

Chapter 4 Environmental Consequences



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CHAPTER 4

Environmental Consequences

The NEPA requires the disclosure of environmental effects of proposed federal actions, and any adverse environmental effects that cannot be avoided should the preferred alternative be implemented. The Environmental Consequences chapter analyzes both beneficial and adverse impacts that would result from implementing any of the four alternatives described in this *Environmental Assessment*. In addition, this chapter includes a summary of laws and policies relevant to each impact topic, definitions of impact “thresholds” (negligible, minor, moderate, major), explanations of methods used to analyze impacts, and the analysis methods used for determining cumulative effects. As required by the Council on Environmental Quality (CEQ) regulations implementing NEPA, a summary of the environmental consequences for each alternative is provided in Table 8 (Chapter 2 Alternatives). The resource topics presented in this chapter, and the organization of the topics, correspond to that presented in Chapter 3 Affected Environment.

General Analysis Methods

The analysis of impacts follows CEQ guidelines and Director’s Order 12 procedures. This includes the application of results of the relevant scientific research related to park resources which has been conducted within Fort Vancouver NHS and the East and South Barracks area in particular. It also includes the use of other best available scientific literature applicable to the region and setting, the resources being evaluated, and the actions being considered in the alternatives. All alternatives have been evaluated for their effects on the resources and values identified during the alternatives development and scoping processes. For each impact topic, impacts are defined in terms of thresholds of effect, context, intensity, duration, and timing. In this document, intensity definitions are not assigned for beneficial effects. The intensity thresholds that are defined for each impact topic apply to adverse impacts only.

Impacts and cumulative effects are discussed in each impact topic. Definitions of intensity levels vary by impact topic. Where it is not specifically stated otherwise under each impact topic, the following definitions apply.

Assessment Methodology

For each impact topic, thresholds are established to determine the magnitude and extent of effects. These thresholds are generally derived from best professional judgment and scientific literature. Assessment methods and specific thresholds are identified under each topic area.

Type of Impact

Beneficial: A positive change in the condition or appearance of the resource or a change that moves the resource toward a desired condition.

Adverse: A change that moves the resource away from a desired condition or detracts from its appearance or condition.

Note: The words impact and effect are used interchangeably in this document.

Context and Duration

Local: Occurs primarily within the immediate vicinity of the East and South Barracks and to a lesser extent within the remainder of Fort Vancouver NHS and the VNHR.

Regional: Occurs throughout the Portland/Vancouver metro area, and/or in the surrounding community.

Short-term: Impacts that would not continue beyond the action itself, e.g. would last only during construction/rehabilitation efforts.

Long-term: Impacts would extend beyond the construction/rehabilitation efforts.

Geographic Analysis Area

The geographic area for the analysis of impact related to the project encompasses not only the East and South Barracks, but also the VNHR and its immediate surroundings (Figures 1 and 2, Chapter 2).

Cumulative Impact Scenario

CEQ regulations for the implementation of NEPA require the assessment of cumulative impacts in the decision-making process for federal projects. Cumulative impacts are defined as the “impacts on the environment which result from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions regardless of what agency (federal or non-federal) or person undertakes such actions” (40 CFR 1508.7). Cumulative impacts are addressed for all alternatives, including the no action. The geographic analysis area for cumulative impacts can be local, regional, or larger, depending on the resource and sources of impact to it. For the purposes of this project, the following projects were considered for the cumulative impact analysis.

Excess and Disposal of West Vancouver Barracks Reservation (2007)

The U.S. Army ended its management interests for a portion of the Vancouver Barracks, known as the West Barracks, in the VNHR, by deeding this area to the City of Vancouver in 2007, prior to the inclusion of the post on the BRAC. The U.S. Army assessed the impacts of terminating its interest at the West Barracks, and transferring the land outside of federal ownership. The outcome was to adaptively reuse historic buildings for a variety of public, non-profit, and commercial purposes consistent with VNHR objectives. The City of Vancouver (along with the National Park Service, the U.S. Army, and the state of Washington), is a managing partner of the VNHR, which was designated in 1996 by Congressional legislation. The City of Vancouver initiated rehabilitation efforts on the 19 structures within the West Barracks, along with a complete utility upgrade, accomplishing the project in 2000-2007. Currently the Fort Vancouver National Trust, through a master lease with the City of Vancouver, leases 14 of the 19 structures to both private individuals and a hospitality and catering school, and has long range plans to adaptively reuse the remaining five structures in the future.

NPS General Management Plan/Environmental Impact Statement

The National Park Service prepared a general management plan and environmental impact statement for Fort Vancouver NHS in 2003-2004 that included plans for adaptive reuse of historic structures, reconstruction of historic structures and landscape, expansion of interpretive programs and visitor services, parking construction, trails construction and maintenance. It also included strategies for management of park resources and their interpretation. The actions

approved in the general management plan for the East and South Barracks are included in this *Environmental Assessment* and are common to all alternatives. Other actions in the general management plan, not related to the East and South Barracks that could have potential for cumulative impacts, are listed here.

- ***The Village Development Concept Plan*** - Proposed reconstruction and restoration of the Village. This has been partly accomplished through the reconstruction of two of the structures from the HBC Village, as well as associated fence lines and replica roads. Based upon the development concept plan and the latest general management plan, at least two more structural reconstructions (and upwards of an additional seven) could be built on current NPS lands and in the lands of the South Barracks.
- ***Access Improvements and Land Bridge Construction for Fort Vancouver National Historic Site*** - This project was a cooperative undertaking by the City of Vancouver, the National Park Service, WSDOT, the Federal Highway Administration, and the Confluence Project. This project constructed a pedestrian and bicycle land bridge on Fort Vancouver NHS and on WSDOT property, including construction of the north landing of the Land Bridge on Fort Vancouver NHS, access across Fort Vancouver NHS necessary to maintain the structure, and the construction of trail improvements on Fort Vancouver NHS to access the structure. The project was completed in 2007.
- ***Fort Vancouver NHS Visitor Center*** - This project, also contained within the *Fort Vancouver National Historic Site General Management Plan* (2003), would remodel and enlarge the current visitor center as an NPS managed visitor center, with new exhibits regarding all historical elements related to the VNHR.
- ***Closing East 5th Street and Parking Plans*** - The preferred alternative from the general management plan calls for closing East 5th Street to general automobile traffic, and removing the current parking lot for the reconstructed HBC Fort Vancouver, relocating this parking into the southeastern portion of the East Barracks. Although this is the preferred alternative for the *Fort Vancouver National Historic Site General Management Plan* (2003), the National Park Service realizes that closing East 5th Street to general automobile traffic is likely infeasible due to the fact that the street is owned by the City of Vancouver. The City of Vancouver has determined that such a closure would be detrimental to automobile traffic flow and emergency vehicle routes in this part of town.

Columbia River Crossing Project - In 1998, WSDOT and Oregon Department of Transportation formed a bi-state partnership to study alternatives for the Interstate 5 Interstate bridges. Two studies resulted from the initial work, *The Portland/Vancouver I-5 Trade Corridor Freight Feasibility and Needs Assessment Study Final Report* (2000), and the *Portland/Vancouver I-5 Transportation and Trade Partnership Final Strategic Plan* (2002). This bi-state work included a variety of corridor-wide improvement and traffic management recommendations. One key recommendation called for adding capacity over the Columbia River with a replacement bridge or by supplementing existing Interstate 5 bridges to ease impacts of bottlenecks on local travel and interstate commerce. Another recommendation called for considering high-capacity transit improvements in the area of the Interstate 5 Interstate Bridge. WSDOT and Oregon Department of Transportation are focusing efforts on these recommendations in the CRC project. Additional study recommendations regarding freight rail capacity, land use, and transportation demand and system management are being addressed in other venues. (Washington Department of Transportation, March 2005).

The current Locally Preferred Alternative calls for a ten lane, two span bridge, with light rail and dedicated bicycle/pedestrian lanes (Figure 20). This bridge will be substantially higher than



Figure 20. A cropped image of the latest (June 2011) rendering of the Locally Preferred Alternative Aerial Image of the CRC project's projected bridge path. (Accessed from [http://columbiarivercrossing.org/Library/CRC Project Aerial Map](http://columbiarivercrossing.org/Library/CRC%20Project%20Aerial%20Map). June 2011)

the present ones, negatively altering the visible cultural landscape of the Vancouver Barracks. The proposed alignment would affect the western end of Fort Vancouver NHS and the VNHR, including a portion of the South Barracks. The Locally Preferred Alternative also calls for the transfer of up to three acres of archeologically sensitive land currently within the VNHR National Historic District. Potential mitigation measures being discussed between WSDOT and the National Park Service include the rehabilitation of building 405 in the South Barracks into a curation and museum space, the inclusion of sound walls along the right of way, and the inclusion of landscaping sensitive to the existing cultural landscapes. Related to this project as a community enhancement is an approved design concept for a large-scale pedestrian and multi-modal overpass that spans Interstate 5 and connects the VNHR to downtown Vancouver. The proposed installation, referred to as the Community Connector, would create a park-like setting over the

highway that would extend from Evergreen Boulevard at the northern edge to 7th Street at the southern edge. Final designs have not been developed.

Hazardous Material Clean up – Based upon the results of the Level II ESA completed in the spring of 2011, (which tested the East and South Barracks for a wide suite of potential environmental contaminants), the only contaminant in the soil that exceeded actionable ESL was lead. High concentrations of lead were discovered in soils around extant and non-extant historic structures, likely the result of the peeling of lead based paint from these structures. Currently the National Park Service and the U.S. Army are negotiating the details on how to address these findings. Cleanup would take place based on what is required by Federal and State agencies, using a risk based approach that gives due consideration to the possible impacts to sensitive archeological sites.

Management of Pearson Air Museum - Signed in 1994, the National Park Service and the City of Vancouver have a Memorandum of Agreement (MOA) designating the City of Vancouver, or its designated entity, to operate and manage the Pearson Air Museum complex, which is owned by the National Park Service. The City of Vancouver has subsequently signed (in 2005) a MOA with the Fort Vancouver National Trust to operate the Museum. The City of Vancouver has notified the National Park Service that due to budget constraints, it would be terminating its agreement with the National Park Service to operate the Museum on December 31, 2012. The National Park Service is currently working with the City of Vancouver and the Fort Vancouver National Trust regarding the continued operation of this important aspect of the NHS. A Long Range Interpretive Plan Addendum for Pearson Air Museum has begun with plans for completion in 2012.

Pearson Lease Extension - Currently, the City of Vancouver operates Pearson Field Airport, a municipal airfield, under a lease agreement with the National Park Service. The National Park Service owns the western half of the Pearson runway, and leases it to the City of Vancouver. The National Park Service and the City of Vancouver completed negotiations in 2011 to lease the western portion of the airfield to the City of Vancouver to allow the continued operation of the airfield to at least 2050, with restrictions on the numbers and types of aircraft that can fly from the field.

Downtown Vancouver Revitalization - In 1997 the City of Vancouver decided to dedicate the next 15–20 years to redeveloping and revitalizing a significant portion of the downtown core. The first projects started in the early 2000s with the construction of many tall condominium structures around Esther Short Park and in the Uptown Village neighborhood. The most lauded outside investment was the construction of a Hilton hotel directly across from this park. Recently, a new shopping complex has been built, including a Fred Meyer store, just outside of the downtown core and east of the VNHR. The *Columbian* newspaper has recently finished construction of a seven-story building, adjacent to the Hilton, which the City of Vancouver purchased and is redeveloping into a City Hall. The new Vancouver Municipal Library was constructed along C Street in downtown and opened in July 2011. In addition, there are these anticipated projects:

- *Riverwest* – Located on the west side of the Interstate 5 corridor, just opposite of the VNHR and the historic Post Hospital, this mixed-use project includes a condominium building, and an office building.
- *The Luxe* – Currently under construction, and located at 412 East 13th Street, just southwest of the intersection of Interstate 5 and East Mill Plain Boulevard, this will be a six-story office and condominium building.

- *Waterfront Redevelopment* – Located on the Columbia River waterfront, southwest of the present downtown area, this proposed development includes condominiums and apartments for over 10,000 residents, retail, offices, parks, and more.
- *Prestige Plaza* – A proposed development of two four-story buildings, including condominiums and offices. Located at 307 East Mill Plain Boulevard in downtown Vancouver, each building would hold 50 apartment units. Construction is slated to begin in the fall of 2011, with leasing to follow in the spring of 2012.

Impairment of National Park Resources

In addition to determining the environmental consequences of implementing the preferred and other alternatives, *NPS Management Policies 2006* (section 1.4) requires analysis of potential effects to determine whether or not proposed actions would impair a park's resources and values.

The fundamental purpose of the national park system, established by the Organic Act and reaffirmed by the General Authorities Act, as amended, begins with a mandate to conserve park resources and values. National Park Service managers must always seek ways to avoid, or to minimize to the greatest degree practicable, adverse impacts on park resources and values. However, the laws do give the National Park Service the management discretion to allow impacts on park resources and values when necessary and appropriate to fulfill the purposes of the park. That discretion is limited by the statutory requirement that the National Park Service must leave resources and values unimpaired unless a particular law directly and specifically provides otherwise.

The prohibited impairment is an impact that, in the professional judgment of the responsible NPS manager, would harm the integrity of park resources or values, including the opportunities that otherwise would be present for the enjoyment of those resources or values (National Park Service 2006). Whether an impact meets this definition depends on the particular resources that would be affected; the severity, duration, and timing of the impact; the direct and indirect effects of the impact; and the cumulative effects of the impact in question and other impacts.

An impact on any park resource or value may, but does not necessarily, constitute impairment. An impact would be more likely to constitute impairment to the extent that it affects a resource or value whose conservation is:

- necessary to fulfill specific purposes identified in the establishing legislation or proclamation of the park, or
- key to the natural or cultural integrity of the park or to opportunities for enjoyment of the park, or
- identified in the park's general management plan or other relevant NPS planning documents as being of significance.

Impairment findings are not necessary for visitor experience, socioeconomics, public health and safety, land use, or park operations, because impairment findings relate back to park resources and values.

CULTURAL RESOURCES

As expressed in the Affected Environment chapter, there are numerous cultural resources present at Fort Vancouver NHS, and most are listed as contributing elements to the VNHR National Historic District. As there are specific types of cultural resources present, and as each type may have specific management concerns, each type is addressed separately in this document. These

cultural resources types are: Archeological Resources, Cultural Landscapes and Vegetation, Museum Collections, and Historic Structures.

Guiding Regulations and Policies

The National Park Service is charged with management and protection of cultural resources through a variety of guidance documents and legislation in which NPS managers avoid, or minimize to the greatest degree practicable, adverse impacts on park resources and values. The following are the primary guidance documents used by the National Park Service for the management of cultural resources.

The NHPA, as amended, is the principal legislative authority for management of cultural resources located within national parks. It requires federal agencies to strive to minimize harm to historic properties that would be adversely affected by an undertaking. Section 106 of the NHPA requires all federal agencies to consider the effects of their actions on cultural resources determined eligible for inclusion in the NRHP (see discussion below). Section 110 of the NHPA, among other things, charges federal agencies with the responsibility to establish preservation programs for the identification, evaluation and nomination of cultural resources to the NRHP.

DO-28, Cultural Resources Management (National Park Service 1998) is the fundamental basis for managing cultural resources in the national park system. It contains park management standards and other requirements for cultural resources, including archeological resources, historic and prehistoric structures, museum collections, cultural landscapes and ethnographic resources. This document also addresses energy conservation and historic preservation. Federal agencies are required to reduce energy consumption; this guideline addresses the means to ensure preservation of historic material and character while conserving energy. For example, proposed retrofit measures would be reviewed by historical architects and/or landscape architects, and other cultural resources specialists who would consider whether (1) the evaluation of effect for compliance purposes is adequate; (2) the proposed action is planned and would be conducted in accordance with relevant management policies, guidelines, and standards; and (3) the proposal incorporates all feasible measures to minimize any adverse effects on cultural resources) (National Park Service 1998, Chapter 4).

NPS Management Policies 2006 outlines NPS management policies for cultural resources including the identification and evaluation of cultural resources, the integration of this information in planning and decision-making, and the stewardship to ensure that cultural resources are preserved and protected (National Park Service 2006a, 60).

Executive Order 13175 Consultation and Coordination with Indian Tribal Governments, November 6, 2000, provides for regular and meaningful consultation and collaboration with tribal officials in the development of Federal policies that have tribal implications.

DO-24, NPS Museum Collection Management (National Park Service 2008) and the Museum Property Act of 1955 as Amended both provide policy guidance, standards, and requirements for preserving, protecting, documenting and providing access to, and the use of, NPS museum collections.

Section 106 Compliance

This cultural resource analysis is intended to comply with the requirements of both NEPA and Section 106 of the NHPA (36 CFR Part 800, Protection of Historic Properties). A Section 106 determination of effects follows the conclusion statement for each alternative. The ACHP regulations for implementation of Section 106 require that impacts to historic resources be identified and evaluated by determining: (1) the area of potential effects (the area of geographic study); (2) identifying cultural resources present in the area of potential effects that are either

listed on or eligible for listing on the NRHP; (3) applying the criteria of adverse effect (see below) to affected cultural resources either listed on, or eligible for listing on, the NRHP; and (4) considering ways to avoid, minimize, or mitigate adverse effects.

Under the ACHP's regulations, a determination of either adverse effect or no adverse effect must be made for affected NRHP-listed or eligible cultural resources located within the area of potential effects. An adverse effect occurs whenever an impact alters, directly or indirectly, any characteristic of a cultural resource that qualifies it for inclusion in the NRHP. Adverse effects also include reasonably foreseeable effects caused by the proposal that would occur later in time, be farther removed in distance, or be cumulative (36 CFR 800.5, Assessment of Adverse Effects). The resolution of adverse effects can occur in a variety of ways, in accordance with 36 CFR 800.6, Resolution of Adverse Effects. A determination of no adverse effect means there is an effect, but the effect would not diminish, in any way, the characteristics of the cultural resource that qualify it for inclusion in the NRHP. All effect determinations are made in consultation with the Washington DAHP. To streamline the Section 106 process for the multi-variate potential effects to varied cultural resources as a result of implementing this *Environmental Assessment*, the National Park Service is drafting a Programmatic Agreement between the Washington DAHP, the ACHP, and any consulting tribes who wish to be signatories. This Programmatic Agreement sets forth recommended practices and responsibilities for each party of the agreement, to ensure that there will be no adverse effect to the many cultural resources present at the site as this *Environmental Assessment* is implemented.

In all cases where new cultural resources are discovered during project activities, or where it is discovered post-review that NRHP-eligible resources may be affected, potential adverse impacts to those NRHP-eligible resources would be coordinated by the park with the DAHP. For each of the impact threshold definitions and determinations below, there are statements specifically related to adverse impacts as defined in 36 CFR 800; which for the determinations are designated by a determination of effect, set in parentheses after the potential environmental impact is stated.

Assessment Methodology

The following describes the methodology used to evaluate the impacts to cultural resources that could result from implementation of each of the alternatives.

Area of Potential Effect

In accordance with the ACHP's regulations implementing Section 106, the "area of potential effects" is determined as the geographic area within which an undertaking may directly or indirectly cause alteration in the character or use of historic properties (36 CFR 800.16(d)). For analysis of effects to cultural resources for the East and South Barracks, the area of potential effect is comprised of two sections; the larger area surrounding the project site that could be indirectly affected, and the area on which the project would occur. These are defined as follows:

1. The indirect area of potential effects consists of the VNHR National Historic District and allows for a cumulative look at effects of the project on the NRHP property (Figure 1). The VNHR Historic District consists of a 336 acre area of terraced plains and shoreline comprising Fort Vancouver NHS, the Vancouver Barracks (West Barracks, East Barracks, and South Barracks), Pearson Field Airport, Pearson Air Museum, and Officers' Row (National Register Nomination Form, 2007). This larger district is historically and architecturally significant as a district because of the multi-layered effects of prehistoric and historic settlement that are key to the development and settlement of the Pacific Northwest as it is known today. The effects of the incorporation of the East and South Barracks into Fort Vancouver NHS within the historic district would be assessed for effects to the district's general integrity.

2. The direct area of potential effects is defined as the East and South Barracks (Figure 2). This is the area in which the greatest potential to affect cultural resources exists as a result of National Park Service rehabilitation and improvements activities (e.g., construction activities, infrastructure upgrades etc.).

