota) wind projects have the largest physical presence. The Polymet Land Exchange will result in loss of around 1000 acres of wetlands and conversion of over 6,000 acres of Superior National Forest for use in sulfide mining with other lands exchanged. Two federally listed animal species, the Canada lynx and the gray wolf, and several animal and plant species of concern at the state or regional forest level have been found on or near the parcels considered in the exchange. Future consideration of potential impacts to species and habitat around the Superior National Forest may depend on any long-term changes to these populations.

In the Great Lakes Region, the Bruce to Milton Transmission Reinforcement Project (New York), the Lewis County Water/Wastewater Implementation Project (New York), the Darlington New Nuclear Power Plant, Northwest Ohio Intermodal Facility (Ohio), OneCommunity (Ohio), Com Net, Inc. (Ohio), Thumb Loop Transmission Line Project (Michigan), and Weston-Arrowhead Transmission Line (Wisconsin) all have the potential for impacts to biological resources.

In the New England Region, the Aroostook County Transportation Plan (Maine), the Northern Forest Canoe Trail (Maine), the Kibby Mountain Extension Project (Maine), the Groveton LINC Cell Phone Tower (New Hampshire), the Granite Reliable Wind Park (New Hampshire), and the Northern Vermont Fiber Optic Connection Project (Vermont) all have the potential for impacts to biological resources.

When considering the potential for impacts to biological resources from potential CBP construction, maintenance and repair, and operational activities under the No Action Alternative, the Facilities Alternative, the Detection/Inspection Alternative, and the Tactical Security Alternative, the incremental contribution of CBP activities along with other non-CBP projects and activities would be minimal in all of the regions. CBP would conduct further consideration of potential cumulative impacts on a site-specific basis when its future projects warrant them.

8.18.4 GEOLOGY AND SOILS

The degree of impact to geology and soils varies depending on location, existing conditions, and activity. Most infrastructures, facilities, towers, mining operations, wind farms and other power generating projects, along with developed areas are widespread throughout the entire area potentially affected by CBP activities. Large forestry and logging operations are most common within the western forests. In these areas, clearing of natural lands would adversely impact soils

by increasing the potential for erosion and mass movement. Water-crossing construction and repair sites would have consequences similar to those listed in the No Action Alternative. The overall cumulative effects to geology and soils of the No Action Alternative, the Facilities Alternative, the Detection/Inspection Alternative, the Tactical Security Alternative, and the Flexible Direction Alternative, when combined with the effects of other construction projects that occupy the same geographic or interconnected geophysical areas, would be expected to be minor to moderate and adverse.

In the WOR Region, non-CBP energy projects include the BP Cherry Point Cogeneration Project (Washington) and the Sumas Generating Station (Washington) within 25 miles of CBP facilities.

In the EOR Region, non-CBP energy projects, such as existing wind facilities in the Horseshoe Bend Wind Park (Montana), Valley County Wind Farm (Montana); and the Glacier Wind Farm (Montana) are within 20 miles of CBP POEs and USBP stations.

In the Great Lakes Region, the ComNet, Inc. fiber optics line project, and in the New England Region, the Northern Vermont Fiber Optic Connection Project potentially run within a few miles of multiple USBP stations and POEs.

8.18.5 WATER RESOURCES

Consideration of all activities having a potential impact on water resources in all alternatives across the Northern Border as a whole, combined with the understanding that best management practices (BMPs) would be implemented, and considering the dispersed nature of the non-CBP projects and their resulting impacts, leads to the conclusion that the overall direct and indirect impacts of all of the alternatives across the Northern Border would be minor and adverse (see Section 8.5.3). As a result of CBP's overall small, incremental contributions to water quality and supply issues, cumulative impacts to water resources across the Northern Border as a whole would be negligible as well.

In the WOR Region, ongoing activities such as forestry and logging and farming (dairy and crops) impact water quality through erosion and runoff into surface waters. Projects such as the BP Cherry Point Cogeneration Project (Washington), the Westmoreland Savage Corporation's Savage Mine (Montana), Montanore Silver-Copper Project (Montana), the Line Creek Coal Mine Expansion (Washington), and McNab Aggregate Mine (Washington) also have potential to impact surface and ground water resources from discharges to water, surface runoff, and withdrawal from water supplies for use in processes. Subsurface mining can also impact groundwater flows, recharge, and quality if not fully managed.

The EOR Region also has various types of farming and ranching activities (wheat, barley, sugar beets, soy beans, cattle and hog production) that can impact water supply for irrigation and water quality from runoff of agricultural wastes and pesticides. Projects that can also impact water resources through runoff and erosion include the Mon Dak Power Facility (North Dakota/Montana), the Bakken Pipeline (North Dakota), the Vantage Pipeline (North Dakota), Keystone XL Pipeline (Montana), the Southern Lights Pipeline Project (North Dakota), and the Quintana Capital Group Pipeline (North Dakota). The Highwood Generating Station in Montana (coal-fired power plant) also has potential to discharge to water bodies.

In the Great Lakes Region, ongoing vessel traffic makes discharges to lakes and rivers. Projects such as the Bruce to Milton Transmission Reinforcement and the Darlington New Nuclear Power Plant will affect water resources through runoff and discharges as well as use. The Hammond Reef Gold Mine and Marathon Copper Mine also would have potential runoff impacts—an open-pit mine with ore being processed at a nearby processing facility. Two projects in New York are designed to effect greater efficiencies in use of water resources: the St. Lawrence County, Industrial Development Agency Water Line (New York) would establish a second water main in St. Lawrence County, and the Lewis County Water/Wastewater Implementation Project (New York) would improve water and wastewater efficiencies. These projects may be beneficial to long-term sustainability of water supply, but they will also have potential adverse impacts from runoff and emergency discharges.

Other projects with potential to impact water resources through erosion and runoff include the Midtown Rising residential/commercial development (New York), the Northwest Ohio Intermodal Facility (Ohio), OneCommunity (Ohio), Com Net, Inc. (Ohio), the Thumb Loop Transmission Line Project (Michigan), Curt Manufacturing (Wisconsin), the Alberta Clipper (Wisconsin), and the Weston-Arrowhead Transmission Line (Wisconsin).

In the New England Region, ongoing mining (sand, gravel, cement, peat, stone, and clay), farming (potatoes, dairy cows, trees), and forestry and logging precipitate runoff issues. In New Hampshire, the Glen Ellis Site Improvement Project and the Crawford Stewardship Project both seek to improve recreation and quality of life opportunities, but may have erosion and runoff associated with site development and operation, maintenance, and improvement of existing recreation facilities. The Northern Forest Canoe Trail Project likewise will improve recreation in Maine, New Hampshire, Vermont, and New York but have some erosion impacts. The Northern Vermont Fiber Optic Connection Project and the Aroostook County Transportation Plan would have construction runoff and sustained runoff impacts.