Context

Local: Impacts to cultural resources occur within the vicinity of the East and South Barracks.

Regional: Impacts to cultural resources occur within the VNHR National Historic District.

HISTORIC STRUCTURES

As discussed in the Affected Environment chapter, Vancouver Barracks is the location of many historical buildings that encompass the entire history of the U.S. Army presence on the landscape of the VNHR. Twenty historical U.S. Army buildings, constructed between 1904 and 1940, remain within East and South Barracks. All of these structures are listed on the NRHP as contributing elements to the VNHR National Historic District.

Duration of Impacts: Potential impacts to historic structures are seen as only being long-term impacts.

Impact Intensities for historic structures are defined below:

Negligible: Effect is at the lowest levels of detection with no perceptible consequences. The determination of effect for Section 106 would be no adverse effect.

Minor: The impact would not affect the character defining features of a structure or building listed on or eligible for the NRHP. For purposes of Section 106, the determination of effect would be no adverse effect.

Moderate: The impact would alter a character defining feature(s) of the structure or building but would not diminish the integrity of the resource to the extent that its NRHP eligibility would be jeopardized. For purposes of Section 106, the determination of effect would be adverse effect.

Major: The impact would alter one or more character defining feature(s) of the structure or building, diminishing the integrity of the resource to the extent that it is no longer eligible to be listed on the NRHP. For purposes of Section 106, the determination of effect would be adverse effect.

Impacts of Alternative A—No Action

Under the no action alternative, all 20 of the existing historic structures (those that contribute to the VNHR National Historic District) would be retained. Still, only one historic structure (building 991) would be rehabilitated for National Park Service and, potentially, the Fort Vancouver National Trust administrative use. The remaining 19 structures would remain vacant with only limited historic structures rehabilitation (only that necessary to make specific structures compatible with the NPS mission, and for basic maintenance and life and safety issues). These structures would remain vacant and without rehabilitation efforts until viable tenants could be identified for them, placing these structures in a caretaking mode, which potentially degrades the structures through benign neglect. There is also the possibility that the empty buildings would become an attractive nuisance, and that resulting graffiti and damage would further impact the integrity of the structures. If left vacant long enough, this situation poses the possibility of adverse impacts to these major structures (adverse effect for Sec. 106).

Cumulative Effects

The impacts of Excess and Disposal of the West Vancouver Barracks from the U.S. Army to the City of Vancouver in 2007, in combination with the impacts of alternative A, would result in beneficial, long-term cumulative impacts to historic structures at the site. Although the many historic structures associated with the U.S. Army and the Vancouver Barracks are now and would be under separate ownership between the City of Vancouver and the National Park Service, the adaptive reuse efforts by the City of Vancouver with the West Barracks and on Officers' Row, help to preserve the greater and overall context of the U.S. Army's occupation and operation of the Vancouver Barracks as a whole. The continued preservation of these structures supports National Park Service efforts at preserving the historic structures within the East and South Barracks.

The potential impacts of the implementation of the CRC project, in combination with the impacts of alternative A, would result in minor, permanent adverse cumulative impacts to historic structures associated with the East Barracks. The current Locally Preferred Alternative plans for the CRC call for the conversion of up to 3 acres of VNHR land into highway right-of-way, and the right-of-way would closely parallel the western edge of the West Barracks portion of the VNHR. The new Interstate 5 highway alignment is proposed to be within five feet of the western wall of the Post Hospital structure located in the West Barracks—threatening the viability of rehabilitating the structure for future occupation and eventually the viability of the structure itself. However, the proposed Community Connector, and vibration monitoring plan for the Post Hospital, will mitigate the adverse effects to the Post Hospital. The CRC Locally Preferred Alternative is indicating a much greater height to the new bridge (as compared to the current bridges) and highway roadbed, and it appears that these new facilities would be quite visible from most of the South Barracks and from much of the East Barracks, changing the landscape views that are present now, which affects the context and setting for these historic properties. New sound walls, planting screening vegetation, and constructing the Community Connector overpass over Interstate 5 adjacent to the Post Hospital will limit visual and audible intrusions of traffic to the structure; mitigating the adverse effect to these resources. The new museum/curation facility in building 405 will mitigate adverse effects, both direct and indirect, associated with the VNHR National Historic District.

Conclusions

The no action alternative has the highest level of retention of historic structures (100%), yet has the lowest possibility of structural rehabilitation and proper caretaking for these historic structures, with rehabilitation efforts only occurring when viable tenants are identified who can help fund such efforts. From a distance, this scenario seems beneficial to the historic structures through their overall retention, yet without directed and quick attempts at rehabilitation and an appropriate budget and effort at upkeep; it is assumed that the structures could suffer from benign neglect within a relatively short period of time. This could result in the possibility of minor to moderate adverse impacts to these structures.

For purposes of Section 106 of the NHPA, structures listed in or eligible for the NRHP are expected to be adversely affected under this alternative (adverse effect for Sec. 106), see Table 16 below.

Impacts of Alternative B—A Vibrant, Urban District in a Historic Setting

Historic Building Rehabilitation. Under this alternative, 18 of the 20 historic structures in the East and South Barracks would be retained. Buildings 749 and 750, two contributing ca. 1941 storage sheds, could be removed. This would result in a long-term adverse major impact to the historic structures (adverse effect for Sec. 106). The remaining historic building exteriors would

generally be preserved while interiors would be rehabilitated for commercial, residential, and other uses. Rehabilitation is defined as:

...the act or process of making possible a compatible use for a property through repair, alteration, and additions while preserving those portions or features which convey its historical, cultural or architectural values (NPS 1996, 49).

Under rehabilitation, historic properties can be given new uses that require minimal change to their character as long as preservation is ensured. Treatment does not need to recreate a literal historic character in the landscape at any one point during the historic period, but rather preserve and enhance the multiple layers of development through ca. 1948, which is the end date of the NPS-defined periods of significance for the site.

Although all NPS rehabilitation efforts are guided by *The Secretary of the Interior's Standards for Historic Rehabilitation*, the rehabilitation efforts of the East and South Barracks historic structures under this alternative would be given the widest leeway to enhance their marketability for the proposed uses. These efforts would result in an improved state for existing and new uses of the historic structures. Still, in this alternative, there would be a high emphasis placed on the potential of rehabilitating structures into public residences, and these efforts may run counter to the Secretary of the Interior's Standards.

See "Historic Building Rehabilitation" under Elements Common to All Action Alternatives in the Alternatives chapter for details on rehabilitation treatment. The rehabilitation work, per Mitigation Measure CR-5 Treatment of Historic Properties and Landscape, would conform to appropriate guidance documents. Rehabilitation activities which allow for compatible uses of historic structures are therefore expected to result in long-term, localized, direct benefits to the Vancouver Barracks and Parade Ground cultural landscape and the larger VNHR National Historic District (no adverse effect for Sec. 106). In addition, there is the realization that in any of the action alternatives, there will be the necessity of introducing modern elements for improvements to accessibility and potentially for energy sustainability. Features such as elevators, access ramps, and fire escapes for accessibility; and solar panels, and improvements to the insulation factors for existing structures for energy sustainability will be considered for new construction and installation throughout the site. Each of these potential actions will be designed in consideration of *The Secretary of the Interior's Standards for Historic Preservation*, and are expected to have only minor adverse effects to these properties (no adverse effect for Sec. 106).

Removal of Historic Buildings. Although the final decisions for the removal of structures will be made on a case by case basis, under this alternative, buildings 749 and 750 could both be removed.

Buildings 749 and 750 are both storage structures constructed in 1941, and both contribute to the Vancouver Barracks cultural landscape and the VNHR National Historic District. The removal of both of these structures would be a moderate adverse impact to both the Vancouver Barracks cultural landscapes and the VNHR National Historic District (adverse effect for Sec. 106). Although these structures are contributing elements to the VNHR National Historic District, they are of small stature (just over 200 square feet each), and they are in poor condition. The environmental assessment process is not identifying a likely function for them. The mitigation stipulations for the removal of these structures are defined in the Programmatic Agreement for Sec. 106 of the NRHP being enacted between the National Park Service, the Washington DAHP, and consulting parties.

Cumulative Effects

As in alternative A, the impacts of the Excess and Disposal of the West Vancouver Barracks from the U.S. Army to the City of Vancouver in 2007, in combination with the impacts of alternative B, would result in beneficial, long-term, cumulative impacts to historic structures at the site.

Likewise, just like alternative A, the potential impacts of the implementation of the CRC project, in combination with the impacts of alternative A, would result in moderate, permanent adverse cumulative impacts to historic structures within the East Barracks.

Conclusions

This alternative presents an overall high percentage of retention of historic structures (18 of 20), yet more importantly, efforts at rehabilitation of the remaining structures would be directed and accomplished as quickly as funding could be obtained. The goal of preserving as many of the building exteriors in their historic guise, while adapting building interiors would generally be acceptable to *The Secretary of the Interior's Standards for Historic Structure Rehabilitation*; however there are concerns on the appropriateness of residential rehabilitation for some of these structures. Still, the rehabilitation of the East and South Barracks historic structures would be undertaken in a manner designed to preserve the character-defining features of the buildings which contribute to their significance (e.g., form structure, roofs, exterior materials, etc.). These efforts would result in an improved state for these structures and new uses of the historic structures and should limit potential impacts to negligible to minor levels.

For purposes of Section 106 of the NHPA, there would be no adverse effect on structures listed in or eligible for the NRHP (no adverse effect for Sec. 106). See Table 16 below.

Impacts of Alternative C—A Sustainable Public Service Campus (Preferred Alternative)

Historic Building Rehabilitation. Under this alternative, historic building exteriors would generally be preserved while interiors would be rehabilitated for commercial, residential, and other uses. Rehabilitation would have the same definition as presented in alternative B.

Removal of Historic Buildings. Although the final decisions for the removal of structures will be made on a case by case basis, under this alternative, buildings 422, 749, and 750 could all be removed.

Building 422, a ca. 1935 Quartermaster's Issue and Receiving Warehouse, is a contributing structure to the VNHR National Historic District. The removal of this structure would be a moderate impact to the VNHR National Historic District (adverse effect for Sec. 106), but would also be a benefit to the HBC cultural landscape. The removal of the structure would assist in restoring the viewshed of the reconstructed HBC Fort Vancouver from East 5th Street, while also enabling the National Park Service to restore more of the HBC Orchard and Gardens in this area. Still, the removal of this structure would necessitate the execution of a memorandum of agreement between the National Park Service and the State Historic Preservation Officer and, if necessary, the ACHP in accordance with 36 CFR 800.6(b).

Buildings 749 and 750 are both storage structures constructed in 1941, and both contribute to the Vancouver Barracks cultural landscape and the VNHR National Historic District. The removal of both of these structures would be a moderate adverse impact to both the Vancouver Barracks cultural landscapes and the VNHR National Historic District (adverse effect for Sec. 106). Although these structures are contributing elements to the VNHR National Historic District, they are of small stature (just over 200 square feet each), and they are in poor condition. The *Environmental Assessment* process is not identifying a likely function for them and rehabilitating them may not be worth the costs or effort required for keeping them. The mitigation stipulations for the removal of these structures are defined in the Programmatic Agreement for Sec. 106 of the NRHP being enacted between the National Park Service, the Washington DAHP, and consulting parties.

Cumulative Effects

Potential cumulative effects are identical to alternative B.

Conclusions

This alternative presents an overall high percentage of retention of historic structures (17 of 20), yet more importantly, efforts at rehabilitation of the remaining structures would be directed and accomplished as quickly as funding efforts could be accomplished. The goal of preserving as many of the building exteriors in their historic guise, while adapting building interiors would generally be acceptable to *The Secretary of the Interior's Standards for Historic Structure Rehabilitation*. It is likely that the adaptive reuse of most of these structures under office and retail guises would be more in keeping with the Secretary's standards than the residential possibilities expressed under alternative B. Likewise, the rehabilitation of the East and South Barracks historic structures would be undertaken in a manner designed to preserve the character-defining features of the buildings which contribute to their significance (e.g., form structure, roofs, exterior materials, etc.). These efforts would result in an improved state for these structures and new uses of the historic structures and should limit potential impacts to negligible to minor levels.

For purposes of Section 106 of the NHPA, there would be no adverse effect on structures listed in or eligible for the NRHP (no adverse effect for Sec. 106). See Table 16 below.

Impacts of Alternative D—An Historic, Educational Campus for All

Historic Building Rehabilitation. Under this alternative, there would be a heavier emphasis on attempting to reflect the overall historic development character of the post as a U.S. Army barracks, and the historic building exteriors would generally be preserved while interiors would be rehabilitated mostly for National Park Service, educational and community non-profit use. Rehabilitation would have the same definition as presented in alternative B.

Removal of Historic Buildings. Although the final decisions for the removal of structures will be made on a case by case basis, under this alternative, buildings 410 and 422 could be removed.

Building 410, a ca. 1935 Automotive Repair Shop, is a contributing structure to the VNHR National Historic District. The removal of this structure would be a moderate impact to the VNHR National Historic District (adverse effect for Sec. 106), but would also be a minor benefit to the HBC cultural landscape. The removal of the structure would restore the viewshed of the reconstructed HBC Fort Vancouver from East 5th Street, while also enabling the National Park Service to restore more of the HBC Orchard and Gardens in this area. The mitigation stipulations for the removal of these structures are defined in the Programmatic Agreement for Sec. 106 of the NRHP being enacted between the National Park Service, the Washington DAHP, and consulting parties.

Building 422, a ca. 1935 Quartermaster's Issue and Receiving Warehouse, is a contributing structure to the VNHR National Historic District. The removal of this structure would be a moderate impact to the VNHR National Historic District (adverse effect for Sec. 106), but would also be a minor benefit to the HBC cultural landscape. The removal of the structure would restore the viewshed of the reconstructed HBC Fort Vancouver from East 5th Street, while also enabling the National Park Service to restore more of the HBC Orchard and Gardens in this area. The mitigation stipulations for the removal of these structures are defined in the Programmatic Agreement for Sec. 106 of the NRHP being enacted between the National Park Service, the Washington DAHP, and consulting parties.

Cumulative Effects

Potential cumulative effects are identical to alternative B.

Conclusions

This alternative also presents an overall high percentage of retention of historic structures (18 of 20), and just as importantly, efforts at rehabilitation of the remaining structures would be directed and accomplished as quickly as funding could be obtained. The goal of preserving as many of the building exteriors in their historic guise, while adapting building interiors would generally be acceptable to *The Secretary of the Interior's Standards for Historic Structure Rehabilitation*. It is likely that the adaptive reuse of most of these structures under office, interpretation/visitor services, and arts/events/community guises would be more in keeping with the Secretary's Standards than, for example, the residential possibilities expressed under alternative B. Likewise, the rehabilitation of the East and South Barracks historic structures would be undertaken in a manner designed to preserve the character-defining features of the buildings which contribute to their significance (e.g., form structure, roofs, exterior materials, etc.). These efforts would result in an improved state for these structures and new uses of the historic structures and should limit potential impacts to negligible to minor levels.

For purposes of Section 106 of the NHPA, there would be no adverse effect on structures listed in or eligible for the NRHP (no adverse effect for Sec. 106). See Table 16 below.

Table 16. Section 106 Assessment of Effect on Historic Structures by Alternative

ALTERNATIVE	HISTORIC STRUCTURE TREATMENT	ASSESSMENT OF EFFECT
A	Retain all 20 historic structures, but only building 991 would be immediately rehabilitated.	Possibility of an Adverse Effect due to benign neglect of historic structures
B	Demolish contributing buildings 749 and 750	Adverse Effect
B	Retain and rehabilitate remaining historic structures for new commercial, residential and other uses	No Adverse Effect
C	Demolish contributing buildings 422, 749 and 750	Adverse Effect
C	Retain and rehabilitate remaining historic structures for new commercial, residential and other uses	No Adverse Effect
D	Demolish contributing buildings 410 and 422	Adverse Effect
D	Retain and rehabilitate remaining historic structures for new commercial, residential and other uses	No Adverse Effect

CULTURAL LANDSCAPES AND VEGETATION

As discussed in the Affected Environment chapter, there is a NPS-listed cultural landscape within the East Barracks, specifically labeled the Vancouver Barracks cultural landscape, as well as the Parade Ground cultural landscape that immediately adjoins the northern boundary of the East Barracks. These cultural landscapes constitute the built environment as well as the mix of historically planted and maintained vegetation that surrounds the built environment. In addition, the Washington Department of Fish and Wildlife lists much of the area associated with the East Barracks as an "Oak Woodland Priority Habitat," and the Washington Department of Fish and Wildlife has specific recommendations on how to manage this habitat for continued

vitality (Larsen and Morgan 1998). The presence of these oaks can be seen as both a natural and a cultural resource, representing the interplay between nature and human cultures (Figure 21).

Duration of Impacts: Potential impacts to *Cultural Landscapes and Vegetation* are only seen as long-term impacts.

Impact intensities for cultural landscape resources are defined below:

Negligible: The impact is at the lowest levels of detection or barely perceptible and not measurable. For purposes of Section 106, the determination of effect would be no adverse effect.

Minor: Adverse impact: The impact would not notably affect the character-defining features of a cultural landscape listed on or eligible for the NRHP. For purposes of Section 106, the determination of effect would be no adverse effect.

Moderate: Adverse impact: The impact would alter a character-defining feature or features of the cultural landscape but would not diminish the integrity of the landscape to the extent that its NRHP eligibility would be jeopardized. For purposes of Section 106, the determination of effect would be adverse effect.

Major: Adverse impact: The impact would alter a character-defining feature(s) of the cultural landscape, diminishing the integrity of the resource to the extent that it would no longer be



Figure 21. One of the Oregon white oak groves present in the East Barracks that are listed by the Washington Department of Fish and Wildlife as an “Oak Woodland Priority Habitat.” (National Park Service)

eligible to be listed on the NRHP. For purposes of Section 106, the determination of effect would be adverse effect. A memorandum of agreement is executed between the National Park Service and applicable State or Tribal Historic Preservation Officer and, if necessary, the ACHP in accordance with 36 CFR 800.6(b).

Impacts of Alternative A—No Action

Under this alternative, building 409 (a non-contributing hollow block construction storage shed) would be removed, and the National Park Service would conduct historical and archeological research on the possibility of reconstructing the HBC Summer House near this location. Utilizing correct methods, the removal of the existing structure, the archeological research in the location, and the subsequent reconstruction of the Summer House could all be done without damaging any archeological deposits *in situ*, thereby resulting in no adverse effect to these resources. The restoration of the Summer House would be beneficial to the HBC cultural landscape. In addition, efforts would be made to expand the HBC Orchard northwards up to the southern boundary of building 422.

Along with these changes, the current HBC Fort Vancouver parking lot south of East 5th Street would be greatly reduced in size (limited to only ADA parking needs), and the main visitor parking lot would be moved into the South Barracks, adjacent to buildings 410 and 422. This move would assist in restoring the HBC cultural landscape and obscure parked vehicles while at the same time providing a more centralized visitor parking location for all of the resources in and around Fort Vancouver NHS.

In the South Barracks, an attempt would be made to partially restore the ca. 1880s U.S. Army Maple Allée that once lined the historic McLoughlin Road, and efforts would be made to help preserve the remaining original trees. Although the reestablishment of the Maple Allée would partly reconstruct this historic road alignment, no attempt would be made to reconstruct the actual road or create a trail in its place. The reestablishment of this Allée would be a benefit to the cultural landscape, and could be done without impacts to the historic resource (no adverse effect for Sec. 106).

The row of mature Douglas-fir trees (that post-date ca. 1948) in front of buildings 987 through 993 have been determined to be non-contributing landscape features to the Vancouver Barracks cultural landscape. Due to their maturity and presence at the site, they will be maintained as is under this alternative, but when they naturally die, they will not be replaced (no adverse effect for Sec. 106). It is estimated that it may take another 50 to 100 years until all of these trees die from natural effects.

Throughout the East Barracks, intact military landscape features (ranging from structures to vegetation) would be preserved, rehabilitated and interpreted as much as possible. Only limited historic structures rehabilitation (only that necessary for basic maintenance and life and safety issues) would take place under the no action alternative. Therefore, there would be no impacts (no adverse effect for Sec. 106).

Cumulative Effects

A few local projects have the potential to cumulatively affect the cultural landscapes and vegetation of the East and South Barracks and the surrounding lands.