A number of ongoing or planned non-CBP projects could contribute to a cumulative effect on water resources, as identified and analyzed in Section 8.5.3.1 under the No Action Alternative. The cumulative effects of these projects are also relevant to the Facilities Alternative and the Tactical Security Alternative. The Detection/Inspection Alternative and the Flexible Direction Alternative would have the greatest number of vessel operations (particularly in the Great Lakes Region) in addition to the ongoing construction under the No Action Alternative. CBP would implement standard and appropriate recommended BMPs for all construction projects. In general, CBP vessels would be a negligible source of disturbance or inadvertent discharges to surface waters. Non-CBP projects and their resulting impacts are regionally dispersed; therefore, cumulative effects would be minor and adverse.

8.18.6 NOISE

In addition to CBP's activities, a wide range of other activities along the Northern Border produce noise.

In the WOR Region, these include the West Pine Zone pre-commercial thinning and prescribed fire (Washington), the Satsop Combustion Turbine Project (Washington), and the BP Cherry Point Cogeneration Project (Washington). In the EOR Region, there are the existing wind facilities (Montana): Horseshoe Bend Wind Park, Valley County Wind Farm, and Glacier Wind

Farm. There are also the Goodhue County Wind Project (Montana), the Louis County Union Depot and Northern Lights Express (Montana), and the Langdon Wind Project (North Dakota). In the Great Lakes, there is the Curt Manufacturing Warehouse Facility (Wisconsin), the Northwest Ohio Intermodal Facility (Ohio), and the Lewis County Water/Wastewater Implementation Project (New York). In the New England Region, the Kibby Mountain Extension Project (Maine) will involve constructing 11 more wind power turbines in Franklin County.

Noise generated by CBP's activities for all alternatives across the Northern Border as a whole would be minor and not concentrated, except as noted at POEs and USBP stations. These activities would constitute small, incremental increases in the overall noise environment, and thus are not expected to contribute appreciably to adverse cumulative noise impacts. As a result, across the Northern Border as a whole, no noise impacts would be major enough to require mitigation measures.

8.18.7 CLIMATE AND RESOURCE SUSTAINABILITY

The CBP Northern Border proposals include projects and activities that could have minor impacts to climate and resource sustainability. Although the overall impact associated with these actions is negligible to minor in most cases, when these actions are combined with other activities along the Northern Border, the potential for incremental impact associated with CBP operations must be considered.

A summary of other actions that may be relevant to Northern Border operations is presented in Appendix F, Cumulative Scenarios. Actions of particular concern to the climate and resource sustainability analysis include those that would incrementally contribute to climate change, emissions of greenhouse gases, and use of nonrenewable resources. The activities proposed under the No Action Alternative would have a generally negligible but potentially minor climate and sustainability effect. Therefore, these activities would not likely contribute substantially to any significantly adverse cumulative impact. As a result, any incremental impact would be negligible to minor in its overall effect.

The potential for impacts associated with the Facilities Alternative, the Detection/Inspection Alternative, the Tactical Security Alternative, and the Flexible Direction Alternatives would be generally similar. The increased number of activities under these alternatives increases the potential for impacts from CBP activities. However, this increased activity would not be sufficient to contribute substantially to the overall effect when considered with other relevant actions in the border communities. They would be expected to have a generally negligible to minor cumulative effect.

In general, for all regions, the activities proposed under the alternatives considered would have a generally negligible to minor incremental effect. Therefore, they would not likely contribute substantially to any significantly adverse cumulative impact. Where particular actions may affect or be affected by ongoing activities at the local level, the analysis of potential climate and sustainability effects would necessarily be site-specific.

8.18.8 LAND USE

Considering the incremental effects of other past, present, and reasonably foreseeable future actions in the study area, the cumulative impacts on land use resources from the No Action Alternative, the Facilities Alternative, the Detection/Inspection Alternative, the Tactical Security Alternative, and the Flexible Direction Alternative would likely be moderate and adverse. While the impacts would be permanent, they would remain localized at the project site and unlikely to affect the viability of regional land use activity. Those CBP activities involving facilities and infrastructure construction would be the largest source of impact. Such activities directly remove the land on which the facilities are constructed from the existing use and alter the landscape in a way that may detract from surrounding land uses. If the amount of land converted for CBP infrastructure and facility development in combination with other projects violated local, state, or regional land use plans, zoning requirements or goals, or otherwise surpassed a threshold that affected the viability of existing land uses—such as recreation, agriculture, conservation, or development—the cumulative impacts could be major.

In the WOR Region, non-CBP energy projects within 25 miles of CBP facilities include the BP Cherry Point Cogeneration Project and Sumas Generating Station (Washington). These facilities represent changes in land use from previously undeveloped or low-development public and private properties. Other projects more distant from CBP border facilities include Westmoreland Savage Corporation's Savage Mine (Montana) and Kittitas Valley Wind Power Project (Washington), as well as the Teanaway Solar Reserve Project, Satsop Combustion Turbine Project, and Desert Claim Wind Power Project (Washington). These projects are being developed on forest and rangeland, logged areas, as well as more developed and more urban private and public lands.

In the EOR Region, non-CBP energy projects in Montana, such as existing wind facilities in the Horseshoe Bend Wind Park, the Valley County Wind Farm, and the Glacier Wind Farm are within 20 miles of CBP POEs; USBP stations represent a recent change to land usage in the region. The stations are relatively distant from Goodhue County Wind Project, which is outside the range of the study area. The Polymet Land Exchange (Minnesota), which would result in near-term loss of natural resource recreation areas for sulfide mining, and the Westmoreland Savage Corporation's Savage Mine represent traditional land uses for the region but are examples of past and future expansion of mining presence in Minnesota and Montana, respectively.

In the Great Lakes Region, projects with land use impacts include the St. Lawrence County Industrial Development Agency Water Line (New York), Bruce to Milton Transmission Reinforcement Project (New York), Lewis County Water/Wastewater Implementation Project (New York), Midtown Rising (New York), Northwest Ohio Intermodal Facility (Ohio), OneCommunity (Ohio), Com Net, Inc. (Ohio), Thumb Loop Transmission Line Project (Michigan), and Weston-Arrowhead Transmission Line.

In the New England Region, the Aroostook County Transportation Plan (Maine) would create a new highway clearing previously undisturbed land. Other projects that would impose land use changes include the Northern Forest Canoe Trail (Maine) and the Northern Vermont Fiber Optic Connection Project (Vermont).

Moderate impacts, such as those from development of a USBP station or major modernization project at an existing POE, would affect a relatively small, localized area compared to the combined land use effects of ongoing activities in the Northern Border regions, described below. In particular, although any proposed modification to an existing POE that involves acquisition of non-commercial or industrial properties would represent a change in land use, the location of POEs occurs proximate to the border at existing road crossings such that it is an inherently expected land use that is not discretionary in placement although design and footprint are variable.

Increasing these activities would result in either (1) greater frequency of noise or light disturbance at particular sites (if the missions are more frequent, but in the same areas), or (2) more of these disturbances across the border (if the additional missions patrol a larger area). If increased surveillance and patrols cover a larger area, the affected land area would likewise increase. In either case, however, this alternative requires no direct land use conversion. Impacts result from reduced quality of certain land uses (e.g., recreation or residential development) near the activity. CBP may minimize such impacts by conducting patrols and surveillance away from other land uses or during periods of relatively low recreation, when feasible.

The cumulative impacts of the Detection, Inspection, Surveillance, and Communications Expansion Alternative on land use resources are expected to be moderate and adverse because no direct change to the use of a particular land parcel is expected. Instead, the increased noise or light disturbance may affect the relative appeal of the area near the project site for recreation or residential development. The cumulative impact of this alternative is, therefore, unlikely to be noticeably greater than that of the No Action Alternative (only negligible to minor additional impacts beyond the No Action Alternative activities). A threshold may exist above which noise and visual disturbances cause more than a minor impact, such that activities would degrade regionally. That specific threshold remains uncertain, but depends on the context of site-specific and surrounding land use (residential versus recreational).

8.18.9 AESTHETICS

Under all alternatives, CBP's activities would occur over a broad range of landscapes that would also be affected by the actions of other agencies, non-governmental organizations, and the public. Potential cumulative impacts would occur from the addition or existence of road repair and construction; communications towers, from other Federal, state, local, and private owners; wind turbine projects, such as the Kibby Mountain Wind Farm and Extension Project; infrastructure remodeling and development; and forestry and logging.

The amount of impact caused by each of these actions varies along the Northern Border. Infrastructure, facilities, towers, and developed areas are widespread throughout the entire border region. Non-CBP road repair and infrastructure improvements, combined with modernization of CBP infrastructure, would result in a cumulative beneficial impact by creating a modern and well-maintained area.

Forestry and logging are most common along the eastern and western forests, where the visual and aesthetic appeal stems from the lack of infrastructure, development, and cleared areas. By clearing and developing additional lands, the proposed CBP actions would decrease the amount

of untouched landscapes. The clearing of natural lands and the erection of large buildings or towers in natural settings by CBP, in addition to other similar projects, would result in an adverse cumulative impact to the visual environment.

Wind turbine projects are common in the Midwest and eastern states, and non-CBP-owned communications towers are prolific throughout the entire area. Both towers and wind turbines are very large, obviously manmade structures, and usually situated in rural or natural landscapes. The presence of additional structures within the same viewshed increasingly detracts from the visual environment. The addition of CBP monopole towers would cause minor adverse cumulative impacts to the visual environment when located in the same viewshed as similar structures.

Cumulative impacts from the No Action Alternative would be minor and adverse with some beneficial impacts from the ongoing modernization of buildings.

The Facilities Alternative and the Tactical Security Alternative would have long-term, minor, and adverse impacts beyond the impacts of the No Action Alternative from the additional widely dispersed facilities and infrastructure, with some beneficial impacts from the modernization of CBP buildings. Most impacts from the Detection/Inspection Alternative would be negligible due to the small effect that most changes or additions to technology have on the visual environment. Communication and surveillance towers have the potential for additional minor and adverse impacts. For reasons provided in previous discussion, the Flexible Direction Alternative's cumulative impacts would be minor and adverse, with some beneficial impacts from the modernization of buildings. Under all alternatives, if structures would need to be erected in more visually sensitive areas, site-specific visual impacts could be greater and mitigation or avoidance measures would be implemented.

8.18.10 SOCIOECONOMICS

When combined with the impacts of other projects and factors, the cumulative impacts of CBP's alternatives would be moderate and adverse. The Detection/Inspection Alternative and the Tactical Security Alternative would likely have only minor additive adverse impacts compared with those of the No Action Alternative, whereas the Facilities Alternative and the Flexible Direction Alternative may have additional moderate adverse impacts. The majority of activities, such as small construction projects, various types of patrols, and surveillance technologies, are all likely to generate minor adverse impacts.

Minor impacts, as previously defined, are temporary and disappear once the impacting agent is removed (e.g., noise associated with small construction projects or patrols). Moderate impacts, such as potential increases in wait times, are primarily associated with POE operations and checkpoints. Many other actions already contribute to traffic delays, including non-CBP-related road repair and construction, and other CBP security programs. Further, while CBP construction and infrastructure development may introduce temporary or permanent noise or visual disturbances, these are minor compared to the mining and wind energy construction and development projects anticipated in the region. Moderate impacts, such as those associated with increased wait times, may be reduced with proper mitigation (as described in Section 8.10.6), or may require the community to adjust to disruptions.

Although patrols introduce noise and disturbance, these impacts are limited to the location and timing of a particular vehicle, aircraft, or vessel mission. Once the impacting agent is eliminated, the affected activity or community would return to a condition with no measurable effects from the action. Furthermore, additional inspection technology at POEs or checkpoints may have either adverse or beneficial effects on wait time at crossings. Additional inspections and surveillance equipment are likely to generate impacts limited to the project site, and not affect economic activities within the broader region.

Beneficial impacts are also associated with large construction projects in that they improve regional employment opportunities, increase visitation to a region, or decrease travel times to cross the border.

In the EOR Region, examples of non-CBP projects that contribute to cumulative socioeconomic impacts include the St. Louis County Union Depot and Northern Lights Express (Minnesota) projects for planned high-speed passenger rail line between Twin Ports and Twin Cities, and the Quintana Capital Group Pipeline (North Dakota).

In the New England Region, examples of non-CBP projects that contribute to cumulative socioeconomic impacts include the Kibby Mountain Extension Project (Maine), the Groveton LINC Cell Phone Tower Project (Maine), and The Northern Vermont Fiber Optic Connection Project (Vermont).