The excess and disposal of the West Barracks from the U.S. Army to the City of Vancouver, and the subsequent rehabilitation of the historic structures in the West Barracks for adaptive reuse

has “set the stage,” for the planned rehabilitation efforts by the National Park Service in the East and South Barracks. The adaptive reuse efforts in the West Barracks have preserved the historic barracks structures in the area, helping to keep the remaining contributing elements of the Vancouver Barracks and the VNHR National Historic District intact. These efforts, along with this project, would have a beneficial cumulative effect on the cultural landscapes in the East and South Barracks and the VNHR National Historic District as a whole.

The potential impacts of the implementation of the CRC project, in combination with the impacts of alternative A, would result in minor, permanent cumulative adverse impacts to historic structures associated with the East Barracks. The current Locally Preferred Alternative plans for the CRC call for the conversion of up to 3 acres of VNHR land into highway right-of-way. This right-of-way would closely parallel the western edge of the West Barracks portion of the VNHR. The new Interstate 5 highway alignment is proposed to be within five feet of the western wall of the Post Hospital structure located in the West Barracks—threatening the viability of rehabilitating the structure for future occupation and eventually the viability of the structure itself. However, the proposed Community Connector, and vibration monitoring plan for the Post Hospital will mitigate the adverse effects to the Post Hospital. The CRC Locally Preferred Alternative is indicating a much greater height to the new bridge and highway roadbed, and it appears that these new facilities would be quite visible from most of the South Barracks and from much of the East Barracks, changing the landscape views that are present now, which affects the context and setting for these historic properties. New sound walls, planting screening vegetation, and potentially constructing the Community Connector overpass over Interstate 5 adjacent to the Post Hospital will limit visual and audible intrusions of traffic to the structure; mitigating the adverse effect to these resources. The new museum/curation facility in building 405 will mitigate adverse effects, direct and indirect, associated with the VNHR National Historic District.

Conclusions

Under this alternative, no activities would occur that would adversely affect cultural landscapes and their associated vegetation. Specifically, measures would be taken to protect the groves of Oregon white oaks in the area. The implementation of mitigation measure CR-9 will ensure there is no impact to these trees. But, as pointed out above, there is the potential for adverse cumulative impacts to cultural landscapes from the CRC. Overall, impacts would be negligible, adverse or beneficial.

For purposes of Section 106 of the NHPA, no cultural landscapes listed in or eligible for the NRHP are expected to be adversely affected under this alternative (no adverse effect for Sec. 106), see Table 17 below.

Impacts of Alternative B—A Vibrant, Urban District in a Historic Setting

Landscape Treatment Options. Under this alternative, the overall landscape of the East and South Barracks would be rehabilitated for adaptive reuse to support new and expanded uses. These efforts would be done while at the same time attempting to preserve the contributing elements of the cultural landscape. The major objectives of landscape rehabilitation would be to enhance visitor appeal and attract a wider spectrum of residential and commercial uses for the property as well as enhance access and improve vehicular and pedestrian circulation. A greater number of newly designed site features would be installed under this alternative, such as shuttle stops, crosswalks, plazas, lighting, benches, street trees, picnic facilities, bike racks, and other site

furnishings. These improvements would be installed in accordance with accessibility standards and designed to be compatible with the cultural landscape (no adverse effect for Sec. 106). East Barracks buildings would be repainted, employing the same paint scheme used at Officers' Row and the West Barracks. Temporary and non-historic changes to buildings made by the U.S. Army would likely be reversed under this alternative in order to improve visual appeal.

Lush, ornamental plantings would also be most abundant under alternative B in order to enhance the visual appearance of the site. Although these plantings would not be historic *per se*, they would be chosen to be compatible with the cultural landscape and the existing ornamental plantings that the U.S. Army chose and utilized throughout the area. Plantings, which would be approved by the National Park Service prior to planting, might include: bigleaf maple, Douglas-fir, Oregon white oak, western red cedar, lilac, climbing rose, hybrid rhododendron, boxwood, hydrangea, viburnum, spirea, honeysuckle, azalea, and camellia. Based upon the appropriateness of these plantings from a cultural landscapes perspective, this treatment would be a minor adverse impact (no adverse effect for Sec. 106).

In addition to these ornamental plantings, there would be efforts made to enhance the HBC and Vancouver Barracks cultural landscapes through vegetation restoration efforts. Specifically, most of the current HBC Fort Vancouver public parking lot on East 5th Street would be removed (with a new parking lot constructed in the South Barracks), and the lot area would be restored to a grass field to help interpret the HBC-period farming activities in this area.

In addition, the National Park Service would continue its efforts to restore the HBC Garden and Orchard. With the removal of the existing cyclone fence around the present National Park Service-U.S. Army boundary in the South Barracks, it would be possible to expand these interpretive elements into the South Barracks area, at least up to the southern face of building 422. These efforts would be a minor benefit to the HBC Cultural Landscape (no adverse effect for Sec. 106). Likewise, efforts will be made to preserve and enhance the existing groves of Oregon white oak trees.

The row of mature Douglas-fir trees (that post-date ca. 1948) in front of buildings 987 through 993 have been determined to be non-contributing landscape features to the Vancouver Barracks cultural landscape. Due to their maturity and presence at the site, they will be maintained as is under this alternative, but when they naturally die, they will not be replaced (no adverse effect for Sec. 106). It is estimated that it may take another 50 to 100 years until all of these trees die from natural effects.

Finally, efforts would be made to restore the ca. 1880s maple, oak, and buckhorn tree Allée of the former McLoughlin Road in the area that currently bounds the HBC Village and South Barracks. This restoration would entail the removal of upwards of 3 feet of sedimentary fill and the elimination of "tree wells" where 1880s-period heritage trees are still growing. These landscape restoration efforts should not affect these trees, and should actually benefit their livelihood (no adverse effect for Sec. 106). Saplings of like-kind could then be planted in the locations where heritage trees are presently missing, helping to further delineate this historic roadway. In addition, a decomposed granite trail replicating the pathway of the historic McLoughlin Road would be constructed within the Maple Allée, connecting in a loop with the existing Land Bridge trail in the HBC Village.

Under alternative B, most of the existing transportation, access and circulation routes for automobiles, pedestrians and cyclists will remain the same as they are now. The only major proposed change to automobile routes is the reorientation of the southern portion of Alvord Road to intersect with East 5th Street, rather than turning west towards Fort Vancouver Way. This

proposed change would reorient one of the oldest road beds in the VNHR, as it appears from historic maps and sketches of the 19th century that Alvord Road was an existing HBC-period road when the U.S. Army arrived. Although this reorientation may be a safety improvement and ease traffic and circulation concerns, it alters this character defining element of the HBC and Vancouver Barracks cultural landscapes enough to be classified as a moderate impact (adverse effect for Sec. 106). In addition, the existing Fort Vancouver parking lot on East 5th Street will be reduced in size, only being available for drop offs of pedestrians and handicap parking, while a new visitor parking lot will be developed in the South Barracks, adjacent to buildings 410 and 422. This proposal will create more replica agricultural fields, a beneficial impact to the HBC cultural landscape.

The implementation of these efforts would provide benefits to both the HBC and the Vancouver Barracks cultural landscapes (no adverse effect for Sec. 106).

Removal of Historic Buildings. Although the final decisions for the removal of structures will be made on a case by case basis, under this alternative, buildings 749 and 750 could both be removed. The loss of these contributing structures would be an adverse effect to these structures themselves, yet would have a minimal effect on the Vancouver Barracks cultural landscape in the East Barracks (no adverse effect for Sec. 106).

Buildings 749 and 750 are both storage structures constructed in 1941, and both contribute to the VNHR National Historic District. The removal of both of these structures would be a moderate adverse impact to both the Vancouver Barracks cultural landscapes and the VNHR National Historic District (adverse effect for Sec. 106). Although these structures are contributing elements to the VNHR National Historic District, they are of small stature (just over 200 square feet each), and they are in poor condition. The environmental assessment process is not identifying a likely function for them and rehabilitating them may not be worth the costs or effort required. The mitigation stipulations for the removal of these structures are defined in the Programmatic Agreement for Sec. 106 of the NRHP being enacted between the National Park Service, the Washington DAHP, and consulting parties.

Removal of Non-Historic Buildings. Although the final decisions for the removal of structures will be made on a case by case basis, under this alternative, buildings 409, 710, and 787 could all be removed.

Building 409, a hazardous materials storage shed in the South Barracks constructed in the 1980s, would be removed. This hollow block structure with one open face is intrusive to the HBC and the Vancouver Barracks cultural landscapes as well as the VNHR National Historic District, and its removal would be a minor benefit to both of these cultural landscapes. The improvement to these cultural landscapes would also provide a tangible benefit to the contexts and setting of the nearby remaining historic structures (no adverse effect for Sec. 106).

Building 710, a munitions storage structure constructed in 1979, is intrusive to the Vancouver Barracks cultural landscape and the VNHR National Historic District. Its removal would be a minor benefit to the Vancouver Barracks cultural landscapes and the VNHR National Historic District. The improvement to these cultural landscapes would also provide a tangible benefit to the contexts and setting of the nearby remaining historic structures (no adverse effect for Sec. 106).

Building 787, a storage structure of unknown date and origin (but certainly post-dating 1970), is intrusive to the Vancouver Barracks cultural landscape and the VNHR National Historic District. Its removal would be a minor benefit to the Vancouver Barracks cultural landscapes and the VNHR National Historic District. The improvement to these cultural landscapes would also

provide a tangible benefit to the contexts and setting of the nearby remaining historic structures (no adverse effect for Sec. 106).

Cumulative Effects

Cumulative impacts would be as described under alternative A; they would result in both long-term beneficial and moderate adverse, permanent cumulative impacts to cultural landscapes.

Conclusions

Under this alternative, some activities would occur that would adversely affect cultural landscapes. The removal of buildings 749 and 750 is an adverse effect to these structures themselves, and will also have a moderate adverse effect on the Vancouver Barracks cultural landscape (adverse effect for Sec. 106). There would be no contribution to any cumulative impacts, but as pointed out above, there is the potential for cumulative impacts to cultural landscapes. Overall, impacts would be beneficial and would enhance cultural landscapes associated with both the HBC and the U.S. Army (no adverse effect for Sec. 106).

The remaining proposed activities under this alternative would provide either negligible adverse or beneficial effects to the available cultural landscapes associated with the East and South Barracks. Specifically, efforts will be made to preserve and enhance existing vegetation, such as the groves of Oregon white oak trees. The implementation of mitigation measure CR-9 will ensure there is no impact to these priority species trees.

For purposes of Section 106 of the NHPA, the proposed removal of buildings 749 and 750 would be an adverse effect to the Vancouver Barracks cultural landscape (adverse effect for Sec. 106), see Table 17 below.

Impacts of Alternative C—A Sustainable Public Service Campus (Preferred Alternative)

Landscape Treatment Options. Much like alternative B, the overall landscape of the East and South Barracks would be rehabilitated for adaptive reuse to support new and expanded uses, while preserving contributing landscape resources. These efforts would have an emphasis on not only enhancing access and improving vehicular and pedestrian circulation, but also actively interpreting historic conditions. These historic conditions would concentrate on the history of the HBC south of East 5th Street and the early/late military history in the East Barracks, as defined in the Affected Environment chapter. In keeping with the preferred alternative's emphasis on sustainable practices, the National Park Service would explore the use of cisterns for rainwater capture, solar panels, geothermal heat sources, and other technologies in ways that do not intrude on the cultural landscape but still provide opportunities for educating the public on these practices (no adverse effect for Sec. 106).

In addition, the National Park Service would continue its efforts to restore the HBC Garden and Orchard. These efforts would be partially achieved with the removal of building 422 and the existing cyclone fence around the present National Park Service-U.S. Army boundary in the South Barracks. With these U.S. Army features removed, it would be possible to expand the HBC Garden and Orchard back into the South Barracks, at least up to the proposed public parking lot in the area. As part of the HBC Garden restoration effort, the National Park Service would conduct historical and archeological research on the possibility of reconstructing the HBC Summer House near building 410. Likewise, efforts will be made to preserve and enhance

the groves of Oregon white oak trees in the area. The implementation of these efforts would be a moderate impact to the Vancouver Barracks cultural landscape by the removal of building 422, a contributing structure to the VNHR National Historic District (adverse effect for Sec. 106). At the same time, the removal of this structure, and the subsequent restoration of the HBC Orchard and Garden would be a moderate benefit to the HBC cultural landscape (no adverse effect for Sec. 106).

Finally, efforts would be made to restore the ca. 1880s Maple Allée along the former McLoughlin Road in the area that currently bounds the HBC Village and the South Barracks. This restoration would entail the removal of upwards of 3 feet of sedimentary fill and the elimination of “tree wells” where 1880s-period heritage trees are still growing. Saplings of like-kind could then be planted in the locations where heritage trees are presently missing, helping to further delineate this historic roadway. In addition, a decomposed granite trail replicating the pathway of the historic McLoughlin Road would be constructed within the Allée, connecting in a loop with the existing Land Bridge trail in the HBC Village. In addition to these efforts, the preferred alternative calls for the partial restoration of the HBC Village north-south road alignment through the South Barracks by the removal of most of the pavement and sedimentary fill in the area between buildings 404 and 405. This highly significant area has the remains of no less than four HBC Village structures, including two that may be directly associated with known HBC French-Canadian employees. The removal of the pavement and sedimentary fill from this area would allow access to these archeological sites for additional archeological research (they were last researched in 1980), and would potentially allow the National Park Service to reconstruct some of these structures and their associated roadways (as degraded granite or other compatible surface material pedestrian trails) and other landscape features.

The row of mature Douglas-fir trees (that appear to post-date ca. 1948) in front of buildings 987 through 993 have been determined to be non-contributing landscape features to the Vancouver Barracks cultural landscape. To improve resource conditions, visitor experience, building conditions, and public safety, the National Park Service would choose not to replace these trees as they age, become diseased or damaged through time (no adverse effect for Sec. 106).

Alternative C proposes substantial alterations to the existing transportation, access and circulation routes for automobiles, pedestrians and cyclists, specifically in the East Barracks. Much like alternative B, it is proposed to have the southern portion of Alvord Road intersect with East 5th Street, rather than turning west towards Fort Vancouver Way. This proposed change would reorient one of the oldest road beds in the VNHR, as it appears from historic maps and sketches of the 19th century that Alvord Road was an existing HBC-period road when the U.S. Army arrived. Although this reorientation may be a safety improvement and ease traffic and circulation concerns, it alters this character defining element of the HBC and Vancouver Barracks cultural landscapes enough to be classified as a moderate adverse effect for Sec. 106. This alternative also proposes to reconnect the eastern terminus of McClelland Road with the Park Road, reconnecting this historic east to west oriented route, which will be a beneficial impact to the Vancouver Barracks cultural landscape (no adverse effect for Sec. 106). This alternative also proposes to remove the gravel parking lot south of building 987 and the paved lot and road east of building 721 in an effort to restore the green space associated with the HBC Cemetery. This will be a beneficial impact to the HBC cultural landscape in this area, and as it does not alter paved or lot areas that pre-date World War II, it will not alter character defining elements of the Vancouver Barracks cultural landscape (no adverse effect for Sec. 106). In addition, the existing Fort Vancouver parking lot on East 5th Street will be reduced in size, only being available for drop offs of pedestrians and handicap parking, while a new visitor parking lot will be

developed in the South Barracks, adjacent to building 410. This proposal will create more replica agricultural fields, a beneficial impact to the HBC cultural landscape.

Overall, the implementation of these efforts would provide benefits to both the HBC and the Vancouver Barracks cultural landscapes (no adverse effect for Sec. 106).

Removal of Historic Buildings. Although the final decisions for the removal of structures will be made on a case by case basis, under this alternative, buildings 422, 749, and 750 could all be removed. The loss of these contributing structures would be an adverse effect to these structures themselves, yet would actually improve the HBC cultural landscape in the area north of the reconstructed Fort Vancouver, and would have a minimal effect on the Vancouver Barracks cultural landscape in the East Barracks.

Building 422, a ca. 1935 Quartermaster's Issue and Receiving Warehouse, is a contributing structure to the VNHR National Historic District. The removal of this structure would be a moderate impact to the VNHR National Historic District (adverse effect for Sec. 106), but would also be a minor benefit to the HBC cultural landscape. The removal of the structure would assist in restoring the viewshed of the reconstructed HBC Fort Vancouver from East 5th Street, while also enabling the National Park Service to restore more of the HBC Orchard and Gardens in this area. The mitigation stipulations for the removal of these structures are defined in the Programmatic Agreement for Sec. 106 of the NRHP being enacted between the National Park Service, the Washington DAHP, and consulting parties.

Buildings 749 and 750 are both storage structures constructed in 1941, and both contribute to the VNHR National Historic District. The removal of both of these structures would be a moderate adverse impact to both the Vancouver Barracks cultural landscapes and the VNHR National Historic District (adverse effect for Sec. 106). Although these structures are contributing elements to the VNHR National Historic District, they are of small stature (just over 200 square feet each), and they are in poor condition. The environmental assessment process has not identified a likely function for them and rehabilitating them may not be worth the costs or effort required. The mitigation stipulations for the removal of these structures are defined in the Programmatic Agreement for Sec. 106 of the NRHP being enacted between the National Park Service, the Washington DAHP, and consulting parties.

Removal of Non-Historic Buildings. Although the final decisions for the removal of structures will be made on a case by case basis, under this alternative, buildings 409, 422, 710, and 787 could be removed.

Building 409, a hazardous materials storage shed in the South Barracks constructed in the 1980s, would be removed. This hollow block structure with one open face is intrusive to the HBC and the Vancouver Barracks cultural landscapes as well as the VNHR National Historic District, and its removal would be a minor benefit to both of these cultural landscapes. The improvement to these cultural landscapes would also provide a tangible benefit to the contexts and setting of the nearby remaining historic structures (no adverse effect for Sec. 106).

Building 710, a munitions storage structure constructed in 1979, is intrusive to the Vancouver Barracks cultural landscape and the VNHR National Historic District. Its removal would be a minor benefit to the Vancouver Barracks cultural landscape and the VNHR National Historic District (no adverse effect for Sec. 106). The improvement to these cultural landscapes would also provide a tangible benefit to the contexts and setting of the nearby remaining historic structures (no adverse effect for Sec. 106).

Building 787, a storage structure of unknown date and origin (but certainly post-dating 1970), is intrusive to the Vancouver Barracks cultural landscape and the VNHR National Historic District. Its removal would be a minor benefit to the Vancouver Barracks cultural landscapes and the VNHR National Historic District (no adverse effect for Sec. 106). The improvement to these cultural landscapes would also provide a tangible benefit to the contexts and setting of the nearby remaining historic structures (no adverse effect for Sec. 106).

Cumulative Effects

Cumulative impacts would be as described under alternative A; they would result in both minor long-term beneficial and moderate adverse, permanent cumulative impacts to cultural landscapes.

Conclusions

Under this alternative, some activities would occur that would adversely effect cultural landscapes. The proposed removal of building 422 in the South Barracks is an adverse effect to this structure itself, but will not have an adverse effect on the HBC or Vancouver Barracks cultural landscapes. The removal of buildings 749 and 750 is also an adverse effect to these structures themselves, and will also have a moderate adverse effect on the Vancouver Barracks cultural landscape (adverse effect for Sec. 106). There would be no contribution to any cumulative impacts, but as pointed out above, there is the potential for cumulative impacts to cultural landscapes. Overall, impacts would be beneficial and would enhance cultural landscapes associated with both the HBC and the U.S. Army (no adverse effect for Sec. 106).

The remaining proposed activities under this alternative would provide either negligible adverse or beneficial effects to the available cultural landscapes associated with the East and South Barracks. For instance, efforts will be made to preserve and enhance existing vegetation, such as the groves of Oregon white oak trees. The implementation of mitigation measure CR-9 will help ensure there is no impact to these priority species trees.

For purposes of Section 106 of the NHPA, the proposed removal of buildings 749 and 750 would be an adverse effect to the Vancouver Barracks cultural landscape (adverse effect for Sec. 106), see Table 17 below.

Impacts of Alternative D—An Historic, Educational Campus for All

Landscape Treatment Options. Much like alternative B, the overall landscape of the East and South Barracks would be rehabilitated for adaptive reuse to support new and expanded uses, while preserving contributing landscape resources. These efforts would have an emphasis on not only enhancing access and improving vehicular and pedestrian circulation, but also actively interpreting historic conditions. Much like alternative C, these historic conditions would concentrate on the history of the HBC in the South Barracks and the early/late military history in the East Barracks.

In addition, under this alternative, the National Park Service would maximize its efforts to restore the HBC Garden and Orchard. These efforts would be achieved with the removal of buildings 409, 410 and 422 and the existing cyclone fence around the present National Park Service-U.S. Army boundary in the South Barracks, and the subsequent expansion of the HBC Garden and Orchard back into the South Barracks area. These efforts would also be maximized as the public parking lot for the reconstructed HBC Fort Vancouver would not be moved from its current

location, allowing for the full restoration of the Garden and Orchard. As part of the HBC Garden restoration effort, the National Park Service would conduct historical and archeological research on the possibility of reconstructing the HBC Summer House near building 410. The implementation of these efforts would be a moderate adverse impact to the Vancouver Barracks cultural landscape by the removal of buildings 410 and 422, both contributing structures to the VNHR National Historic District (adverse effect for Sec. 106). At the same time, the removal of these structures, and the subsequent restoration of the HBC Orchard and Garden would be a benefit to the HBC cultural landscape (no adverse effect for Sec. 106). Similarly, efforts will be made to preserve and enhance the groves of Oregon white oak trees in the area.

The row of mature Douglas-fir trees (that appear to post-date ca. 1948) in front of buildings 987 through 993 have been determined to be non-contributing landscape features to the Vancouver Barracks cultural landscape. In order to reinstate the open views of the facades of buildings 987 through 993 across the Parade Ground this row of trees will be removed under this alternative. The removal of these trees will be done in an archeologically sensitive manner with trained archeological monitors on site during their removal, and limited use of a stump grinder to minimize sub-surface disturbance that may disturb intact archeological deposits (no adverse effect for Sec. 106).

Alternative D proposes substantial alterations to the existing transportation, access and circulation routes for automobiles, pedestrians and cyclists, specifically in the East Barracks. Although Alvord Road will remain overall intact, it will be restricted to pedestrian and cyclist use only south of its intersection with Hatheway Road. This can likely be accomplished with the installation of bollards at this intersection, and overall it should not alter this character defining element of both the HBC and Vancouver Barracks cultural landscapes making for a negligible adverse impact (no adverse effect for Sec. 106). Much like alternative C, this alternative proposes to reconnect the eastern terminus of McClelland Street with the Park Road, reconnecting this historic east to west oriented route, which will be a beneficial impact to the Vancouver Barracks cultural landscape (no adverse effect for Sec. 106). The west end of McClelland Road (west of building 989), will also become a pedestrian and bicyclist only route through the use of the installation of bollards (no adverse effect for Sec. 106). This alternative also proposes to remove the gravel parking lot south of building 987 and the paved lot and road east of building 721 in an effort to restore the green space associated with the HBC Cemetery. This will be a beneficial impact to the HBC cultural landscape in this area, and as it does not alter paved or lot areas that pre-date World War II, it will not alter character defining elements of the Vancouver Barracks cultural landscape (no adverse effect for Sec. 106). In addition, the existing Fort Vancouver parking lot on East 5th Street will be reduced in size, only being available for drop offs of pedestrians and handicap parking, while a new visitor parking lot will be developed in the East Barracks, adjacent to buildings 754 and 786. This proposal will create more replica agricultural fields, a beneficial impact to the HBC cultural landscape (no adverse effect for Sec. 106).

Removal of Historic Buildings. Although the final decisions for the removal of structures will be made on a case by case basis, under this alternative, buildings 410 and 422 could both be removed. The loss of these contributing structures would be an adverse effect for the structures themselves, yet would actually improve the HBC cultural landscape in the area north of the reconstructed Fort Vancouver (no adverse effect for Sec. 106).

Building 410, a ca. 1935 Automotive Repair Shop, is a contributing structure to the VNHR National Historic District. The removal of this structure would be a moderate impact to the VNHR National Historic District, but would also be a minor benefit to the HBC cultural landscape (no adverse effect for Sec. 106). The removal of the structure would restore the

viewshed of the reconstructed HBC Fort Vancouver from East 5th Street, while also enabling the National Park Service to restore more of the HBC Orchard and Gardens in this area. The mitigation stipulations for the removal of these structures are defined in the Programmatic Agreement for Sec. 106 of the NRHP being enacted between the National Park Service, the Washington DAHP, and consulting parties.

Building 422, a ca. 1935 Quartermaster's Issue and Receiving Warehouse, is a contributing structure to the VNHR National Historic District. The removal of this structure would be a moderate impact to the VNHR National Historic District, but would also be a minor benefit to the HBC cultural landscape (no adverse effect for Sec. 106). The removal of the structure would restore the viewshed of the reconstructed HBC Fort Vancouver from East 5th Street, while also enabling the National Park Service to restore more of the HBC Orchard and Gardens in this area. The mitigation stipulations for the removal of these structures are defined in the Programmatic Agreement for Sec. 106 of the NRHP being enacted between the National Park Service, the Washington DAHP, and consulting parties.

Removal of Non-Historic Buildings. Although the final decisions for the removal of structures will be made on a case by case basis, under this alternative, buildings 400, 401, 402, and 409 could all be removed.

Building 400, a non-historic vehicle maintenance structure in the South Barracks constructed in the 1980s, would be removed. This masonry structure with large bay doors is intrusive to the HBC and the Vancouver Barracks cultural landscapes as well as the VNHR National Historic District, and its removal would be a minor benefit to both of these cultural landscapes (no adverse effect for Sec. 106). The improvement to these cultural landscapes would also provide a tangible benefit to the contexts and setting of the nearby remaining historic structures (no adverse effect for Sec. 106).

Building 401, a non-historic hazardous materials storage shed in the South Barracks constructed in the 1980s, would be removed. This hollow block structure with one open face is intrusive to the HBC and the Vancouver Barracks cultural landscapes as well as the VNHR National Historic District, and its removal would be a minor benefit to both of these cultural landscapes (no adverse effect for Sec. 106). The improvement to these cultural landscapes would also provide a tangible benefit to the contexts and setting of the nearby remaining historic structures (no adverse effect for Sec. 106).

Building 402, a non-historic vehicle maintenance structure in the South Barracks constructed in the 1980s, would be removed. This masonry structure with large bay doors is intrusive to the HBC and the Vancouver Barracks cultural landscapes as well as the VNHR National Historic District, and its removal would be a minor benefit to both of these cultural landscapes (no adverse effect for Sec. 106). The improvement to these cultural landscapes would also provide a tangible benefit to the contexts and setting of the nearby remaining historic structures (no adverse effect for Sec. 106).

Building 409, a hazardous materials storage shed in the South Barracks constructed in the 1980s, would be removed. This hollow block structure with one open face is intrusive to the HBC and the Vancouver Barracks cultural landscapes as well as the VNHR National Historic District, and its removal would be a minor benefit to both of these cultural landscapes (no adverse effect for Sec. 106). The improvement to these cultural landscapes would also provide a tangible benefit to the contexts and setting of the nearby remaining historic structures (no adverse effect for Sec. 106).

Cumulative Effects

Cumulative impacts would be as described under alternative A; they would result in both minor long-term beneficial and moderate adverse, permanent cumulative impacts to cultural landscapes.

Conclusions

Under this alternative, no activities would occur that would adversely affect cultural landscapes. The proposed removal of buildings 410 and 422 in the South Barracks is an adverse effect to these structures themselves, but will not have an adverse effect on the HBC or Vancouver Barracks cultural landscapes. There would be no contribution to any cumulative impacts, but as pointed out above, there is the potential for cumulative impacts to cultural landscapes. Overall, impacts would be beneficial and would enhance cultural landscapes associated with both the HBC and the U.S. Army. Specifically, efforts will be made to preserve and enhance existing vegetation, such as the groves of Oregon white oak trees. Implementation of mitigation measure CR-9 will help ensure there is no impact to these priority species trees.

For purposes of Section 106 of the NHPA, although the removal of contributing structures to the VNHR National Historic District is an adverse effect, no cultural landscapes listed in or eligible for the NRHP are expected to be adversely affected under this alternative (no adverse effect for Sec. 106), see Table 17 below.

Table 17. Section 106 Assessment of Effect of Key Actions by Alternative on Cultural Landscape Resources

ALTERNATIVE	CULTURAL LANDSCAPE/AREA OF POTENTIAL IMPACT	TREATMENT	ASSESSMENT OF EFFECT
A	HBC Cultural Landscape Restoration	Reconstruct Summer House, Restore Orchard, Restore McLoughlin Road Maple Allée (without a trail), Relocate Fort Parking	No Adverse Effect
B	Vancouver Barracks Landscape Rehabilitation	Maximizing aesthetic appeal with lush, ornamental plantings; Preserve contributing existing landscape resources	No Adverse Effect
B	Vancouver Barracks Landscape Rehabilitation	Removal of buildings 749 and 750	Adverse Effect
B	HBC Cultural Landscape Restoration	Restore McLoughlin Road Maple Allée (with a trail running through it); Partially restore HBC Orchard	No Adverse Effect
B	Reorientation of Traffic, Access and Circulation Routes	Reorient Alvord Road into East 5th Street	Adverse Effect
C	Vancouver Barracks Landscape Rehabilitation	Overall landscape to be rehabilitated with focus of military history in the East Barracks and the removal of buildings 749 and 750	Adverse Effect

Table 17. Continued

ALTERNATIVE	CULTURAL LANDSCAPE/AREA OF POTENTIAL IMPACT	TREATMENT	ASSESSMENT OF EFFECT
C	HBC Cultural Landscape Restoration	A robust HBC cultural landscape restoration including: the move of the HBC Fort Vancouver parking lot into the South Barracks, the partial restoration of the HBC Orchard and Garden, and the associated Summer House, the partial restoration of the HBC Cemetery by the removal of existing parking lots and some minor roads on the HBC Cemetery	No Adverse Effect
C	HBC Cultural Landscape Restoration	The removal of building 422	No Adverse Effect
C	Reorientation of Traffic, Access and Circulation Routes	Reorient Alvord Road into East 5th Street	Adverse Effect
C	Reorientation of Traffic, Access and Circulation Routes	Reconnect McClelland Road into the Park Road	No Adverse Effect
D	Vancouver Barracks Landscape Rehabilitation	Overall landscape to be rehabilitated with focus of military history in the East Barracks	No Adverse Effect
D	HBC Cultural Landscape Restoration	A robust HBC cultural landscape restoration including: the move of the HBC Fort Vancouver parking lot into the South Barracks, the partial restoration of the HBC Orchard and Garden, and the associated Summer House, the partial restoration of the HBC Cemetery by the removal of existing parking lots and some minor roads on the Cemetery	No Adverse Effect
D	Reorientation of Traffic, Access and Circulation Routes	Convert portions of Alvord Road and McClelland Road into pedestrian and cyclist access only	No Adverse Effect
D	Reorientation of Traffic, Access and Circulation Routes	Reconnect McClelland Road to the Park Road	No Adverse Effect
D	HBC Cultural Landscape Restoration	The removal of buildings 410 and 422	No Adverse Effect

ARCHEOLOGICAL RESOURCES

As stated in the Affected Environment section of this document, Fort Vancouver NHS is the premier historical archeological site in the Pacific Northwest, and deposits of sub-surface archeological materials are both known to be, and likely to be, endemic to the project area. Due to the non-renewable nature of archeological resources, adverse impacts are considered permanent.

Assessment Methodology

To comply with Section 106 of the NHPA, archeological testing and evaluation work would focus on areas slated for park development and rehabilitation, and then proceed to other park areas. Archeological work would be integrated with the park's existing Geographic Information System. Additional archival research would be conducted to identify and preliminarily assess any intact and potentially contributing archeological resources that are discovered. Interested and consulting parties, including the Washington DAHP and appropriate American Indian tribes would be consulted and notified about the proposed undertakings.

Archeological testing and evaluation would be conducted as needed to determine the significance of archeological resources that could be impacted by park projects within the East and South Barracks. Wherever possible, reconstruction, trail and road development, and other projects would seek to avoid archeological resources that are intact and contribute to the significance of the VNHR National Historic District. Any future archeological investigations would follow the highest standards for scientific investigations using state of the art remote sensing and excavation techniques. Where possible, as much of the actual archeological resources would be left *in situ*. If it is not possible to avoid significant archeological deposits for a proposed undertaking, a data recovery or other mitigation plan would be developed and implemented. Artifacts collected during testing and evaluation work would be cataloged to the *Secretary of the Interior's Standards* and curated at the Fort Vancouver NHS curation facility.

Duration of Impacts: Potential impacts to archeological resources are only seen as permanent impacts.

Impact intensities for archeological resources are defined below:

Negligible: The impact is at the lowest level of detection or barely measurable, with no perceptible consequences, either adverse or beneficial, to archeological resources. For purposes of Section 106, the determination of effect would be no adverse effect.

Minor: Disturbance of a site(s) results in little loss of integrity or important information potential, and the qualities of the site(s) are retained. For purposes of Section 106, the determination of effect would be no adverse effect.

Moderate: Disturbance of a site(s) results in loss of integrity but not a substantial loss of important data related to either the site's significance or other NHPA criteria associated with the archeological resource. For purposes of Section 106, the determination of effect would be adverse effect. A memorandum of agreement is executed between the National Park Service and the Washington DAHP and, if necessary, the ACHP in accordance with 36 CFR 800.6(b).

Major: Disturbance of a site would be substantial and would result in the loss of most or all of the site and its potential to yield important information. For purposes of Section 106, the determination of effect would be adverse effect. A memorandum of agreement is executed between the National Park Service and the Washington DAHP and, if necessary, the ACHP in accordance with 36 CFR 800.6(b).

Impacts of Alternative A—No Action

Ground Disturbance. Under this alternative, there is no directly anticipated ground disturbance associated with specific projects, as there would be no development and limited rehabilitation projects. There is however, the likelihood of limited ground disturbance necessary for the emergency repairs of the sub-surface utility system throughout the East Barracks. Based upon the report on the existing utility systems throughout the project area prepared by Kennedy/Jenks Consultants (2010), the gas lines, water lines, storm water, and sewer lines are all beyond their serviceable life span, and require replacement. Without this required replacement, it is anticipated that there would be many failures to these systems requiring immediate emergency repairs.

These repair activities have the potential to result in permanent, localized adverse impacts depending on the archeological resource involved and the level of disturbance created, particularly if within undisturbed sedimentary layers. These potential impacts occur through the loss of cultural context of artifacts, features, etc. Infrastructure upgrades will be designed after archeological testing has been conducted and will avoid where possible archeological deposits that contribute to the NRHP significance of the VNHR National Historic District. Further, in the unlikely event that NHRP-significant, subsurface archeological resources cannot be avoided, then implementation of Mitigation Measures CR-1 Pre-Construction Field Surveys and Training, CR-2 Archeological and American Indian Monitoring, CR-3 Previously Undiscovered Cultural Resources, and CR-4 Cultural Resources Monitoring Plan, would reduce adverse impacts to archeological resources within the East and South Barracks from major to minor in intensity (no adverse effect for Sec. 106).

Cumulative Effects

A few National Park Service and local projects have the potential to cumulatively affect the archeological resources of the East and South Barracks.

The potential impacts of the implementation of the CRC project, in combination with the impacts of alternative A, would result in moderate, permanent adverse cumulative impacts to archeological resources, specifically in the South Barracks area adjacent to State Route 14 and Interstate 5. The current Locally Preferred Alternative plans for the CRC calls for the conversion of up to 3 acres of VNHR land into highway right of way. Several known archeological sites associated with the HBC Village and the U.S. Army Quartermaster's Depot sites are within this right of way area, and would likely be impacted by construction related activities. Even with the proposed mitigation measure of a data recovery archeological excavation for these sites, the result is still an adverse effect to these resources, and like any archeological resource, once they are excavated, they are permanently, adversely impacted. The CRC project is slated to have a Record of Decision for an Environmental Impact Statement, for the proposed project sometime in 2012, and the National Park Service is currently negotiating a Memorandum of Agreement with the CRC on how to mitigate these undertakings on the archeological sites within the proposed right of way. These mitigations will include archeological data recovery operations, as well as the implementation of Mitigation Measures CR-1 Pre-Construction Field Surveys and Training, CR-2 Archeological and American Indian Monitoring, CR-3 Previously Undiscovered Cultural Resources, and CR-4 Cultural Resources Monitoring Plan. These, in combination with the new museum/curation facility in building 405 will mitigate adverse effects, both direct and indirect, associated with the VNHR National Historic District, and keep the potential to a moderate cumulative impact.

Based upon the results of a Level II ESA completed in the spring of 2011, (which tested the East and South Barracks for a wide suite of potential environmental contaminants), the only contaminant in the soil that exceeded actionable ESL was lead. High concentrations of lead were discovered in soils around extant and non-extant historic structures, likely the result of the peeling of lead based paint from these structures. Currently the National Park Service and the U.S. Army are negotiating the details on how to address these findings. Cleanup would take place based on what is required by Federal and State agencies using a risk based approach giving due consideration to the possible impacts to sensitive archeological sites. However, the lead cleanup project will be designed after archeological testing has been conducted in contaminated areas and will avoid, where possible, archeological deposits that contribute to the NRHP significance of the VNHR. Further, in the unlikely event that NHRP-significant, subsurface archeological resources cannot be avoided, then implementation of mitigation measures CR-1 Pre-Construction Field Surveys and Training, CR-2 Archeological and American Indian Monitoring, CR-3 Previously Undiscovered Cultural Resources, and CR-4 Cultural Resources Monitoring Plan, CR-6 Use of sedimentary fill to encapsulate contaminated soils adverse impacts to archeological resources from this remediation action within the East and South Barracks should not exceed minor in intensity (no adverse effect for Sec. 106).

With mitigation, the impacts of the above actions, in combination with the impacts of alternative A, would result in minor to moderate adverse, permanent, cumulative impacts to local archeological resources.

Conclusions

Under this alternative, no activities would occur that would adversely impact archeological resources. Overall, impacts would be minor adverse. For purposes of Section 106 of the NHPA, no archeological resources that contribute to the NRHP significance of the VNHR National Historic District are expected to be adversely affected under this alternative (no adverse effect for Sec. 106), see Table 18 below.

The actions of alternative A, when combined with the potential impacts of the implementation of the CRC project, would result in moderate, permanent adverse cumulative impacts to archeological resources, specifically in the South Barracks area adjacent to State Route 14 and Interstate 5 (adverse effect for Sec. 106).

Impacts of Alternative B—A Vibrant, Urban District in a Historic Setting

Ground Disturbance. Under this alternative, most of the anticipated ground disturbance would be from the result of all infrastructure and utilities being upgraded and replaced underground, requiring the excavation of some new trenches within the project area. Such ground disturbance has the potential to adversely effect prehistoric and historic archeological resources, particularly those buried resources which have not been previously identified or evaluated. In addition, some of these utility upgrades may occur within the area of the HBC Cemetery boundaries, with the potential to disturb intact burials.

In order to minimize potential excavations into intact human burials within the HBC Cemetery, the current schematic utility upgrade plan attempts to follow previous utility corridors within the Cemetery as much as possible. Further, an inadvertent discovery plan has been developed and would be approved by the consulting tribes and the Washington DAHP.

Much of the fill within the East and South Barracks has been previously disturbed by site development over the past 150+ years.

In addition, there is the added potential ground disturbing activities from the proposed rerouting of the southern end of Alvord Road more directly into East 5th Street, and some pavement around selected historic structures would be removed. Under this alternative, it is also proposed to create a traffic circle in the heart of the East Barracks at the Hatheway Road/Alvord Road intersection, which would necessitate ground disturbing activities within the cartographically identified boundaries of the HBC Cemetery, as well as within an area associated with non-extant 19th and 20th century U.S. Army structures (Figure 22). Finally, this alternative proposes to remove buildings 409, 710, 749, 750, and 787. The demolition of these structures would likely result in ground disturbance and the records indicate that no formal archeological survey has been undertaken around these structures to date.