If other resource, energy, and economic development projects occur in the same areas as CBP's increased construction activities, additional impacts may be felt on surrounding lands. However, the low density of facilities, even under the Flexible Direction Alternative, would still render the cumulative impacts, at most, moderately adverse. As described, opening additional undeveloped areas through access road construction and development could also bring beneficial economic impacts with increased regional employment and economic activity.

8.18.11 CULTURAL AND PALEONTOLOGICAL RESOURCES

The nature of potential impacts to cultural and paleontological resources, including permanent physical changes to resources such as demolition or physical removal of materials, could result in impacts that are long term. Though not in themselves adverse, multiple incremental changes to individual historic facilities have the potential over time to result in adverse impacts if the changes remove significant character-defining materials that eventually diminish the significance of the property. Under the No Action Alternative, CBP would undertake 80± small construction projects and 60± large construction projects all along the Northern Border. The Facilities Development and Improvement Alternative would result in additional small and large construction projects (120± and 80±, respectively). Most projects under these alternatives are anticipated to consist of repairs to facilities and infrastructure, rather than construction of new facilities, minimizing the potential to impact cultural and paleontological resources.

The Detection, Inspection, Surveillance, and Communications Technology Expansion Alternative entails an increased number of construction projects (400±) across the Northern Border region. Many projects involve building communication towers and infrastructure, which increases the potential for long-term adverse impacts due to the need to site the structures in a wide variety of locations, some of which may be the location of cultural and paleontological

resources or within the viewshed of Native American cultural resources. Multiple incremental changes to viewsheds from the introduction of multiple towers that are not themselves adverse, have the potential over time to result in adverse impacts if the addition of multiple towers within sight of one another sufficiently changes the visual quality of historic viewsheds in a way that diminishes their significance.

The Tactical Security Infrastructure Deployment Alternative would potentially have minor to major long-term adverse impacts on cultural and paleontological resources in some cases and beneficial impacts in others. The number of small and large construction projects in the Northern Border region as a whole would be modest (480± and 80± respectively) with most of the projects likely to consist of trench components less than a quarter mile in length, rather than large construction projects (more than a quarter mile in length), minimizing the potential to impact cultural resources.

Under the Flexible Direction Alternative, the number of small and large construction projects in the Northern Border region as a whole would be larger (640± and 100±, respectively, over the No Action Alternative) than under the other alternatives, increasing the potential for impacts on cultural and paleontological resources; yet, as with those alternatives, most of the projects are likely to consist of repairs to facilities and infrastructure, rather than construction of new facilities, minimizing the potential to impact cultural and paleontological resources.

In addition, CBP (or GSA for those properties owned by that agency) would carry out facility and infrastructure projects in consultation with State and Tribal Historic Preservation Offices and other consulting parties under Section 106 of the National Historic Preservation Act. That review process is intended to identify mutually agreeable project designs that avoid or minimize adverse effects, with the result that most projects would result in minor impacts. In addition, some projects would be designed to avoid cultural or paleontological resources entirely, or to repair or rehabilitate historic properties in accordance with the Secretary of the Interior's Standards for the Treatment of Historic Properties and would thereby result in beneficial, long-term impacts.

8.18.12 ENVIRONMENTAL JUSTICE AND THE PROTECTION OF CHILDREN

The CBP Northern Border proposals include projects and activities that could affect minority or low-income populations or populations of children under age 18, depending on their proximity to the actual site of CBP operations. Although the overall environmental justice impact associated with these actions is negligible to minor in most cases, when these actions are combined with other activities along the Northern Border, the potential for incremental impact associated with CBP operations must be considered.

A summary of other actions that may be relevant to Northern Border operations is presented in Appendix A, the Northern Border PEIS Public Scoping Report. Actions of particular concern to the environmental justice analysis include those that would directly affect populations living in areas adjacent to, or not far removed from, the site of the activity, and those that might pose a significant or otherwise disproportionately adverse risk to the health and safety of the local population. Where potential impacts are unequally distributed across community segments, especially with regard to minority and low-income populations, or where these impacts pose a

disproportionately high risk to the health and safety of children, an environmental justice concern may exist.

The activities proposed under the No Action Alternative would have a generally negligible but potentially minor environmental justice effect. Therefore, they would not likely contribute substantially to any significantly adverse cumulative impact. As a result, any incremental impact would be negligible to minor in its overall effect.

The potential for and type of impact associated with the Facilities Alternative, the Detection/Inspection Alternative, the Tactical Security Alternative, and the Flexible Direction Alternative would be generally similar. The increased number of activities under these alternatives increases the potential for impacts from CBP activities. However, this increased activity would not be sufficient to contribute substantially to the overall effect when considered with other relevant actions in the border communities. They would be expected to have a generally negligible to minor cumulative effect.

In general, for all regions, the activities proposed under the alternatives considered here would have a generally negligible to minor incremental effect. Therefore, they would not likely contribute substantially to any significantly adverse cumulative impact. Where particular actions may affect or be affected by ongoing activities at the local level, the analysis of potential environmental justice or human health effects to minority or low-income populations or populations of children under the age of 18 would necessarily be site specific.

8.18.13 HUMAN HEALTH AND SAFETY

The potential for cumulative human health impacts from the combination of actions proposed by CBP and others along the Northern Border, results from the additive and synergistic effects of increased projects and activities, which provide increased opportunities for human exposure to individually minor or negligible health hazards. Cumulative impacts on human health and safety (HH&S) are possible because of the accumulated risk of multiple projects. For the purposes of this analysis, CBP is concerned with cumulative impacts that would be expected from the addition or continued existence of the following:

- Technologies or activities that produce radiation;
- Technologies or activities that produce radio frequency (RF) energy and electromagnetic (EM) radiation; and
- Activities that increase lead concentrations.

The degree of impact to HH&S varies in relation to location along the Northern Border. Technologies or activities that produce radiation would have negligible to minor adverse impacts to HH&S. According to the NRC, low doses (less than 10,000 mrem) spread out over long periods of time—years to decades—do not cause an immediate problem on any body organ. The effects of low doses of radiation, if any, would occur at the cellular level; thus changes may not be observed for many years (usually 5 to 20 years) after exposure (USNRC, 2004). These activities would be covered under OSHA, and the level of radiation exposure would be within standards set by such regulation. However, adverse impacts could still occur.

The chance of exposure to RF, EM, and lead emissions would increase with an increase in the number of RF-, EM-, and lead-emitting technologies used. Technologies that produce RF and EM emissions are regulated under OSHA and would have negligible to minor adverse impacts. Lead concentrations from munitions in the environment can be regulated by RCRA, the Comprehensive Environmental Response, Compensation, and Liability Act, or the Clean Water Act, depending on site location; they would have negligible to minor adverse impacts. Since CBP's activities would raise the risk of exposure, the U.S. population could experience health problems over time from accumulated exposure to these emissions.

Activities that produce radiation, RF, EM, and lead, which could contribute to cumulative impacts in the West of the Rockies Region include:

- Continued use of wind turbines. Wind turbines' electrical generators and -voltage transformers emit low-level EM (CECO, no date).
- Continued use of communication towers. Communication towers are scattered across the WOR Region. Still the WOR Region has a lower concentration of communication towers than does the Great Lakes Region. Communication towers emit both EM and RF emissions (http://www.cellreception.com/towers/, no date).
- The Kittitas Valley Wind Project**.** A total of 52 wind turbines would interconnect to the Bonneville Power Administration transmission systems in Kittitas County, Washington.
- The Satsop Combustion Turbine Project. The project consists of two combustion turbine generators in a two-on-one configuration, with a single steam turbine generator. It is located in Grays Harbor County, Washington.
- The Desert Claim Wind Power Project. The project is located in Kittitas County, Washington and will have a maximum of 95 turbines with a total height of 410 feet.
- Marten Ridge Wind Energy Project. The project is located near Fernie, British Columbia. The proposal consists of 40 wind turbines and an overhead transmission line. Both the wind turbines and the transmission line produce EM radiation.

Activities that produce radiation, RF, EM, and lead, which could contribute to cumulative impacts in the East of the Rockies Region include:

- Continued use of wind turbines. Wind turbines' electrical generators and medium-voltage transformers emit low-level EM (CECO, no date).
- Continued use of communication towers. Communication towers are scattered across the EOR Region. Still, the EOR Region has a lower concentration of communication towers than does the Great Lakes Region. Communication towers emit both EM and RF emissions (http://www.cellreception.com/towers/, no date).
- Planned use of the Langdon Wind Project. Located in Cavalier County, North Dakota, this project proposes 106 wind turbines and a 35-mile transmission line that will be upgraded from 41.6kV to 115kV.
- Planned use of the Langdon Wind Project. The project is located in Goodhue County, Minnesota and will include a maximum of 50 400-foot turbines.

Activities that produce radiation, RF, EM, and lead, which could contribute to cumulative impacts in the Great Lakes Region include:

- Continued use of wind turbines. Wind turbines' electrical generators and medium-voltage transformers emit low-level EM radiation (CECO, no date).
- Continued use of acid-lead battery manufacturing facilities.
- Continued use of nuclear power facilities.
- Continued use of communication towers. Communication towers are scattered across the Great Lakes Region. Compared to the other regions, the Great Lakes Region has a high concentration of communication towers. Communication towers emit both EM and RF emissions (Cellphonereception.com, no date).
- The LEEDCo Wind Project. Located off the coast of Lake Erie, Ohio, this project will generate 1,000 MW of electricity and will be operational in 2012.

Activities that produce radiation, RF, EM, and lead, which could contribute to cumulative impacts in the New England Region include:

- Continued use of wind turbines. Wind turbines' electrical generators and medium-voltage transformers emit low-level EM (CECO, no date).
- Continued use of communication towers. Communication towers are scattered across the New England Region. Still, the New England Region has a lower concentration of communication towers than does the Great Lakes Region. Communication towers emit both EM and RF emissions (http://www.cellreception.com/towers/, no date).
- Planned use of the Kibby Mountain Extension Project. Located in Franklin County, Maine, this project proposes to add 11 turbines on Sisk Mountain.
- Planned use of the Granite Reliable Wind Park Project. Located in Coos County, New Hampshire, the park is currently in development and when operating will be a 99-MW wind park.

The cumulative overall adverse impacts to HH&S from non-CBP projects and the Facilities Alternative and the Tactical Security Alternative would be the same as for the cumulative overall adverse impacts to HH&S from non-CBP projects and the No Action Alternative. Generally, the cumulative impacts would be minor and adverse with minimal incremental health factor risks with the increased activity under each of the action alternatives and the potential for closer proximity to non-CBP activities with potential human health effects.

The Detection, Inspection, Surveillance, and Communications Technology Expansion Alternative and the Flexible Direction Alternative would increase the number of sources of RF and EM emissions. It is unlikely, however, that enough communications towers, wind turbines, and transmission lines would be erected close enough together to produce dangerous levels of RF and EM emissions, although emission exposure would increase. Additional beneficial safety and human health impacts would be anticipated because the rate of interdictions would likely increase along the Northern Border.

8.18.14 HAZARDOUS MATERIALS

Hazardous wastes are defined by the Resource Conservation and Recovery Act (RCRA) as solid waste or a combination of solid wastes, which, because of quantity, concentration, or physical, chemical, or infectious characteristics may cause or significantly contribute to an increase in mortality or an increase in serious irreversible, or incapacitating reversible, illness, or pose a substantial present or potential hazard to human health or the environment when improperly treated, stored, transported, or disposed of, or otherwise managed. CBP implements its RCRA requirements consistently across the Northern Border as a whole. For descriptions of the regional affected environments for hazardous materials see Sections 4.14.2 (WOR), 5.14.2 (EOR), 6.14.2 (Great Lakes), and 7.14.2 (New England).

Across the Northern Border as a whole, under all of the alternatives, current operations would continue in order to meet CBP's goals to secure the Nation's borders from the entry of dangerous people and goods and prevent unlawful trade and travel. Using a risk-based approach, CBP would employ the most effective inspection and scanning technology available at designated POEs, airports, seaports, and permanent traffic checkpoints to detect and prevent the entry of hazardous materials, goods, and instruments of terror into the United States (USDHS, 2009).

Overall, across the Northern Border, direct and indirect impacts from CBP's management of hazardous wastes would range from beneficial to minor adverse for all alternatives. Non-CBP actions in close proximity to CBP's activities, such as small and large construction projects and motorized ground operations, would add to the hazardous material impacts caused by CBP's activities. These actions would produce comparable hazardous waste to that of CBP's activities. Materials used during ground operations and during the large and small construction projects would be comparable to those used by CBP.

Only minor increases in the cumulative effects of hazardous materials would occur as a result of construction, maintenance, and operation activities. Across the Northern Border as a whole the effects of all of the alternatives, when combined with other ongoing and proposed projects in the area, would not be expected to have a significant cumulative effect. BMPs would be implemented as standard operating procedures during all construction activities and would include proper handling, storage, or disposal of solid and hazardous or regulated materials. The impacts of hazardous waste would vary greatly with each CBP activity described in this analysis, but the overall cumulative impacts would be expected to be short-term, adverse, and minor. This assumes that CBP would continue to follow the appropriate mitigation measures and BMPs to avoid accidental releases and spills of hazardous materials.