These activities have the potential to result in permanent, localized adverse impacts depending on the archeological resource involved and the level of disturbance created, particularly if within undisturbed sediments. These potential impacts occur through the loss of cultural context of artifacts, features, etc. However, these activities will be designed after archeological testing has been conducted and will avoid where possible archeological deposits that contribute to the NRHP significance of the VNHR. Further, in the unlikely event that NHRP-significant, subsurface archeological resources cannot be avoided, then implementation of Mitigation Measures CR-1 Pre-Construction Field Surveys and Training, CR-2 Archeological and American Indian Monitoring, CR-3 Previously Undiscovered Cultural Resources) and CR-4 Cultural Resources Monitoring Plan, adverse impacts to archeological resources from this remediation action within the East and South Barracks should not exceed minor in intensity (no adverse effect for Sec. 106).



Figure 22. The south end of Alvord Road, looking north towards the intersection with Hatheway Road. (National Park Service)

Cumulative Effects

Cumulative impacts would be as described under alternative A; they would result in moderate adverse, permanent cumulative impacts to localized archeological resources.

Conclusions

Under this alternative, impacts would be permanent, local, minor adverse. For purposes of Section 106 of the NHPA, no archeological resources listed in or eligible for the NRHP are expected to be adversely affected under this alternative (no adverse effect for Sec. 106), see Table 18 below.

The actions of alternative B, when combined with the potential impacts of the implementation of the CRC project, would result in moderate, permanent adverse cumulative impacts to archeological resources, specifically in the South Barracks area adjacent to State Route 14 and Interstate 5 (adverse effect for Sec. 106).

Impacts of Alternative C—A Sustainable Public Service Campus (Preferred Alternative)

Ground Disturbance. The utility upgrade plan for the East and South Barracks would be in effect for this alternative, and the effects would be identical to those identified for alternative B. In addition, this alternative proposes to respect the boundaries of the HBC Cemetery by removing the parking lots that are currently located south of building 987, west of building 721, and the minor drives near buildings 721 and 722. The removal of these lots may pose some limited ground disturbance, while it may also be possible to essentially bury these lots in place with imported sediments. There are added potential ground disturbing activities from the proposed rerouting of the southern end of Alvord Road more directly into East 5th Street. This alternative also proposes to remove buildings 409, 422, 710, 749, 750, and 787, and the same recommended mitigation measures from alternative B are recommended for these proposed actions.

In addition, this alternative proposes to reconnect McClelland Road with the Park Road, and connect Alvord Road with East 5th Street to assist with vehicle circulation routes. These proposals will require ground disturbance to construct a new road bed.

These activities have the potential to result in permanent, localized adverse impacts depending on the archeological resource involved and the level of disturbance created, particularly if within undisturbed sediments. These potential impacts occur through the loss of cultural context of artifacts, features, etc. However, these activities will be designed after archeological testing has been conducted and will avoid where possible archeological deposits that contribute to the NRHP significance of the VNHR National Historic District. Further, in the unlikely event that NHRP-significant, subsurface archeological resources cannot be avoided, then implementation of Mitigation Measures CR-1 Pre-Construction Field Surveys and Training, CR-2 Archeological and American Indian Monitoring, CR-3 Previously Undiscovered Cultural Resources, and CR-4 Cultural Resources Monitoring Plan, adverse impacts to archeological resources from this remediation action within the East and South Barracks should not exceed minor in intensity (no adverse effect for Sec. 106).

Cumulative Effects

Cumulative impacts would be as described under alternative A; they would result in moderate adverse, permanent cumulative impacts to localized archeological resources.

Conclusions

Under this alternative, no activities would occur that would adversely impact archeological resources. Overall, impacts would be minor adverse. For purposes of Section 106 of the NHPA, no archeological resources listed in or eligible for the NRHP are expected to be adversely affected under this alternative (no adverse effect for Sec. 106), see Table 18 below.

The actions of alternative C, when combined with the potential impacts of the implementation of the CRC project, would result in moderate, permanent adverse cumulative impacts to archeological resources, specifically in the South Barracks area adjacent to State Route 14 and Interstate 5 (adverse effect for Sec. 106).

Impacts of Alternative D—An Historic, Educational Campus for All

Ground Disturbance. The utility upgrade plan for the East and South Barracks would be in effect for this alternative, and the effects would be identical to those identified for alternative A. In addition, this alternative proposes most of the same parking lot removals on the HBC Cemetery as are proposed in alternative C. This alternative also proposes to remove buildings 400, 401, 402, 409, 410, 422, and the same recommended mitigation measures from alternative B are recommended for this proposed action.

In addition, this alternative proposes to reconnect McClelland Road with the Park Road to assist with vehicle circulation routes. This proposal will require ground disturbance to construct a new road bed.

These activities have the potential to result in permanent, localized adverse impacts depending on the archeological resource involved and the level of disturbance created, particularly if within undisturbed soils layers. However, these activities will be designed after archeological testing has been conducted and will avoid where possible archeological deposits that contribute to the NRHP significance of the VNHR National Historic District. Further, in the unlikely event that NHRP-significant, subsurface archeological resources cannot be avoided, then implementation of Mitigation Measures CR-1 Pre-Construction Field Surveys and Training, CR-2 Archeological and American Indian Monitoring, CR-3 Previously Undiscovered Cultural Resources, and CR-4 Cultural Resources Monitoring Plan, adverse impacts to archeological resources from this remediation action within the East and South Barracks should not exceed minor in intensity (no adverse effect for Sec. 106).

Cumulative Effects

Cumulative impacts would be as described under alternative A; they would result in moderate adverse, permanent cumulative impacts to localized archeological resources.

Conclusions

Under this alternative, impacts would be permanent, local, minor adverse. For purposes of Section 106 of the NHPA, no archeological resources listed in or eligible for the NRHP are expected to be adversely affected under this alternative (no adverse effect for Sec. 106), see Table 18 below.

The actions of alternative D, when combined with the potential impacts of the implementation of the CRC project, would result in moderate, permanent adverse cumulative impacts to archeological resources, specifically in the South Barracks area adjacent to State Route 14 and Interstate 5 (adverse effect for Sec. 106).

Table 18. Section 106 Assessment of Effect on Archeological Resources by Alternative

ALTERNATIVE	CULTURAL LANDSCAPE/AREA OF POTENTIAL IMPACT	TREATMENT	ASSESSMENT OF EFFECT
A	HBC Cemetery	Upgrade utilities	No Adverse Effect
A	Rest of Project Area	No changes immediately proposed	No Adverse Effect
B	HBC Cemetery	Upgrade utilities	No Adverse Effect
B	Rest of Project Area	Upgrade utilities, reroute southern portion of Alvord Road, remove buildings 409, 710, 749, 750, and 787	No Adverse Effect
C	HBC Cemetery	Upgrade utilities, remove parking pots on HBC Cemetery area	No Adverse Effect
C	Rest of Project Area	Upgrade utilities, reroute southern portion of Alvord Road, remove buildings 409, 422, 710, 749, 750, and 787	No Adverse Effect
D	HBC Cemetery	Upgrade utilities, remove parking lots on HBC Cemetery area	No Adverse Effect
D	Rest of Project Area	Remove buildings 400, 401, 402, 409, 410, 422	No Adverse Effect

MUSEUM COLLECTIONS

Both 36 CFR 800 and the NHPA define historic property as including artifacts, records, and remains that are related to and located within such NRHP eligible or listed properties [36 CFR 800.16(l)(1); also see NHPA Section 301(5)]. Therefore, the impact intensity definitions for museum collections must be applied, in part, in association with a related archeological site, cultural landscape, ethnographic resource, or historic or prehistoric structure. For assessing impacts to museum collections where Section 106 is not applicable, only the first part of each definition statement should be applied. Under all action alternatives, the capacity of the anticipated collections facility would be sufficient for the current collection and potential growth factors, and the inclusion of other partner collections (and their effect on capacity) within the facility would be considered based upon National Park Service facility modeling.

Duration of Impacts: Potential impacts to Museum Collections are only seen as long-term impacts.

Impact intensities for museum collection resources are defined below:

Negligible: The effect would be at the lowest levels of detection, barely perceptible, with no measurable consequences, either adverse or beneficial, to the collections. The Section 106 determination would be no adverse effect.

Minor: The effect is measurable or perceptible, but it is slight and affects the integrity of a few items in the museum collection, but would not degrade the usefulness of the collection for future research and interpretation. Slight alteration to any of the characteristics of the collection that qualify its related resource for inclusion in the NRHP may diminish the integrity of the resource and its related collection. For purposes of Section 106, the determination of effect would be adverse effect.

Moderate: The effect is measurable and perceptible, and would affect the integrity of many items in the collection and diminish the usefulness of the collection for future research and interpretation. The effect changes one or more of the characteristics of the collection that qualify its related resource for inclusion in the NRHP and diminishes the integrity of the resource and its related collection, but does not jeopardize the NRHP eligibility of the resource related to the collection. For purposes of Section 106, the determination of effect would be adverse effect.

Major: The effect on the collection is substantial, noticeable, and permanent, and would affect the integrity of most items in the collection and destroy the usefulness of the collection for future research and interpretation. The action severely changes one or more characteristics of the collection that qualify its related resource for inclusion in the NRHP, diminishing the integrity of the resource and its related collection to such an extent that the resource is no longer eligible for listing in the NRHP. For purposes of Section 106, the determination of effect would be adverse effect.

Impacts of Alternative A—No Action

Museum Collection Management Options

The current curatorial facility, which meets federal standards for a museum collection facility, as outlined in 36 CFR Part 79, would continue to be located in the reconstructed Fur Store building inside of the HBC Fort Vancouver stockade. Therefore, there would be no potential for impacts to the museum collection due to moving the collection (no adverse effect for Sec. 106).

However, based upon this same scenario, there would be great limitations on the potential growth of the archeological collections since the current facility is near capacity. Without expanded curatorial space, and with the current pace of archeological collection growth due to compliance and research projects, not moving the collection into a larger space would soon constitute a moderate to major impact to the collection. Additions to the collection would cause overcrowding in the current facility, adversely affecting preservation efforts and accountability, and some material types might have to be curated in spaces with a less tightly controlled climate. (adverse effect for Sec. 106). Another potential necessity could be splitting the collection into multiple, smaller spaces (perhaps even some off-site), creating operational inefficiency and removing collections from their site of origin. The National Park Service, U.S. Army, City of Vancouver, WSDOT, and the consulting tribes, are in agreement that collections from the VNHR and adjacent, related sites should be kept as near to the site of origin as possible and made accessible to associated cultural groups, researchers, and interested members of the public. Triage actions of either overcrowding or splitting the collection would jeopardize both the preservation of the collection and our responsibilities to interested parties. In addition, operating multiple, small curation areas would be directly counter to the consolidation efforts documented in the servicewide *Park Museum Collection Storage Plan* (2007).

Cumulative Impacts

The potential impacts of the CRC project not proceeding to construction, in combination with the impacts of alternative A, would result in moderate, long-term cumulative impacts to the park's existing museum collections and those associated with the East and South Barracks for the reasons outlined above. Under this alternative, it is assumed that the CRC project would not proceed, and therefore that there would be no agreement for mitigation between the National Park Service and WSDOT to fund the rehabilitation of building 405 into a curation center. This would keep the museum collections in the current curatorial facilities located in the reconstructed Fur Store building inside of the HBC Fort Vancouver stockade, which is already at capacity. The slow and steady pace of additions to the archeological collections from Sec. 106 undertakings within the park would slowly overwhelm the facility, affecting the integrity of many items in the collection and diminishing the usefulness of the collection for future research and interpretation (adverse effect for Sec. 106).

Conclusions

Under this alternative, there would be no attempt to rehabilitate building 405 into a new curatorial space, and the museum collections would remain in their current reconstructed Fur Store building inside of the HBC Fort Vancouver stockade. The current curatorial facilities located in the reconstructed Fur Store building are near capacity, placing great limitations on professional curation of the archeological collections. Without expanded curatorial space, and with the current pace of archeological collection growth due to compliance and research projects, not transferring the collection into a larger space would soon constitute a moderate adverse impact to the collection.

For purposes of Section 106 of the NHPA, it is anticipated that alternative A would result in an adverse effect to artifacts, records, and remains that are related to and located within such NRHP eligible or listed properties. See Table 19 below.

Impacts of Alternative B—A Vibrant, Urban district in a Historic Setting

Museum Collection Management Options

Under this alternative, building 405, a 1984 U.S. Army aircraft hangar, would be rehabilitated into a state of the art curation center and public interpretive space for archeology and cultural resources. This facility would be designed to handle not only the existing collection, including the multiple parks for whom curation responsibilities are based at Fort Vancouver NHS, but would also allow for future growth.

The realization of this alternative would provide a benefit to the museum collection as a whole, and with appropriate management practices during the move process (as defined in the NPS *Museum Handbook*, Part I, Chapter 6: Handling, Packing, and Shipping Museum Objects), it is anticipated that there would be a negligible impact to the collection (no adverse effect for Sec. 106).

Cumulative Impacts

The potential impacts of the implementation of the CRC project, in combination with the impacts of alternative B, would result in beneficial, long-term cumulative impacts to museum collections associated with the park. The current CRC Locally Preferred Alternative calls for

the conversion of up to 3 acres of VNHR land into highway right of way. This right of way would closely parallel the western edge of the West Barracks portion of the VNHR. Part of the mitigation measures for these adverse impacts includes the rehabilitation of building 405 into a museum/curation facility. The National Park Service has agreed to curate all archeological objects recovered from the Washington side of the Columbia River as a part of the CRC project. The National Park Service museum facility model confirms that all of these collections can be housed in this renovated facility, and still allow for the projected growth of archeological collections. The realization of these plans would not only ensure the continued preservation of the existing park collections, but would enhance the collection and research capabilities for visiting scholars and the public to include regional contexts.

Conclusions

Under this alternative, no activities would occur that would adversely affect the management of existing or future museum collections. There would be no contribution to any cumulative impacts. Overall, impacts would be beneficial and would enhance the long-term management abilities of the museum collections.

For purposes of Section 106 of the NHPA, no elements of the existing or potential future museum collection are expected to be adversely affected under this alternative (no adverse effect for Sec. 106), see Table 19 below.

Impacts of Alternative C—A Sustainable, Historic Campus for Public Service (Preferred Alternative)

Museum Collection Management Options

Same as alternative B

Cumulative Effects

Same as alternative B

Conclusions

Same as alternative B

Impacts of Alternative D—An Historic, Educational Campus for All

Museum Collection Management Options

Same as alternative B

Cumulative Effects

Same as alternative B

Conclusions

Same as alternative B

Table 19. Section 106 Assessment of Effect on Museum Collections by Alternative

ALTERNATIVE	MUSEUM COLLECTION MANAGEMENT OPTION	ASSESSMENT OF EFFECT
A	Continue to operate museum collection facility within the Fur Store building, which cannot handle anticipated collection needs	Adverse Effect
B	Rehabilitate building 405 into a museum facility to increase capacity	No Adverse Effect
C	Same as B	No Adverse Effect
D	Same as B	No Adverse Effect

CLIMATE CHANGE AND AIR QUALITY

Guiding Regulations and Policies

Beyond the National Park Service's responsibility to protect air quality under the Clean Air Act and the 1916 Organic Act, NPS *Management Policies 2006* state that National Park Service would, "seek to perpetuate the best possible air quality in parks to; (1) preserve natural resources and systems; (2) preserve cultural resources; and (3) sustain visitor enjoyment, human health, and scenic vistas. The Service would. . . minimize air quality pollution emissions associated with park operations. . ." (Sec. 4.7.1).

Assessment Methodology

Type of Impact: Beneficial air quality impacts would reduce pollutant emissions or lower pollutant concentrations, while adverse impacts would increase them.

Impact Intensities

The air quality analysis was based on both qualitative and quantitative assessment of typical air emissions from construction and operations activities as well as emissions related to an increase in traffic. Impacts from construction activities would generally be considered short-term impacts, while an increase in vehicles and traffic would result in more long-term impacts to both air quality and climate change.

Short-Term Construction-Generated Emissions

Negligible: Measurable or anticipated degree of change to air quality would be localized and not be detectable or would be only slightly detectable. In addition, there would be no potential for impact to air quality from odors associated with project activities.

Minor: Measurable or anticipated degree of change would be localized, have a slight effect, causing a slightly noticeable change compared to existing conditions. In addition, sensitive individuals may notice odors, but they would be barely detectable and not offensive.

Moderate: Changes in air quality would be measurable or anticipated degree of change is readily apparent, appreciable, and would be noticed by most people. Changes can be localized or widespread. In addition, sensitive receptors would notice odors and may find them objectionable.

Major: Measurable or anticipated degree of change would be substantial, causing a highly noticeable change compared to existing conditions. Effects are often widespread. In addition, sensitive receptors would universally notice odors and find them objectionable.

Long-Term Regional and Local Mobile Source Emissions

Negligible: The daily traffic volume or the LOS for individual locations would not change.

Minor: The change in daily traffic volume from existing conditions would be less than 1,000 trips. The LOS for individual locations would change by one category and would remain at an acceptable level (LOS A, B, C, or D).

Moderate: The change in daily traffic volume from existing conditions would be 1,001 to 2,000 trips. The LOS for individual locations would change by more than one category but would remain at an acceptable level (LOS A, B, C, or D).

Major: The change in daily traffic volume from existing conditions would be more than 2,000 trips. The LOS for individual locations would change.

Impacts of Alternative A—No Action

Short-term Construction-Generated Emissions: Under the no action alternative, construction and rehabilitation efforts within the East and South Barracks would be limited to the rehabilitation of structures only for National Park Service use, and repairs to existing utility systems, as necessary. Such localized work would result in short-term use of heavy construction equipment. Dust generation would be mitigated through limiting the disturbed areas and use of water for dust suppression. It is expected that this should result in only minor adverse effects to localized air quality and negligible adverse contributions to overall global climate change.

Long-Term Regional and Local Mobile Source Emissions: Under the no action alternative, the average weekday trips generated through the East and South Barracks would markedly decrease from existing conditions. The number of trips into and out of South Barracks would markedly increase from 171 to 464 (a 58.3% increase), yet the number of trips into and out of the East Barracks would markedly decrease from 2,545 to 281 (a 1,323% decrease). Total trips generated into the entire East and South Barracks would fall from 2,716 to 745, a 264% decrease in traffic volume. In effect, under the no action alternative, there is a marked loss of operational automobile traffic coming into or out of the East and South Barracks, meaning a negligible impact to local air quality and global climate change.

Cumulative Effects

Several projects in the cumulative impact scenario have the potential to cause both beneficial and adverse cumulative effects when combined with the no action alternative. The remodel of the Visitor Center, when combined with the effects of the limited construction from alternative A, could add cumulative, minor, short-term negative effects to short-term, construction-generated emissions. In and of itself, the construction of the CRC project could generate moderate short-term adverse effects through construction-related emissions. When combined with the no action alternative, the CRC project could result in moderate short-term cumulative impacts.

There is also the potential for long-term negligible to minor impacts from the CRC project. According to the *Columbia River Crossing Draft Environmental Impact Statement*, whether the CRC project is built or not, long-term emissions of all air pollutants along the Interstate 5

corridor would be substantially lower than present due to expected improvements in vehicle emissions by 2030—although this seems to be an optimistic assessment when considering the increased traffic volume expected by 2030. When combined with the decrease in the number of projected vehicles accessing the East and South Barracks proposed in alternative A, it is projected that there would be at least negligible to minor cumulative impacts to air quality.

Conclusions

The no action alternative proposes little in the way of active construction activities or an increase in daily automobile traffic accessing the East and South Barracks area. These factors limit short-term construction-generated emissions to negligible to moderate impacts; while the long-term air emissions from general automobile usage should decrease in the short-term, and improve in the long-term due to more stringent vehicle emission standards. Overall, the no action alternative would result in negligible to minor adverse impacts.

The results of alternative A, when combined with the potential impacts of the implementation of the CRC project, would result in moderate short-term construction related cumulative impacts. There is also the potential for long-term negligible to minor impacts from air pollutants from traffic using the CRC Bridge.

Impacts of Alternative B—A Vibrant, Urban District in a Historic Setting

Short-term Construction-Generated Emissions: The proposed rehabilitation efforts, the demolition of five structures, reorientation of paved roads, and the replacement of existing utilities would all result in short-term construction-related emissions. Dust generation would be mitigated through limiting the disturbed areas and use of water for dust suppression. None of the proposed building uses would result in objectionable odors. Based upon the total area projected for these construction efforts (probably over a period of several years), it is likely that these construction activities would constitute a short-term, moderate adverse effect to air emissions and minimal contributions to global climate change.