8.18.15 UTILITIES AND INFRASTRUCTURE

There are potential cumulative impacts to all utility resources from the combination of actions proposed by CBP and the activities conducted by others in each of the regions along the Northern Border. Continued activities at non-CBP-owned communication towers in all four regions would have long-term, negligible impacts to electrical supply since energy supply capacities allow for expected marginal growth, and the demand from the proposed activities is not likely to strain capacity.

In the West of the Rockies Region, construction and operation of the silver-copper mine in Montana and Idaho would have a negligible impact on utility resources; however, construction of

the associated transmission line would have a long-term beneficial impact to electrical resources because of the added transmission capacity. Continued operations and construction of wind farms, solar and turbine projects, and transmission lines in Washington would have long-term beneficial impacts to utility resources by adding more environmentally friendly sources of electricity supply.

In the East of the Rockies Region, continued mineral mining activities in Montana, Minnesota, and North Dakota which demand water, such as quarrying and milling, put stress on water supply and would have long-term, minor, and adverse impacts to water resources. Upgrades or maintenance of mines would have a negligible impact to utility resources. Construction, upgrades, and/or maintenance of nonrenewable power plants (coal and nuclear) would have short-term, minor, and adverse impacts to water resources and beneficial impacts to electrical and HVAC resources. Continued operations and construction of wind farms, crude oil pipelines, renewable energy plants, and transmission lines in Minnesota, Montana, and North Dakota would have long-term, minor, and adverse impacts to water resources and beneficial impacts from the addition of electrical fuel and capacity.

In the Great Lakes Region, continued operations and construction of wind farms, crude oil pipelines, renewable energy plants, and transmission lines in Michigan, Wisconsin, and Ohio would have a long-term beneficial impact to electrical resources by adding transmission capacity. Improved efficiency of water supply and wastewater facilities in New York would have a long-term beneficial impact to water and wastewater resources. Improved energy dispatching, system reliability, and planning capabilities in Michigan, Illinois, Ohio, and Pennsylvania will have long-term beneficial impacts to electrical and fuel capacity resources by increasing efficiency of transmission systems.

In the New England Region, mining activities requiring water, such as quarrying and milling operations, put stress on water supply and would have a long-term, minor, and adverse impact to water resources. Construction of fiber optic cable lines would have long-term beneficial impacts to communication utilities by the addition of technological infrastructure. Construction of wind farms in Maine and New Hampshire would have long-term, beneficial impacts to utility resources by adding more environmentally friendly sources of electricity supply.

Cumulative impacts would be expected from the following activities (beginning with those in the WOR Region, then travelling east):

- Continued activities at non-CBP-owned communication towers (across the Northern Border);
- Continued construction of the Kittitas Valley Wind Power Project (52 turbines) and Desert Claim Wind Power Project near Ellensburg in Kittitas County, Washington (95 turbines);
- Construction of the Teanaway 75 MW Solar Reserve Project 90 miles east of Seattle just outside Cle Elum, Washington. The photovoltaic (PV) installation will have a reserve capacity able to supply power to 45,000 homes;

- Construction of the Satsop Combustion Turbine Project in Gray Harbor County, Washington will produce a nominal output of approximately 530 MW per year, with a maximum annual output of approximately 650 MW;
- Construction of the 72-MW, natural gas-fired, combined-cycle BP Cherry Point Cogeneration Project near Blaine in Whatcom County, Washington would provide electricity to the Bonneville Federal Columbia River transmission system;
- Continued operations at Sumas Generating Station in Sumas, Washington, which produces 125 MW of electricity when operating at maximum capacity (enough to meet the peak electricity needs of about 94,000 households);
- Construction of Montanore Silver-Copper Project in the Coeur d'Alene Mining District, on the Montana-Idaho border is targeting an initial annual production rate of eight million ounces of silver and 60 million pounds of copper. Major infrastructure for the project will include construction of a 230volt (500 kV electrical) transmission line approximately 17 miles in length, access road and bridge improvements, and water treatment facilities;
- Continued mineral mining in Minnesota, North Dakota, and Minnesota;
- Continued operations at Langdon Wind Project in Langdon, North Dakota; Horseshoe Bend Wind Park in Great Falls, Montana; Valley County Wind Farm near Glasgow, Montana; and the Glacier Wind Farm near Ethridge, Montana. Operations of the Goodhue Wind Project in Goodhue County, Minnesota are slated to begin in 2011;
- Continued operations of the Southern Lights Project, which includes a 313-mile, 20-inch crude oil pipeline from Cromer, Manitoba to Clearbrook, Minnesota;
- Construction of the 300-mile Quintana Capital Group pipeline will extend from Watford City in western North Dakota to Fallon County in eastern Montana;
- Planned construction to connect the 123.4 km oil pipeline from Steelman, Saskatchewan to Cromer, Manitoba to a pipeline in North Dakota, designed to transport up to 145,800 barrels oil per day;
- Planned construction of the Montana segment of the 1,661-mile, 36-inch crude oil pipeline Keystone Gulf Coast Expansion, which would begin at Hardisty, Alberta and enter the United States at Port Morgan, Montana;
- Continued operations at Westmore Savage Corporation's Savage Mine in Sidney, Montana, a pit surface mine that produces approximately 350,000 tons of lignite annually;
- Construction of 150 miles of high-speed passenger rail between Twin Ports and Twin Cities, Minnesota;
- Construction of 180 km, double-circuit, 500,000 volt (500 kV) transmission line from the Bruce Power facility in Kincardine, Ontario to Hydro One's Milton Switching Station in the Town of Milton, New York; with an additional 3,000 MW of energy from clean and renewable resources;
- Improvement of Lewis County Water/Wastewater Implementation Project in Lewis County, New York;