Long-Term Regional and Local Mobile Source Emissions: Under alternative B, based upon analysis conducted by the National Park Service in 2011, the average weekday trips generated through the East and South Barracks would markedly increase from existing conditions. The number of trips into and out of South Barracks would increase from 171 to 1,516 (a 786% increase), while the number of trips into and out of the East Barracks would increase from 2,545 to 3,674 (a 44% increase). Total trips generated into the entire East and South Barracks would increase from 2,716 to 5,290, a 94.7% increase in traffic volume. However, it is expected that by 2030, long-term emissions of all air pollutants would be substantially lower than present due to expected improvements in vehicle emissions. This is a large increase in operational automobile traffic coming into or out of the East and South Barracks, and with over 5,000 vehicle trips into the East and South Vancouver Barracks every day, there would be major adverse long-term impacts to local air quality and major adverse contributions to global climate change.

Cumulative Effects

Cumulative impacts for alternative B are largely similar to those for alternative A. Combining the effects of the rehabilitation of the Visitor Center and the construction of the CRC project with the projected increases in traffic volume in alternative B would still result in long-term negligible to minor cumulative impacts for air quality and global climate change.

Conclusions

Under alternative B, the National Park Service would enact substantial rehabilitation and construction activities within the East and South Barracks, which would cause short-term, construction-related air emissions for a number of years. These emissions would constitute a short-term, minor adverse effect to air emissions and global climate change.

In addition, it is projected that under full development of alternative B, there would be a seven-fold increase in the number of automobiles accessing and parking within the East and South Barracks. Even with the projected lessening of air emissions per vehicle based upon more stringent vehicle emission standards, the projected increase in the number of vehicles utilizing the area would still constitute a long-term minor impact to air emissions and global climate change. Some of these effects can be moderated through the use of mitigation measure AQ-1, encouraging staff and non-NPS tenants to utilize mass transit and bicycling options whenever feasible.

Impacts of Alternative C—A Sustainable Public Service Campus (Preferred Alternative)

Short-term Construction-Generated Emissions: Short-term, construction-generated emissions are projected to be the same as those under alternative B.

Long-term Regional and Local Mobile Source Emissions: Under alternative C, based upon analysis conducted by the National Park Service in 2011, it is anticipated that full development of the proposed uses of the East and South Barracks would result in an increase up to a total of 577 automobiles driving into the East and South Barracks, parking, and leaving during the day. Based upon parking counts in the East and South Barracks in 2011, this is a six-fold increase in the average number of vehicles entering and parking in the East and South Barracks on a Monday-Friday basis. This is a large increase in operational automobile traffic coming into or out of the East and South Barracks, but it is still fewer than 1,000 vehicle trips into the area, resulting in minor, long-term adverse impacts to local air quality and minor contributions to global climate change.

Cumulative Effects

Cumulative effects would be the same as those under alternative B.

Conclusions

Under alternative C, the National Park Service would enact substantial rehabilitation and construction activities within the East and South Barracks, which would cause short-term, construction-related air emissions for a number of years. These emissions would constitute a short-term, minor adverse effect to air emissions and global climate change.

In addition, it is projected that under full development of alternative C, there would be a six-fold increase in the number of automobiles accessing and parking within the East and South Barracks. Even with the projected lessening of air emissions per vehicle based upon more stringent vehicle emission standards, the projected increase in the number of vehicles utilizing the area would still constitute a long-term minor impact to air emissions and global climate change. Some of these effects can be moderated through the use of mitigation measure AQ-1, encouraging staff and non-NPS tenants to utilize mass transit and bicycling options whenever feasible.

The results of alternative C, when combined with the potential impacts of the implementation of the CRC project, would result in moderate short-term construction related cumulative impacts. There is also the potential for long-term negligible to minor impacts from air pollutants from traffic using the CRC bridge.

Impacts of Alternative D—An Historic, Educational Campus for All

Short-term, construction-generated emissions are projected to be the same as those under alternative B.

Long-Term Regional and Local Mobile Source Emissions: Under alternative D, based upon analysis conducted by the National Park Service in 2011, it is anticipated that full development of the proposed uses of the East and South Barracks would result in an increase up to a total of 604 automobiles driving into the East and South Barracks, parking, and leaving during the day. Based upon parking counts in the East and South Barracks in 2011, this is more than a six-fold increase in the average number of vehicles entering and parking in the East and South Barracks on a Monday-Friday basis. This is a large increase in operational automobile traffic coming into or out of the East and South Barracks, but it is still fewer than 1,000 vehicle trips into the area, resulting in a minor, long-term impact to local air quality and global climate change.

Cumulative Effects

Cumulative effects would be the same as those under alternative B.

Conclusions

Under alternative D, the National Park Service would enact substantial rehabilitation and construction activities within the East and South Barracks, which would cause short-term, construction-related air emissions for a number of years. These emissions would constitute a short-term, minor adverse effect to air emissions and global climate change.

In addition, it is projected that under full development of alternative D, there would be more than a six-fold increase in the number of automobiles accessing and parking within the East and South Barracks. Even with the projected lessening of air emissions per vehicle based on more stringent vehicle emission standards, the projected increase in the number of vehicles utilizing the area would still constitute a long-term minor impact to air emissions and global climate change. Some of these effects can be moderated through the use of mitigation measure AQ-1, encouraging staff and non-NPS tenants to utilize mass transit and bicycling options whenever feasible.

The results of alternative D, when combined with the potential impacts of the implementation of the CRC project, would result in moderate short-term construction-related cumulative impacts. There is also the potential for long-term negligible to minor impacts from air pollutants from traffic using the CRC bridge.

VISITOR EXPERIENCE

Guiding Regulations and Policies

The importance of and commitment to visitor experience is affirmed in various NPS documents. The 1916 Organic Act requires the National Park Service to ensure its natural and cultural resources are not impaired, while providing for the enjoyment of these resources. NPS *Management Policies 2006* (NPS 2006) state that the enjoyment of park resources and values by the people of the U.S. is part of the fundamental purpose of all parks, and that the National Park Service is committed to providing appropriate, high-quality opportunities for visitors (Figure 23).

Director's Order 47: Soundscape Preservation and Noise Management, articulates NPS policies that address the protection, maintenance or restoration of the natural soundscape resource in a condition unimpaired by inappropriate or excessive noise sources (National Park Service 2000). Therefore, noise is an important consideration in visitor experience.



Figure 23. Ranger-led tours are one of many high-quality visitor experiences possible in the East and South Barracks. (National Park Service)

The National Park Service has committed to providing facilities which are designed to be accessible to all individuals. Under Director's Order #42: Accessibility for Visitors with Disabilities in National Park Service Programs and Services, the National Park Service ensures that all people should have the highest level of accessibility that is reasonable to NPS programs, facilities and services in conformance with applicable regulations and standards.

Assessment Methodology

The purpose of this impact analysis is to determine if the proposed actions are compatible, or in conflict with, the purpose of the park, its visitor experience goals, and the direction provided by NPS policies. Effects to the visitor experience related to traffic and parking restrictions are addressed and are not intended to function as a technical transportation analysis. Rather, they are analyzed as to how they would effect a visitor's enjoyment of the area. See the *Transportation* section for additional analysis of transportation-related effects.

Noise is an important consideration of the visitor experience. The analysis of the effects of noise on visitor experience in national parks involves a variety of factors, many of which are not easily quantifiable. These include, among other things, a visitor's expectation (e.g., presumptions of noise levels in developed vs. undeveloped/wilderness areas), a visitor's personal characteristics (the likelihood of being annoyed by noise), and the degree to which a quiet experience is desired (Gramann 1999). Noise receptors in the area could be affected by construction noise, and include park and partner staff and park visitors.

Context and Duration of Impact

Short-term: Effects would be perceptible to visitors only temporarily (e.g., construction-related) and/or these management actions would persist for less than one year.

Long-term: Effects would be repeatedly perceptible to visitors, lasting for at least a year or more.

Impact Intensities

Negligible: Visitors would not likely be aware of changes related to visitor use, in critical characteristics of visitor experiences fundamental to the park's purpose and significance, or in any defined indicator of visitor satisfaction. There would be little or no change in the visitor experience or visitor safety.

Minor: Change in the visitor experience or visitor safety would be noticeable; however they would be slight and likely short-term. Other areas in the park would remain available for similar visitor experience and use without derogation of park resources and values.

Moderate: Visitors would be aware of the effects associated with changes proposed for visitor use and enjoyment of park resources. Changes in visitor use and experience would be readily apparent and likely long-term. Other areas in the park would remain available for similar visitor experience and use without derogation of park resources and values, but visitor satisfaction might be measurably affected (visitors could be either satisfied or dissatisfied). Some visitors who desire to continue their use and enjoyment of the activity/visitor experience would be required to pursue their choice in other available local or regional areas.

Major: Visitors would be highly aware of the effects associated with changes proposed for visitor use and enjoyment of park resources. Changes in visitor use and experience would be readily apparent and long-term. The change in visitor use and experience proposed in the alternative would preclude future generations of some visitors from enjoying park resources and values. Some visitors who desire to continue their use and enjoyment of the activity / visitor experience would be required to pursue their choice in other available local or regional areas.

Alternative A – No Action

Under this alternative, there would be very few initial changes or improvements to the visitor experience. Increases to park visitation are expected to be slight and barely noticeable. Building 991 would be rehabilitated for a National Park Service and Fort Vancouver National Trust administrative headquarters, but all of the other buildings would remain vacant until a prospective tenant comes forward, leaving the majority of space (81%) unavailable for public use, access, or education.

There would be some public informational or exhibit space in building 991 that would be open to park visitors, but no other space would be developed for interpretive or educational programs or special events.

The grounds would be maintained but not improved, so visitors would not benefit from improved landscape in either the East or South Barracks. The fences around the South Barracks, as well as unattractive concrete security barriers in the East would be removed, allowing for some increased public access to the buildings and grounds. Access through the grounds would be mostly unrestricted except for NPS maintenance and storage areas. Alternative A would not include construction of any new visitor facilities such as restrooms or exhibit space. The potential reconstruction of the Summer House would add to the visitor experience since it recreates a piece of history which may be interpreted for the public.

Interpretive themes and programming would be the same as it exists currently and use established interpretive themes such as HBC, settlement of Oregon Country and establishment

of the U.S. Army Vancouver Barracks. A small number of interpretive signs currently exist on site. There would not be any immediate plans for additional interpretive signage or programming.

Parking for the Fort would be relocated to the East Barracks near building 753 and north of building 754, which is approximately 500 feet farther from the existing lot, and would result in a 5-10 minute walk to the Fort for most visitors. There would be a drop off adjacent to the Fort for those with mobility needs. There would be no other changes to visitor parking for personal vehicles, tour buses, recreational vehicles, or trailers.

Noise generated during any construction activities, such as minor utility repairs and building rehabilitation, would impact visitors who are in the park and most likely within the VNHR. This impact would be temporary, and noise would not occur on nights or weekends. After any temporary construction, the soundscape of the park would be similar to what exists today.

To the greatest extent possible, site improvements and building rehabilitation would accommodate all people and abilities without the need for individual adaptation. Once building occupancy is certain and subsequent design work is developed, the National Park Service would ensure the incorporation of public health and safety requirements, including standard accessibility requirements, into the design. For example, improvements such as accessible parking, loading zones, fire access, elevators, ramps, and other modifications would be made in accordance with the *Architectural Barriers Act Accessibility Standards* and the *Accessibility Guidelines for Outdoor Developed Areas*. The park would also strive to be as universally accessible as possible and make improvements that make the East and South Barracks buildings, grounds, and interpretive displays accessible to all people.

Cumulative Impacts

Several projects in the cumulative impact scenario have the potential to cause both beneficial and adverse cumulative effects when combined with the no action alternative. The remodel of the Visitor Center, when combined with the effects of the limited construction from alternative A, could add cumulative, minor, short-term adverse effects to the visitor experience if construction were to occur at the same time. This would result from additional noise, dust, detours, and other construction activities in visitor areas. Similar impacts would result from the hazardous material remediation and restoration of the Village. In and of itself, the CRC project could generate moderate to major long-term adverse effects to visitors due to: the direct taking of existing park lands and conversion into the right of way, the destruction of archeological sites within this new right of way, construction activities that may last over five years, the increased height of the new bridge, the increased visibility of moving vehicles on the bridge, the anticipated increase in traffic, and the loss of visibility of the west hills of Portland from the park which has been an iconic view since the creation of the park. When combined with the no action alternative, moderate to major long-term cumulative impacts are expected.

There is also the potential for cumulatively long-term beneficial effects. When combined with the increased access and limited restoration to the East and South Barracks proposed in alternative A, the past construction of the Land Bridge, the future remediation of hazardous materials and improvement to the Visitor Center, as well as the potential Community Connector (mitigation for the CRC project) all add an increased LOS, access, and safety for the visitor. Additionally, the deeding of the West Barracks to the City of Vancouver in 2007 also contributes to cumulative beneficial impacts to visitors, as now the majority of the VNHR is accessible to the public.

Conclusion

Compared to existing conditions, the no action alternative would result in a slight benefit to the visitor experience. Although the majority of buildings would not be open to the public, the grounds would be more open, available and visitor friendly and foot access would be permitted throughout both the East and South Barracks. Both the addition of the public space in building 991 and reconstruction of the Summer House would also add to the visitor experience. In the short-term, there would also be a benefit from the accessibility and universal access improvements that would be completed as part of the rehabilitation of building 991. Benefits from improved access for the rest of the East and South Barracks would be delayed until plans are developed for future use of the area.

As demonstrated during the public scoping period, only proceeding with actions approved in the *Fort Vancouver National Historic Site General Management Plan* (2003) in the foreseeable future would result in long-term moderate adverse effects to the visitor experience as visitors would likely be dissatisfied with the lack of space available for public events, programs, and recreational activities as well as lack of improvements to the barracks buildings and grounds, and interpretive programs. Construction in the barracks would result in short-term minor adverse impacts to visitors, but many of these can be mitigated through mitigation measures VE-2, Timing; VE-3, Construction Related Noise Control; VE-4, Construction Exclusion Areas-Visitor Restrictions, and VE-5, Visitor Notification. There would be short and long-term adverse minor to major cumulative impacts, as well as some long-term beneficial effects.

Alternative B - A Vibrant, Urban District in a Historic Setting

In this alternative, the Barracks would provide a welcoming environment and there would be opportunities for the public to work, shop, dine, recreate, and learn in the historic barracks. Park visitation could increase slightly, but no substantial increases are expected. There would be increased public access to the majority of buildings and the grounds of the Barracks and a variety of activities and gathering places for visitors. Buildings that provide office space would have some public component, such as an interpretive display in the lobby or event space. Other buildings may provide larger spaces for community/public activities such as arts, events, performances, festivals, weddings, galleries or meeting space. Some buildings would contain a retail function, such as shops and a restaurant which would support visitor use. A building with a visitor support function (restrooms, bike rentals, food service, etc.) could be provided near the Discovery Trail and HBC Fort area (building 410). Restrooms would also be made available in key buildings throughout the site. The public would also have the opportunity to live in the historic barracks, as some buildings could be rehabilitated into multi-family residences and made available to rent.

Additional museum space would also be developed. In this alternative, building 405 would be developed into a regional museum management facility which would not only provide needed space for curatorial functions but also a public exhibit and/or educational facility for National Park Service and other Pacific Northwest museum collections. The number and size of special events could increase in the future with the availability of additional special use areas, and the growth in knowledge and appreciation of this historic site. These functions would constitute a substantial improvement to the visitor experience in the East and South Barracks.

Interpretive themes and programming would be the same as currently existing and use established interpretive themes such as HBC, settlement of Oregon Country and establishment of U.S. Army Vancouver Barracks. Interpretation would occur mostly through non-personal

services such as self-guided walking tours, personal media, and signs within some of the Barracks buildings. Military history may also be interpreted in the East Barracks. The park would also build opportunities for self-directed learning about the history and resources of the historic Barracks (such as self-guided trails, new media, etc.).

The landscape of the Barracks would have a distinct emphasis on visitor appeal: shade trees, ornamental plantings, and other site furnishings would be maximized. Improved aesthetics would also enhance the visitor experience. Overhead power lines would be buried as part of infrastructure improvement. Multi-modal access and circulation would be improved throughout the project site; sidewalks would be repaired and possibly extended throughout East and South Barracks. Excess asphalt around the buildings would be removed (i.e. paving at building foundations, extraneous lanes and spurs between buildings, etc.) and re-vegetated, which would improve the visitor experience of the area. Removal of fencing in the South Barracks and removal of barriers in the East Barracks would increase public access and allow more area for recreation and exercise. Linkages with existing and proposed trail networks would be created, and a new interpretive loop trail would be created to connect with the historic Maple Allée, HBC Village and Discovery Trail. These actions would also provide an improvement and benefit visitors.

The existing visitor parking at the Fort would be reduced to a few handicap parking spaces only, and the area would be re-vegetated to appear as historic agricultural fields. Parking would be relocated to the South Barracks, east of building 405, which is approximately 700 feet farther from the existing lot, and would result in a 5-10 minute walk to the Fort for most visitors. New surface lots throughout the site would be constructed to service retail and commercial functions (i.e. small lots north of East 5th Street). Tour buses, recreational vehicles, and trailer parking would be accommodated in the new Fort parking lot in the South Barracks. The National Park Service would also work with the City of Vancouver to use existing lots in the West Barracks.

Noise and dust generated during construction activities would impact visitors who are in the park and most likely the VNHR. These actions would include utility upgrades, potential building demolition, historic building rehabilitation, installation of solar panels, asphalt removal, and road construction, and could involve the use of equipment such as hand tools, power drills, saws, trucks, dump trucks, excavators, jack hammers, cement mixers, and front end loaders. Use of this mechanized equipment, particularly heavy equipment, would result in temporary increases in noise levels within the Barracks and the VNHR and affect staff and visitors of the park, West Barracks, and possibly Officers' Row. Noise emission levels for typical construction equipment are displayed in Table 20.

As points of reference, normal conversation at the source point results in a 60 dBA noise level, while whispering at five feet results in a 20 dBA noise level. At levels above 80 dBA, it is recommended that exposure time be limited to avoid hearing loss (National Institute for Occupational Safety and Health 2006). Table 21 provides additional information on predicted noise levels from any source at various distances from a construction site using a combination of the three loudest pieces of construction equipment simultaneously.

Under alternative B, there is the potential that some buildings would be demolished. While any demolition and/or construction are underway, most visitors would choose activities away from the noise. The Visitor Center is approximately 1,150 feet from the eastern boundary of the East Barracks, while occupied buildings or picnic areas in the West Barracks are approximately 230 feet from the East Barracks and 450 feet from the South Barracks. The reconstructed Fort Vancouver is 340 feet from the South Barracks and 570 feet from the East Barracks. At these distances, noise levels are generally expected to be in the 60-80 dBA range for visitors.

Table 20. Noise Emission Levels Typical for Construction Equipment

EQUIPMENT	TYPICAL NOISE LEVEL (9dBA) 50 FEET FROM SOURCE
Backhoe	80
Grader	85
Loader	85
Roller	75
Bulldozer	85
Truck	88
Scraper	89

Note: dBA = A-weighted decibel scale. Source: Federal Transit Administration, 1994

Table 21. Examples of Estimated Noise Levels Associated with Construction

DISTANCE TO RECEPTOR	SOUND LEVELS AT RECEPTOR (dBA)
50	92
100	86
200	80
400	73
600	69
800	67
1000	64
1500	60
2000	57
2500	54

The intensity of the effects on the park's soundscape would vary with the type of construction activity, its location, and the duration of the activity. Noise impacts are also affected by a variety of other factors, including the distance from noise-sensitive receptors, weather, topography, ambient noise levels, etc. Noise effects would be compounded by simultaneous use of several pieces of noise-generating equipment. Considering these many factors, it is believed that construction-related noise effects could result in short-term, localized, negligible to moderate adverse impacts on visitor experience. The range in impact would vary based upon the sound level at the receiver, and the receiver's perception of the sound. The effects would be short-term and localized. Implementation of Mitigation Measures VE-1 General Measures, VE-2 Construction Management Plan, and VE-4 Construction-Related Noise Control would generally reduce these impacts to a minor adverse level, although isolated instances of moderate impacts are likely.

To the greatest extent possible, site improvements and building rehabilitation would accommodate all people and abilities without the need for individual adaptation; these improvements would provide a substantial benefit to park visitors as well as future building tenants. Such improvements will be done to not only be consistent with both the Americans

with Disabilities Act, and *The Secretary of the Interior's Standards for Historic Rehabilitation*. Rehabilitation examples from similar sites (such as the Presidio and Fort Baker at Golden Gate National Recreational Area) will be used as models on how to balance handicap accessibility with historic preservation efforts.

Cumulative Impacts

Cumulative impacts would be similar to alternative A, but have the potential to be more substantial since more construction is planned under alternative B. The remodel of the Visitor Center, when combined with the effects of the construction from alternative B, could add cumulative, minor, short-term adverse effects to the visitor experience if construction were to occur at the same time. This would result from additional noise, dust, detours, and other construction activities in visitor areas. Similar impacts would result from the hazardous material remediation and restoration of the Village. In and of itself, the CRC project could generate moderate to major long-term adverse effects to visitors, and when combined with alternative B, moderate to major long-term cumulative impacts are expected. This is due to: the direct taking of existing park lands and conversion into the right of way, the destruction of archeological sites within this new right of way, construction activities that may last over five years, the increased height of the new bridge, the increased visibility of moving vehicles on the bridge, the anticipated increase in traffic, and the loss of visibility of the west hills of Portland from the park which has been an iconic view since the creation of the park. When combined with alternative B, moderate to major long-term cumulative impacts are expected.

There is also the potential for cumulatively long-term beneficial effects. When combined with the increased access, utility improvements, building rehabilitation, and other visitor improvements associated with alternative B – the past construction of the Land Bridge, the future remediation of hazardous materials and improvement to the Visitor Center, as well as the potential Community Connector (mitigation for the CRC project) add an increased LOS, access, and safety for the visitor.

Conclusion

Collectively, the rehabilitation and interpretation of the historic East and South Barracks structures and landscape would result in long-term, localized benefits to visitor experience related to the greatly expanded opportunities and amenities for visitors; increased public access to many buildings and grounds and improved circulation; additional educational, conferencing and event space; infrastructure improvement; increased interpretive signage and programs; improved aesthetics; increased accessibility; and furtherance of the understanding of the historic significance of the Barracks.

Short-term, localized minor to moderate adverse effects related to noise from construction, dust, construction traffic/detours and restricted access during construction. Many of these effects can be mitigated through mitigation measures VE-2, Timing; VE-3, Construction Related Noise Control; VE-4, Construction Exclusion Areas-Visitor Restrictions, and VE-5, Visitor Notification. Adverse visitor impacts resulting from parking reconfiguration is expected to be negligible. There would be short and long-term adverse minor to major cumulative impacts, as well as long-term beneficial effects.

Alternative C - A Sustainable Public Service Office Campus (Preferred)

Under alternative C, the visitor experience would be marked by increased public access to buildings and grounds, a variety of activities and opportunities for visitors, enhanced circulation

for pedestrians and motorists, welcoming and safe environment, and opportunities to learn about the work of federal agencies within a historic, multi-agency campus. Conferences, lectures and other events and activities would energize the site. The Barracks would be a lively campus that provides many opportunities for the public to work, shop, dine, recreate, and learn. A wide variety of uses would complement the existing mix of uses occurring in the VNHR.

Handicap accessibility improvements would be incorporated to the greatest extent possible in the rehabilitation of the buildings, landscape, and enhanced interpretive programming. Buildings that provide office space for the National Park Service, Fort Vancouver National Trust, or other federal or non-federal agencies (52%) would have some public component, such as an interpretive display in the lobby or event space. Buildings 991 and/or 993, to be rehabilitated for NPS Headquarters, would have a public space devoted to interpretation of early military history. Other buildings such as 991, 993 and 721 (~8%) may provide larger spaces for community activities such as arts, events, performances, festivals, galleries or meeting space that is tied to the mission of the public agencies that reside in the barracks. Educational activities (lectures, conferences, and trainings) would be an ideal public use for the barracks, but events such as weddings, theater or performances could also occur. This alternative would also provide some limited overnight accommodations for visitors who attend conferences, trainings or business meetings on site, as well as for educational groups such as field schools, elder hostels, environmental camps, etc.

This function would greatly enhance the visitor experience. As with alternative B, building 405 would be developed into a regional museum management facility which would contain a public exhibit and/or educational facility for museum collections. A building with a visitor support function (restrooms, bike rentals, food service, etc.) could be provided near the Discovery Trail and HBC Fort area (building 410). Restrooms would also be made available in key buildings throughout the site.

A wide variety of uses would complement the existing mix of uses occurring in the VNHR. There would be some limited retail services, such as shops, a café or deli and a daycare facility, to support visitors and those people working in the offices within the Barracks. Healthy and locally produced foods would be encouraged in food establishments. The number and size of special events is expected to increase in the future with the availability of additional special use areas, and the growth in knowledge and appreciation of this historic site. These functions would constitute a substantial improvement to the visitor experience in the East and South Barracks.

Generally, the interpretive themes, programming, and methods (i.e. signage) would be the same as alternatives A, and B, but with some additions. The multiple layers of history in the Barracks would be interpreted in different portions of the site, where those interpretive opportunities exist (e.g., HBC in the South Barracks and in the HBC Cemetery, and early military history in the East Barracks). With alternative C, there would be a focus on the interpretation of environmental sustainability with possible demonstration areas and/or events that highlight the environmentally responsible landscape and building practices that were incorporated into the East and South Barracks. Some buildings in the East Barracks would devote space to interpreting military history. Interpretation of American Indian history and culture would also be expanded. Themed dining opportunities (that focus on healthy sustainably grown foods) would be encouraged.

There are opportunities for collaboration between multiple agencies to encourage active interpretation of the varied missions of these agencies to the visiting public. As in alternative B, other additions could also include restoring the Barracks scene or other interpretive exhibits. In partnership with non-NPS organizations, educational programming and interpretive opportunities would be maximized, and new programs, such as American Indian crafts making,

could be offered to give the public a fuller understanding and appreciation for the history and resources of the project area. There would be an emphasis on non-personal interpretation (such as waysides, self-guided tours) of military and other history that complements more person-to-person interpretation elsewhere in the park. Special events, such as conferences, lectures, weddings, exhibits, and other activities, would be encouraged and would provide the visitor with a fun and unique environment to learn, recreate, and gather.

The grounds will be enhanced through additional plantings, reducing the amount of paved area, restoring the HBC Orchard and Garden, and reconstruction of the Summer House in conjunction with the HBC Garden restoration. The gravel lot on the HBC Cemetery would be removed and restored to a park-like setting.

As with alternative B, multi-modal access and circulation would be improved throughout the project site, sidewalks would be repaired and possibly extended throughout East and South Barracks. Excess asphalt around the buildings would be removed (i.e. paving at building foundations, extraneous lanes and spurs between buildings, etc.) and re-vegetated, which would improve the visitor experience of the area, create a simpler road pattern for drivers, and create designated safe places for pedestrian activities and passive recreation. Removal of fencing in the South Barracks and removal of barriers in the East Barracks would increase public access and allow for more area for recreation and exercise. Linkages with existing and proposed trail networks would be created, and a new interpretive loop trail would be created to connect with the historic Maple Allée, HBC village and Discovery Trail. Site amenities such as picnic tables, bike racks, benches, etc., would be installed through the barracks as appropriate. These actions would also provide an improvement and benefit visitors.

Parking and vehicular activity in the East Barracks would be limited. The existing visitor parking at the Fort would be reduced to a few accessible spaces and the area would be re-vegetated. The new parking lot in the South Barracks east of building 405 would be 580 feet farther from the existing lot, and would result in a 5-10 minute walk to the Fort. Other additional parking needs would be evaluated, but expansion of new surface lots would be limited to the greatest extent possible to minimize resource damage. Tour buses, recreational vehicles and trailer parking would be accommodated in the new Fort parking lot in South Barracks. The National Park Service would also work cooperatively with the City of Vancouver regarding parking throughout the VNHR, including addressing the use of existing lots in West Barracks for parking for carpools, vanpools, etc. Although visitors may not be able to park directly adjacent to their destination, the walk would be short and no more than 5-10 minutes for most visitors, creating a more tranquil and safe pedestrian park experience.

In this alternative, there is the potential that some buildings would be demolished. This could enhance the visitor experience by improving the aesthetics of the Barracks, but would create short-term negligible to minor adverse visitor impacts to visitor due to noise, dust and other construction impacts.

Cumulative Impacts

Cumulative impacts for alternative C would be the same as alternative B.

Conclusion

Similar to alternative B, the impacts of alternative C are anticipated to be long-term and beneficial due to the greatly expanded opportunities and amenities for visitors: increased public access to many buildings and grounds and improved circulation; additional educational, conferencing and event space; infrastructure improvement; increased interpretive signage and special events;

improved aesthetics; increased handicap accessibility; and furtherance of the understanding of the historic significance of the Barracks and the environmentally sustainable ways of maintaining and preserving it.

There would also be short-term minor to moderate adverse impacts as a result of noise from construction, building removal, dust, construction traffic/detours and restricted access during construction. Many of these effects can be mitigated through mitigation measures VE-2, Timing; VE-3, Construction Related Noise Control; VE-4, Construction Exclusion Areas-Visitor Restrictions, and VE-5, Visitor Notification. Adverse visitor impacts resulting from parking reconfiguration are expected to be negligible. There would be short and long-term adverse minor to major cumulative impacts, as well as long-term beneficial effects.

Alternative D - An Historic, Educational Campus for All

As with alternatives B and C, alternative D would also increase public access in the Barracks as a large number of buildings would be rehabilitated for public use, but the number of opportunities would be greater than the other action alternatives. Park visitation could increase slightly, but no substantial increases are expected. There would be a heavy focus on educational, community and non-profit uses that support the history of the project area. Offices, classrooms and community spaces would be encouraged. In partnership with outside organizations, educational programming and interpretive opportunities such as environmental learning camps, American Indian crafts making, and other activities would be maximized. This alternative would host the greatest number of museums. There would also be some commercial activity to support visitors. Accessibility improvements would be incorporated to the greatest extent possible in the rehabilitation of the buildings, landscape, and enhanced interpretive programming.

A wide variety of uses would complement the existing mix of uses occurring in the VNHR. Buildings that provide office space for the National Park Service, Fort Vancouver National Trust, or other federal or non-federal agencies would also have some public component, such as an interpretive display in the lobby or event spaces. A portion of building 993 would be devoted to interpretation of early military history, and similar to the other action alternatives, building 405 would be rehabilitated into a museum management facility with public exhibits. Portions of building 991 would be reserved for special public events. Visitor services, such as bike rentals, concessions (i.e. food service), and public restrooms would be incorporated into building 786. Restrooms would also be made available in other key buildings throughout the site, to provide this necessary visitor amenity conveniently throughout the Barracks. Themed dining opportunities (at the Mess Hall for example) would provide the public with a unique recreation of history, and contribute to the wide range of public activities available in the project area. All of these functions would greatly enhance the visitor experience in the East and South Barracks.

Interpretation of the East and South Barracks would be consistent with the goals and themes of the *Long Range Interpretive Plan* and focus on themes such as HBC, settlement of the Oregon Country and establishment of the U.S. Army Vancouver Barracks. In addition, in this alternative, 20th Century military history in the East Barracks would be emphasized, while HBC and American Indian history and culture would be emphasized in the South Barracks. The National Park Service would implement non-personal interpretive methods in the Barracks (similar to alternative B and C) but also could accommodate guided tours and demonstrations where feasible and seek partnerships with outside organizations to develop other interpretive opportunities. These increased opportunities would greatly improve the visitor's experience of the Barracks.

There would be robust cultural landscape restoration under this alternative, which would improve the visitor experience in the Barracks. This would include restoration of the HBC

Orchard and Garden, reconstruction of the Summer House, reinstatement of the historic Maple Allée, and potential limited expansion of the Oregon white oak savanna plant community. In order to restore the historic views of the Parade Ground, the Douglas-firs along its southern edge would be removed. While the overall landscape improvements would benefit the public experience, some people may be unhappy with the tree removal – this could result in both a short and long-term minor adverse impact.

As with alternative B and C, multi-modal access and circulation would be improved throughout the project site, sidewalks would be repaired and possibly extended throughout East and South Barracks. Excess asphalt around the buildings would be removed (i.e. paving at building foundations, extraneous lanes and spurs between buildings, etc.) and re-vegetated, which would improve visitor experience and create safe, designated places for pedestrian activities and passive recreation. Removal of fencing in the South Barracks and removal of barriers in the East Barracks would increase public access and allow for more area for recreation and exercise. Linkages with existing and proposed trail networks would be created, and a new interpretive loop trail would be created to connect with the historic Maple Allée, HBC Village and Discovery Trail. These actions would also provide an improvement and benefit visitors.

New site amenities, such as crosswalks, plazas, benches, and other site furnishings would be limited in this alternative in order to maintain the historic setting.

In addition to the above improvements, aesthetics would be improved within the Barracks because excess asphalt on the site would be reduced. Sidewalks would be repaired and extended, and provide links to existing and proposed trails. Road circulation would be improved to enhance visitor safety and appearance. Some roadways would be converted to pedestrian only, which would help the visitor enjoy the Barracks as they might have been historically, as well as to provide a more reverent pathway across the HBC Cemetery. The parking lots on the HBC Cemetery would also be removed. Parking around the buildings in the East Barracks would be limited to a small number of handicap accessible and drop off spaces, and new lots would be minimized. Parking for the Fort would be moved to the MASH site. The National Park Service would work cooperatively with the City of Vancouver regarding parking, including accommodating parking for tour buses, recreational vehicles, and trailers in existing lots in the West Barracks. Although visitors may not be able to park directly adjacent to their destination, the walk would be short, no more than 5-10 minutes, creating a more tranquil pedestrian experience.

In this alternative, buildings could be removed, and other construction activities related to site improvement and building rehabilitation would occur. Building removal may improve the visitor experience by improving the aesthetics of the Barracks and allow for the restoration of the HBC Garden, Summer House, and Orchard, but this demolition would also create short-term negligible to minor adverse visitor impacts due to dust and other construction impacts. Impacts to the visitor from noise generated by this construction would be the same as under alternative B.

Cumulative Impacts

Cumulative impacts for alternative D would be the same as alternative B.

Conclusion

Similar to the other action alternatives, alternative D is expected to result in long-term, localized benefits to visitor experience for the same reasons mentioned above for alternatives B, and C. Benefits to the visitor may be slightly greater in this alternative since there would be

more museums, more interpretive signage, history programs, event space, and space for non-profit organizations.

There would also be short-term, localized minor to moderate adverse effects related to noise from construction, building removal, dust, construction traffic/detours and restricted access during construction. Many of these effects can be mitigated through mitigation measures VE-2, Timing; VE-3, Construction Related Noise Control; VE-4, Construction Exclusion Areas-Visitor Restrictions, and VE-5, Visitor Notification. Adverse visitor impacts resulting from parking reconfiguration is expected to be negligible. The visitors could experience short and long-term adverse impacts as a result of the removal of Douglas-firs along the Parade Ground. There would be short and long-term adverse minor to major cumulative impacts, as well as long-term beneficial effects.

TRAFFIC, CIRCULATION AND PARKING

Guiding Regulations and Policies

The *NPS Management Policies* (National Park Service 2006) instructs park units to consider several factors when modification of a road inside the park is needed. Most of these factors are more germane to a proposal to expand or construct roadway systems to accommodate additional visitors or provide additional access to a park site. However, Section 9.2 of the policies indicates parks should consider whether the road modification “is appropriate and necessary to meet park management needs...” and requires that it be “designed with extreme care and sensitivity to the landscape through which it passes.”

Assessment Methods

Assessment methods are divided into three considerations, traffic volume, LOS, and parking utilization. The numbers of parking spaces and trips are based on full occupation of the East and South Barracks over the life of this plan. It is not anticipated, based on the assumptions of the plan, that these numbers will be significantly higher.

This analysis focuses on calculations for weekdays since the majority of proposed functions in the East and South Barracks, such as offices and child care, under any of the action alternatives, would require the most parking and operate primarily during weekdays. Retail generates less trips and parking on weekends than weekdays and restaurants are about the same or just slightly higher (Institute of Transportation Engineers Trip Generation Report, 2008). Buildings with a public use function are a small percentage of the proposed uses in alternative B and C, and about the same as offices for alternative D. It is anticipated that planning for parking for weekdays would be inclusive of the weekend parking requirements. Similarly, except for special events, the traffic within the project area is expected to be lower on weekends than weekdays.

Traffic Volume

As previously discussed in Chapter 3, recent NPS analysis calculated average weekday trips at 171 for the South Barracks and 2,545 for the East Barracks, or a total of 2,716 trips generated for the project area. Trip generation estimates the number of “trip ends” produced in and/or attracted to each land use in a development. Each trip is made of two “trip ends,” one at the production end of the trip and one at the attraction end of the trip. Since peak traffic generally occurs during the traditional lunch hour and the majority of building functions proposed in the action alternatives is employment related, it is assumed that both trip ends will occur within the project area. For

example, if an employee goes to lunch during the work day, one trip occurs when the employee leaves the facility and a second when the employee returns.

These data were determined using the Institute of Transportation Engineers Trip Generation Report (2008). The traffic was distributed to the adjacent external roadway system based on traffic count data provided by the City of Vancouver and supplemented by additional traffic counts taken by Western Federal Lands Division of the Federal Highway Administration. Resulting traffic was evaluated at four intersections; the roundabout at Evergreen Boulevard and Fort Vancouver Way, the two-way stop controlled intersection at Evergreen Boulevard and Park Road, the two-way stop controlled intersection at Fort Vancouver Way and East 5th Street and the two-way stop controlled intersection at East 5th Street and Park Road.

For the purpose of the study, the project was divided into two multi-use developments: the East Barracks and the South Barracks. Internal trip distribution and pedestrian connections were not analyzed. Since all the buildings within each development are fairly close to each other and are situated within reasonable walking distance; facilities or parts of facilities assigned the same Institute of Transportation Engineers (ITE) Land Use Code were combined to determine the trip generation. Trips that would occur between facilities, but within either the East or South Barracks complex, were not calculated. If it is believed that a large number of these types of vehicle trips would occur, then internal trips should be calculated as part of the pedestrian circulation portion in the final design process.

Impact intensities for traffic volume are defined below:

Negligible: The change in daily traffic throughout the Barracks would be less than 10% and the LOS for individual intersections and locations would remain the same.

Minor: The effect would be slightly detectable, but there would not be an overall effect on the condition of roads and/or traffic flow. The change in daily traffic throughout the Barracks would be between 10% and 20%.

Moderate: The change in daily traffic throughout the Barracks would be between 20% and 30% and the LOS would change by no more than one category and would remain at an acceptable LOS (A, B, C or D)

Major: The change in daily traffic throughout the Barracks would be more than 30% and the LOS would change by one or more categories and would deteriorate to an unacceptable LOS (E or F).

Level of Service

The 2010 Highway Capacity Manual was used to calculate the LOS at each of the four study intersections for the existing traffic and the preferred alternative. Level of Service is a calculation of the average delay experienced by a driver. Delay is the amount of time a driver must wait to complete the desired maneuver.

Six levels of service (LOS A through LOS F) are defined for intersections, based on the average total delay to a motorist at the intersection. An intersection described as LOS A has the shortest delay, while LOS F is the longest delay.

Four intersections surrounding the park property were analyzed to determine the long-term effect of increased traffic on the surrounding transportation system (short-term effects were not analyzed). The four intersections included in this study are: the roundabout at Fort Vancouver Way and Evergreen Boulevard, the stop controlled “T” intersection at Fort Vancouver Way and

East 5th Street, the stop controlled intersection at East 5th Street and Park Road, and the stop controlled intersection at Park Road and Evergreen Boulevard near the park's Visitor Center.