- Construction of the LEEDCo wind project off the coast of Lake Erie in Ontario to eventually generate 1,000 MW of electricity;
- Construction of the Thumb Loop Transmission Line Project, 140 miles of double-circuit 345,000 volt (345 kV) lines and four new substations from Tuscola to Huron County, Michigan;
- Continued operations of Enbridge Energy, LP's Alberta Clipper, a 1,000-mile, 36-inch pipeline from northern Canada to Superior, Wisconsin, which pumps 19 million gallons of oil daily to the Midwest;
- Construction of the 220-mile, 345 kilovolt (kV) Weston-Arrowhead Transmission Line from the Weston Power Plant near Wausau, Wisconsin;
- The Midwest Independent Transmission System Operator Smart Grid Project that will pass through Minnesota, Montana, and North Dakota and improve energy dispatching, system reliability, and planning capabilities in several independent transmission systems throughout the Great Lakes states (Michigan, Illinois, Ohio, and Pennsylvania);
- Ongoing mining of sand, gravel, cement, peat, stone, and clay in Maine;
- Continued operations of 44-wind-turbine Kibby Mountain Wind Farm in Franklin County, Maine and construction of 11 (3 MW) wind turbines to produce an additional 92 million kW hours per year, the equivalent of supplying 13,000 average-sized Maine households;
- Construction of Groveton LINC Cell Phone Tower in Groveton, Coos County, New Hampshire to provide enhanced cell phone coverage;
- Construction of the 99-MW Granite Reliable Wind Park in Coos County, New Hampshire; and
- Construction of fiber optic cable from Stanhope, Quebec to Norton, Vermont.

The overall cumulative impact of CBP activities under the No Action Alternative would be long-term, minor, and adverse when analyzed in conjunction with continued activities at non-CBP-owned communication towers. CBP would follow a suitable combination of BMPs, siting plans, design strategies, mitigation measures, and monitoring plans to lessen the severity of impacts (as described in Section 8.15.6). Continued operations and construction of wind farms, crude oil pipelines, renewable energy plants, and transmission lines would have beneficial impacts resulting from the addition of electrical and fuel supplies.

Under the Facilities Development and Improvement Alternative, CBP's facilities development activities would at most double. There are currently about 40 POE projects under development by OFO, ranging from renovations and alterations to completely new stations, as well as over 65 BP projects, ranging from minor construction such as landscaping, expansion of parking, and housing for radio repeater sites, to completely new stations in new locations. Though some beneficial impacts would result from the modernization of buildings and their facilities, the incremental impact of facilities construction would contribute to increased demand on utility resources. Following proper standards, criteria, and mitigations would ensure that maximum supply capacities are not exceeded. The proposed CBP activities would produce long-term, minor, and adverse cumulative impacts to utility resources.

Under CBP's Detection, Inspection, Surveillance, and Communications Technology Expansion Alternative, deployment of detection, inspection, surveillance and communications technologies would increase. Even combined with continued activities at non-CBP-owned communication towers, the cumulative impact to electrical demand would be negligible in the long-term, since energy supply capacities allow for expected marginal growth, and the demands of the proposed activities are not expected to strain capacity. In addition, continued operations and construction, upgrade, or maintenance of nonrenewable power plants (coal and nuclear), wind farms, crude oil pipelines, renewable energy plants, and transmission lines would have beneficial impacts to electrical and HVAC energy resources. For these reasons, cumulative adverse impacts would be negligible to minor.

Under the Tactical Security Infrastructure Deployment Alternative, none of the increased activities (except for the construction of towers) would affect utility resources differently than would those in the No Action Alternative. Therefore, this alternative would also have negligible cumulative impacts.

Under the Flexible Direction Alternative, CBP's aggregate construction projects would increase more than fivefold in comparison with the No Action Alternative. The increase in activities from this alternative would contribute to increased demand on utility resources. Since following proper BMPs would ensure that maximum supply capacities are not exceeded, the proposed CBP activities would produce long-term, minor, and adverse cumulative impacts to utility resources.

8.18.16 ROADWAYS AND TRAFFIC

CBP's current activities and proposed programs, when combined with other projects and activities, have the potential for moderate cumulative adverse effects overall. Notably, the vast majority of CBP activities along the Northern Border are relatively small, diverse, and not concentrated in any area. Hence, most planned activities would have minor effects to transportation resources. Planned CBP activities are not expected to combine with each other or with other concurrent activities to create cumulative adverse effects on transportation resources. The potential for major cumulative adverse effects would only exist in cases where CBP activities included the establishment of a new road, or the long-term or permanent closure of an existing road. Road closures are not contemplated as mechanisms for advancing border security or facilitating trade and travel; however, changes in priorities have the potential to result in a major change in a roadway's status in the next five to seven years. If these changes become necessary, additional site-specific analysis would be required to determine the necessary level of NEPA analysis and the actual level of effects. The road closure scenario is not a part of any of the alternatives, but is possible under any of them. All other activities would have less than major cumulative effects.

Ongoing road repair and construction projects could have short-term minor or moderate adverse impacts on traffic from road closures and rerouting, requiring users to adapt to and possibly endure longer travel times and congestion. Ongoing road repair and construction projects may also have long-term beneficial impacts from improved road conditions and the alleviation of traffic via road or lane expansions. One such project in the New England Region is the Aroostock County Transportation Plan, which includes a proposal for a new, two-lane, controlled-access highway extending east and north from the Route 1/Route 89 intersections, crossing Route 1 north of the Cary Medical Center, and connecting to Route 161. Short-term

cumulative moderate adverse impacts could occur if POEs in the vicinity were to undergo modifications to activity under the Facilities Development or Flexible Direction Alternative within the same timeframe. There would also be potential for long term, moderately beneficial traffic impacts after all construction was completed and traffic flow improved. The Detection/Inspection Alternative could also result in improvements to traffic flow by increasing the efficiency of vehicle screening,

The No Action Alternative could cause major cumulative adverse effects under circumstances where CBP would need to implement a road closure for an extended period of time. Notably, the vast majority of CBP's activities along the Northern Border are relatively small, diverse, and not concentrated in any area. Hence, most planned activities would have minor effects to transportation resources. Planned CBP activities are not expected to combine with each other or with other concurrent activities to create cumulative adverse effects on transportation resources.

In areas with greater concentrations of CBP activities, the potential exists for greater individual and cumulative impacts to traffic and road-system function. The potential for major cumulative adverse effects would only exist in cases where CBP activities included either the establishment of a new road or the permanent closure of an existing road. If these activities become necessary, additional site-specific analysis would be required to determine the necessary level of NEPA analysis and the actual level of effects. All other activities would have less than major cumulative effects. Proper site-specific NEPA documentation would be provided to evaluate the potential impacts of any major road modifications.

Like the No Action Alternative, the Facilities Alternative, the Detection/Inspection Alternative, and the Tactical Security Alternative all have the potential for major adverse effects on transportation resources; however, this would only be true in cases where CBP activities included either the establishment of a new road or the permanent closure of an existing road. If these actions became necessary, additional site-specific analysis would be required to determine the necessary level of NEPA analysis and the actual level of effects. All other activities would have minor effects to transportation resources.

8.18.17 RECREATION

Several non-CBP projects in the regions have the potential to affect recreation resources. CBP's actions, therefore, could produce cumulative impacts to recreation:

West of the Rockies Region

- Kittitas Valley Wind Power Project, in Kittitas County, Washington is near the Snoqualmie and Wenatchee national forests. The project site includes forest and rangeland that may currently be used for recreation. Construction of wind turbines could limit access to or eliminate recreational opportunities on the project site, or degrade its aesthetic appeal.
- Teanaway Solar Reserve Project is located outside of Cle Elum, Washington; it is also near the Snoqualmie and Wenatchee national forests. The project will be located on previously logged land, but may restrict access to, degrade, or eliminate recreation in the national forests. The Desert Claim Wind Power Project site is also located near these two

forests. The construction and visual impacts of this project may degrade recreation opportunities in the vicinity.

- Satsop Combustion Turbine Project will be located in Grays Harbor County and is near Olympic National Park. This project may restrict access to, degrade, or eliminate local recreation opportunities.
- BP Cherry Point Cogeneration Project is located in Whatcom County, which lies directly outside of the North Cascades National Park Complex. Undeveloped land would be converted for the cogeneration facility. This construction could eliminate some recreation opportunities and degrade or limit access to others in the vicinity of or in the national park.

East of the Rockies Region

- Polymet Land Exchange: This land exchange would result in the acquisition of 6,650 acres of U.S. Forest Service land in Superior National Forest for sulfide mining. This project may have a range of impacts on recreation, including loss of recreation lands and land access, a change in the scenic and natural quality of remaining nearby recreation areas, and effects on wildlife. CBP actions near Superior National Forest will consider this large project to avoid compounding impacts on recreation.

Great Lakes Region

- St. Lawrence County Industrial Development Agency Water Line: While this New York project is not near any federally protected lands, the visual impacts of the project could affect state, local, and private recreation lands.
- Bruce to Milton Transmission Reinforcement Project: This transmission line project will traverse Canada and New York and may change the scenic quality of local, state, and private recreation.
- One Community: This project in northeastern Ohio may affect recreation by changing the scenic and visual quality of landscapes.
- LEEDCo: This Ohio-based wind farm project could impact visual landscapes.
- Thumb Loop Transmission Line Project: This transmission project is located near Huron National Forest in Michigan and could produce impacts from construction and visual alterations.

New England Region

- Glen Ellis Site Improvement Project : This project will take place in the White Mountain National Forest and will involve small construction and maintenance of facilities. The overall outcome of the project is likely to be beneficial to recreation in the area, but some temporary minor impacts may occur while access to certain areas is limited and while construction results in noise, waste, increased traffic, and visual disturbance.
- Crawford Stewardship Project: This project will also take place in the White Mountain National Forest and will involve maintenance and improvement of existing recreation facilities. Similar to the Glen Ellis Project, this project would result in long-term benefits and temporary minor adverse impacts during construction.

- Aroostook County Transportation Plan: This project includes a new two-lane highway, which could produce impacts due to temporary construction and permanent impacts to the viewshed, noise, and wildlife.
- Northern Forest Canoe Trail: This project involves building recreational infrastructure along a canoe trail in New York, Vermont, New Hampshire, Canada, and Maine which is likely to have beneficial impacts on recreation.
- Northern Vermont Fiber Optic Connection Project: This project may result in temporary impacts due to construction and long-term impacts from land clearing.

Other non-CBP actions that may affect recreation and which have a broader scope include dairy farming, farming of crops, mining, wind farming, and the modernization and expansion of Canada Border Services Agency facilities. Farming may affect recreation if agricultural operations expand into areas currently used for private or public recreation. Mining would affect recreation if recreation land is mined, resulting in changes in access, scenic quality, wildlife disturbance, and other impacts associated with construction and development. Similarly, wind farms may alter viewsheds and have construction and development impacts; they may also restrict access to recreation opportunities.

Expansion of Canada Border Services facilities may affect recreation in much the same ways that expansion of USCBP facilities may impact recreation.

The area near the Wenatchee and Snoqualmie National Forests has several foreseeable projects, so special consideration must be given to projects in this area.

In general, each of these non-CBP projects is unlikely to lead to major cumulative impacts on public recreation, since they are separated by distance and time from the CBP projects described in this alternative.

Many of the non-CBP projects in the regions involve construction. Under the Facilities Alternative and the Flexible Direction Alternative, CBP projects that generate construction-related impacts such as noise, visual disturbance, and traffic could be compounded by additional, nearby construction projects. Since several non-CBP construction projects cluster near the Snoqualmie, Wenatchee, and Superior national forests, CBP will need to consider the potential cumulative impacts of any additional small and large CBP construction projects in this general area. However, it is expected that CBP projects would only produce, at most, minor cumulative impacts given the proper siting considerations discussed in Section 8.17.5.

Actions emphasized in the Detection/Inspection Alternative and the Flexible Direction Alternative generate impacts from visual or noise disturbances. Several of the non-CBP projects proposed or planned, such as the Desert Claim Wind Power Project, may also have moderate visual impacts. The impacts from these projects add to the visual clutter of the landscape; construction of multiple communications towers could further exacerbate this problem. If these projects are within the viewshed of recreational areas, they may alter the visual quality of the recreational experience. Additional construction projects may also create impacts such as temporary noise, lighting, and traffic disturbances, as well as permanent access restrictions or changes in land use. If pristine viewsheds near recreation areas are avoided by both CBP and

non-CBP projects, the impacts may remain minimal. It is possible that the cumulative impacts of additional projects that may affect the scenic quality of recreational areas will exacerbate the impacts of these alternatives and could be minor to moderate.

Other non-CBP construction projects will be much larger in size and scope than the type of projects emphasized in the Tactical Security Alternative. Therefore, cumulative impacts of additional CBP actions on recreation under this alternative will be negligible.

The accumulation of activities under the Flexible Direction Alternative could have a synergistic impact on recreational values in the region—including solitude, opportunities for wildlife interaction, and aesthetic appeal—depending on the location, nature, timing, and extent of the proposed activities. The high volume of activity under this alternative has the potential to create major impacts to recreation if it concentrates the full range of increased activities near an important recreational site.

Other projects that could affect recreation due to construction or visual disturbances may combine with the impacts of previously described actions. Overall, the cumulative impacts of non-CBP projects could range from minor to moderate due primarily to construction impacts, scenic quality changes, and an increase in human traffic and developments.