The LOS delay is calculated for the drivers that must stop and the drivers that desire to turn left across free flow traffic; the maximum delay is used to express the LOS. For the roundabout intersection on Fort Vancouver Way, the delay is calculated for each approach and the average of all approaches is used to determine the LOS. The volume to capacity (V/C) ratio for the considered roadways shown below is also calculated for the Fort Vancouver Way roundabout traffic only. Intersection capacity is determined by roadway characteristics such as the number and width of lanes, and the existence of right turn lanes. The capacity of the intersection is expressed as the total number of passenger cars that can be accommodated in a one hour period. The capacity is compared to the traffic volume and expressed as a decimal. When the volume to capacity ratio equals 1.0 or greater; the LOS is identified as F regardless of the average calculated delay. The existing volume to capacity ratio for Fort Vancouver Way was determined to be 0.38, well below the 1.0 threshold where LOS determinations reach an "F." Table 22 shows how LOS classifications are assigned.

Table 22. Definition of LOS by Control Delay of vehicles and by Volume to Capacity ratio

CONTROL DELAY (Sec/Veh)	LOS BY VOLUME-TO-CAPACITY RATIO	
	V/C≤1.0	V/C>1.0
0-10	A	F
>10-15	B	F
>15-25	C	F
>25-35	D	F
>35-45	E	F
>50	F	F

Impact intensities for LOS are defined below:

Negligible: The LOS for individual locations would remain the same.

Minor: The LOS would change by one category and would remain at an acceptable LOS (A, B, C or D).

Moderate: The LOS would change by more than one category and would remain at an acceptable LOS (A, B, C or D).

Major: The LOS would change by one or more categories and would deteriorate to an unacceptable LOS (E or F).

Parking

As described in the Affected Environment chapter, a parking utilization study conducted in 2011 documented parking use around the East and South Barracks on weekdays. Using the results of the 2011 study, expected parking needs were projected for the project area under each alternative. However, the final parking capacity/numbers of parking spaces will vary as more detailed designs are developed. The actual amount of parking that will be provided will be dependent on a variety of issues such as compatibility with the cultural landscape, archeology, sloping site conditions, location and size of walkways, and location and size of planting islands (Figure 24). Because of this variability, the National Park Service has estimated that parking



Figure 24. Parking opportunities will be dependent on a variety of issues, such as compatibility with the cultural landscape, archeology, existing slopes, and locations of walkways. (National Park Service)

numbers will vary approximately 7% over or under the numbers originally derived from using the 2011 study results. This deviation does not apply to alternative A, no action, for which parking numbers are taken from the the American Land Title Association/American Congress on Surveying and Mapping/National Park Service Land Title Survey of the East and South Barracks completed in 2002 and on-site car counts.

Using requirements under the City of Vancouver Municipal Code, Chapter 20.945 -Section 20.945.070, Minimum Off-Street Parking Requirements, estimates were developed for maximum parking requirements under each alternative. In most cases, the gross square footage of buildings was used in order to determine Vancouver Municipal Code requirements, which vary according to building uses. However, for live performance space proposed for building 721, estimated maximum occupancy for that building was used.

In general, these estimates vary under each alternative, based on differences in building uses and potential building demolitions. In addition, the amount of parking that the Barracks can accommodate varies in each alternative according to the extent and nature of treatments to the cultural landscape. Therefore, the alternatives vary in terms of how well and in what location estimated parking needs may be accommodated. Parking estimates assume complete implementation of the plan, and therefore, represent maximum expected parking numbers. In order to address any parking shortages and reduce the amount of surface parking needed, the National Park Service may explore a shared parking strategy with the City of Vancouver and other partners.

Impact intensities for parking need:

Negligible: There would not be a perceptible change in the current parking balances and/or imbalances.

Minor: A change in the current parking balances and/or imbalances would be slightly perceptible.

Moderate: A change in the current parking balances and/or imbalances would be moderately perceptible.

Major: A change in the current parking balances and/or imbalances would be very perceptible.

Impacts of Alternative A—No Action

Traffic Volume

Under the no action alternative, it is anticipated that there would be limited construction activities that would likely have a short-term, negligible effect on traffic volume. It is calculated that the long-term, average weekday trips generated through the East and South Barracks would markedly decrease from existing conditions. The number of trips generated into and out of South Barracks would markedly increase from 171 to approximately 464 (a 58% increase), yet the number of trips into and out of the East Barracks would markedly decrease from 2,545 to approximately 281 (a 1,323% decrease). Total trips generated into the entire East and South Barracks would fall from 2,716 to 745, an approximate 264% decrease in traffic volume. This would result in both a short-term and long-term beneficial impact on traffic volume, and the decrease in the number of trips generated into the project area would be perceptible.

Level of Service

Under the no action alternative, the long-term LOS for each of the analyzed intersections would remain unchanged. The traffic volume to roadway capacity ratio for alternative A was determined to be 0.36, even lower than the existing determination. This would result in a long-term negligible impact on the LOS.

Parking Needs

Under the no action alternative, it is anticipated that there would be limited construction activities that would likely have a short-term, negligible effect on parking needs. In the long-term, it is estimated that there will be 410 parking spaces available in the South Barracks and 323 spaces available in the East Barracks, for a total of 733 parking spaces (Figure 6). Using current Vancouver Municipal Code guidelines for Officers' Row and the West Barracks, and the proposed building uses for alternative A, it is estimated that there will only be demand for a total of 86 parking spaces on weekdays in the East and South Barracks, resulting in a surplus of over 650 parking spaces. Using the ITE estimates, total demand is only 78 spaces, with a similar surplus of over 650 parking spaces (Table 23). Based on the modeling estimates for alternative A, parking utilization under alternative A will result in a short-term and long-term negligible impact.

Cumulative Effects

A few local projects have the potential to cumulatively affect the traffic, circulation and parking in the East and South Barracks and the surrounding lands.

The excess and disposal of the West Barracks from the U.S. Army to the City of Vancouver, and the subsequent rehabilitation of the historic structures in the West Barracks for adaptive reuse has "set the stage," for the planned rehabilitation efforts of the National Park Service in the East and South Barracks. The adaptive reuse efforts in the West Barracks have preserved the historic barracks structures in the area, helping to keep the remaining contributing elements of the Vancouver Barracks and the VNHR National Historic District intact. These efforts have created and maintained parking areas in the West Barracks, while the presence of residences, public, and private events in the West Barracks have created their own traffic and circulation demands within the East and South Barracks. These existing conditions, with the growth of rehabilitation efforts

Table 23. Estimated Parking Needs for Alternative A

	POTENTIAL SPACES AVAILABLE	# OF SPACES PER VMC	OVER/ <UNDER> # OF SPACES PER VMC	# OF SPACES PER ITE REPORT	OVER/ <UNDER> # OF SPACES PER VMC
South Barracks	410	52	358	33	377
East Barracks	323	34	298	45	278
Totals	733	86		78	

Note: The actual amount of parking that will be provided will be dependent on resource considerations (archeology/cultural landscapes) and site conditions (slope, walkway location/size, etc.). These specifics will not be known until later in the design process. Because of this variability, the NPS has estimated the parking numbers will vary approximately 7% over or under the numbers originally derived from the using the 2011 study results.

in the West Barracks, will likely increase the traffic, circulation, and parking needs within the area. These future demands, combined with the effects of alternative A, will likely produce minor to moderate long-term cumulative impacts to traffic volume, LOS, and parking utilization in the East and South Barracks project area.

The potential impacts of the implementation of the CRC project, in combination with the impacts of alternative A, may produce negligible long-term cumulative impacts to traffic volume, LOS, and parking utilization in the East and South Barracks project area. According to the *Draft Columbia River Crossing Environmental Impact Statement*, if no action is taken to replace the existing bridges, traffic levels on the Interstate 5 bridges will increase 37% from 135,000 vehicles a day to over 184,000 vehicles a day by the year 2030. The *Draft Columbia River Crossing Environmental Impact Statement* analyzes three action alternatives, which have corresponding increases in vehicles a day from between 165,000 to 179,500 vehicles per day by the year 2030. Not only will the construction of the new bridges (with some kind of transit—buses or rail) reduce the number of vehicles traveling over the bridges each day compared to the no action alternative, it is anticipated that the increase in the number of lanes combined with the elimination of the lift-span capability of the bridge, will reduce the number of hours of traffic congestion on the bridge and its arterials by several hours compared to the no action alternative. In short, all of the action alternatives for the CRC will reduce traffic congestion on the Interstate 5 bridges and their arterials compared to the CRC no action alternative, likely meaning that traffic volume will go up but will be accommodated more effectively by the proposed changes and its associated traffic concerns, within the East and South Barracks, compared to the no action alternative.

Conclusions

The no action alternative would result in an overall long-term decrease in the average number of vehicle trips generated into and out of the East and South Barracks, resulting in no change to the LOS at four major intersections around the Barracks, and a surplus in the available parking versus daily demand for parking. Overall, the no action alternative would result in both short-term and long-term negligible adverse to beneficial impacts to traffic, circulation, and vehicle parking around the East and South Barracks.

Cumulative impacts for alternative A are limited to minor to moderate, long-term cumulative impacts to LOS, and parking utilization due to an increase in traffic volume in the East and South Barracks project area for the rehabilitation of the West Barracks, and negligible impacts for the CRC project.

Impacts of Alternative B—A Vibrant, Urban District in a Historic Setting

Traffic Volume

Under alternative B, it is anticipated that construction activities could cause temporary road closures and detours that could have short-term minor to moderate effects on traffic volume. The average long-term weekday trips generated through the East and South Barracks would markedly increase from existing conditions. The number of trips into and out of South Barracks would increase from 171 to approximately 1,516 (a 786% increase), while the number of trips into and out of the East Barracks would increase from 2,545 to approximately 3,674 (a 44% increase). Total trips generated into the entire East and South Barracks would increase from 2,716 to approximately 5,290 (a 94.7% increase). This would result in a moderate impact on traffic volume, and the increase in the number of trips generated into the project area would be perceptible.

Level of Service

Under alternative B, the LOS for three out of the four analyzed intersections would remain the same. Only the traffic circle at Fort Vancouver Way and Evergreen would possibly decrease from a LOS A to a LOS B or an increase in delay of 5 seconds. The traffic volume to roadway capacity ratio for alternative B was determined to be 0.91, which is approaching capacity, but not surpassing it over the life of the plan. The LOS drops only one level because the existing roadway infrastructure in the project area has existing capacity to absorb the additional traffic. This would result in a long-term minor impact on the LOS.

Parking Needs

Under alternative B, it is anticipated that construction activities could cause temporary road closures and detours that could have short-term minor to moderate effects on parking utilization. In addition, it is estimated that long-term, there could be approximately 266-306 parking spaces available in the South Barracks and 443-509 spaces available in the East Barracks, for a total of 709-815 parking spaces (Table 24). Using current Vancouver Municipal Code guidelines for Officers' Row and the West Barracks, and the proposed building uses for alternative B, it is estimated that there will be demand for a total of 604 parking spaces on weekdays in the East and South Barracks, resulting in a surplus of between 105 to 211 parking spaces. Still, using these estimates, there will be an excess of parking in the South Barracks of over 108 to 178 parking spaces, and either a deficiency or surplus in the East Barracks of approximately 30 spaces. Using ITE estimates, total demand is over 1,030 parking spaces, with a deficiency of 215 to 321 parking spaces, with most of the demand coming from the East Barracks. Based on the modeling estimates for alternative B, parking utilization under alternative B will result in a minor to moderate impact.

Table 24. Estimated Parking Needs for Alternative B

	POTENTIAL SPACES PROVIDED	# OF SPACES PER VMC	OVER/ <UNDER> # OF SPACES PER VMC	# OF SPACES PER ITE REPORT	OVER/ <UNDER> # OF SPACES PER VMC
South Barracks	266-306	128	108-178	128	108-148
East Barracks	443-509	476	<33>	902	<393-459>
Totals	709-815	604		1030	

Note: The actual amount of parking that will be provided will be dependent on resource considerations (archeology/cultural landscapes) and site conditions (slope, walkway location/size, etc.). These specifics will not be known until later in the design process. Because of this variability, the National Park Service has estimated the parking numbers will vary approximately 7% over or under the numbers originally derived from using the 2011 study results.

Cumulative Effects

As discussed for alternative A, the presence of residences, public and private events in the West Barracks, along with the likely growth of rehabilitation efforts there, could increase the traffic, circulation, and parking needs within the area. These future demands, combined with the effects of alternative B, will likely produce minor to moderate long-term adverse cumulative impacts to traffic volume, LOS, and parking utilization in the East and South Barracks project area.

Conclusions

Under alternative B, in the long-term, the NPS efforts at rehabilitating the East and South Barracks into a dynamic, mixed use urban campus would markedly increase the number of vehicles entering, parking, and leaving the Barracks each day. This increase would have a moderate impact on traffic volume, a minor impact on the LOS on at least one of the four main intersections surrounding the East and South Barracks, and a minor to moderate impact to parking utilization around the Barracks.

Some of these effects can be moderated through the use of mitigation measure AQ-1, encouraging staff and non-NPS tenants to utilize mass transit and bicycling options whenever feasible.

Cumulative impacts for alternative B are likely to produce minor to moderate long-term cumulative impacts to traffic volume, LOS, and parking utilization in the East and South Barracks project area.

Impacts of Alternative C (Preferred Alternative)—A Sustainable Public Service Campus

Traffic Volume

Under alternative C, it is anticipated that construction activities could cause temporary road closures and detours that could have short-term minor to moderate effects on traffic volume. In the long-term, it is anticipated that the average weekday trips generated through the East and South Barracks would markedly increase from existing conditions. The number of trips into and out of the South Barracks would increase from 171 to 845 (a 394% increase), while the number of trips into and out of the East Barracks would increase from 2,545 to 3,743 (a 47% increase). Total trips generated into the entire East and South Barracks would increase from 2,716 to 4,588, a 68.9% increase in traffic volume. This would result in a moderate impact on traffic volume, and the increase in the number of trips generated into the project area would be perceptible.

Level of Service

In the long-term, even with the projected 68% increase in traffic volume, the calculations for the LOS for all four of the analyzed intersections would remain the same. The traffic volume to roadway capacity ratio for alternative C was determined to be 0.92, again approaching capacity for these roadways, but not surpassing it, over the life of the plan. The existing roadway infrastructure is able to handle the traffic demands generated in this alternative. This would result in a long-term negligible to minor impact on the LOS.

Parking Needs

Under alternative C, it is anticipated that construction activities could cause temporary road closures and detours that could have short-term minor to moderate effects on parking utilization. In the long-term, it is estimated that there will be approximately 227-261 parking spaces available in the South Barracks and between 350 to 398 spaces available in the East Barracks, for a total of 577-659 parking spaces (Figure 11). Using current Vancouver Municipal Code guidelines

for Officers' Row and the West Barracks, and the proposed building uses for alternative C, it is estimated that there will be demand for a total of 638 parking spaces on weekdays in the East and South Barracks, ranging from either a deficiency of approximately 61 to a surplus of approximately 20 parking spaces, based on the two different methods used. Still, using these estimates, there will be an excess of parking in the South Barracks of up to 183 parking spaces, and a deficiency in the East Barracks of approximately 162-210 spaces. Using ITE estimates, total demand increases to 877 parking spaces, with a deficiency of between 218 to 300 parking spaces, with most of the demand coming from the East Barracks (Table 25). Based on modeling estimates for alternative C, parking utilization under this alternative will result in a moderate to major impact.

Table 25. Estimated Parking Needs for Alternative C

	POTENTIAL SPACES PROVIDED	# OF SPACES PER VMC	OVER/ <UNDER> # OF SPACES PER VMC	# OF SPACES PER ITE REPORT	OVER/ <UNDER> # OF SPACES PER VMC
South Barracks	227-261	78	149-183	67	160-194
East Barracks	350-398	580	<162-210>	810	<412-460>
Totals	577-659	638		877	

Note: The actual amount of parking that will be provided will be dependent on resource considerations (archeology/ cultural landscapes) and site conditions (slope, walkway location/size, etc.). These specifics will not be known until later in the design process. Because of this variability, the National Park Service has estimated the parking numbers will vary approximately 7% over or under the numbers originally derived from using the 2011 study results.

Cumulative Effects: The cumulative effects would be the same as alternative B.

Conclusions

Under alternative C, the long-term NPS efforts at rehabilitating the East and South Barracks into a sustainable public service campus would markedly increase the number of vehicles entering, parking, and leaving the Barracks each day. This increase would have a moderate impact on traffic volume, a negligible impact on the LOS on all four of the main intersections surrounding the East and South Barracks, and a moderate impact to the parking utilization around the Barracks.

Some of these effects can be moderated through the use of mitigation measure AQ-1, encouraging staff and non-NPS tenants to utilize mass transit and bicycling options whenever feasible. The effects on the parking utilization may be partially off-set by the development of a parking lot in the East Barracks, south of building 993 (Figure 11).

Cumulative impacts for alternative C are likely to produce minor to moderate long-term cumulative impacts to traffic volume, LOS, and parking utilization in the East and South Barracks project area.

Impacts of Alternative D—An Historic, Educational Campus for All

Traffic Volume

Under alternative D, it is anticipated that construction activities could cause temporary road closures and detours that could have short-term minor to moderate effects on traffic volume. In the long-term, the average weekday trips generated through the East and South Barracks would markedly increase from existing conditions. The number of trips into and out of South Barracks would increase from 171 to 487 (a 184% increase), while the number of trips into and out of the

East Barracks would increase from 2,545 to 3,785 (a 48.7% increase). Total trips generated into the entire East and South Barracks would increase from 2,716 to 4,272, a 57.2% increase in traffic volume. This would result in a moderate impact on traffic volume, and the increase in the number of trips generated into the project area would be perceptible.

Level of Service

Under alternative D, even with the 57% increase in traffic volume, the long-term calculations for the LOS for all four of the analyzed intersections would remain the same. The traffic volume to roadway capacity ratio for alternative C was determined to be 0.40, because the existing roadway structure has the capacity to handle the traffic demands generated by the alternative. Altogether, this would result in a long-term negligible impact on the LOS.

Parking Needs

Under alternative D, it is anticipated that construction activities could cause temporary road closures and detours that could have short-term minor to moderate effects on parking utilization. In the long-term, it is estimated that there would be approximately 136-156 parking spaces available in the South Barracks and 275-315 spaces available in the East Barracks, for a total of approximately 485-557 parking spaces (Figure 14). Using current Vancouver Municipal Code guidelines for Officers' Row and the West Barracks, and the proposed building uses for alternative D, it is estimated that there will be demand for a total of 606 parking spaces on weekdays in the East and South Barracks, resulting in a deficiency of approximately 49-121 parking spaces. Still, using these estimates, there will be an excess of parking in the South Barracks of 80-100 parking spaces, and a deficiency in the East Barracks of 235-275 spaces. Using ITE estimates, total demand increases to 955 parking spaces, with a deficiency of 438 to 510 parking spaces, with most of the demand coming from the East Barracks (Table 26). Based on the modeling estimates for alternative D, parking utilization will result in a moderate to major impact.

Table 26. Estimated Parking Needs for Alternative D

	POTENTIAL SPACES PROVIDED	# OF SPACES PER VMC	OVER/ <UNDER> # OF SPACES PER VMC	# OF SPACES PER ITE REPORT	OVER/ <UNDER> # OF SPACES PER VMC
South Barracks	136-156	56	80-100	23	113-133
East Barracks	349-401	550	<149-201>	972	<571-623>
Totals	485-557	606		995	

Note: The actual amount of parking that will be provided will be dependent on resource considerations (archeology/cultural landscapes) and site conditions (slope, walkway location/size, etc.). These specifics will not be known until later in the design process. Because of this variability, the National Park Service has estimated the parking numbers will vary approximately 7% over or under the numbers originally derived from using 2011 study results.

Cumulative Effects: The cumulative effects would be the same as alternative B.

Conclusions

Under alternative D, the NPS efforts at rehabilitating the East and South Barracks into an educational campus would markedly increase the number of vehicles entering, parking, and leaving the Barracks each day.

Some of these effects can be moderated through the use of mitigation measure AQ-1, encouraging staff and non-NPS tenants to utilize mass transit and bicycling options whenever feasible.

Cumulative impacts for alternative D are likely to produce minor to moderate long-term cumulative impacts to traffic volume, LOS, and parking utilization in the East and South Barracks project area.

SOCIOECONOMIC FACTORS AND LAND USE

The actions contained in the alternatives in this *Environmental Assessment* are strategies for reuse and rehabilitation of the East and South Barracks buildings and grounds. Relinquishment of the Barracks from the U.S. Army to the National Park Service is considered part of the existing conditions for the purpose of this analysis.

Regulations and Policies

Council on Environmental Quality regulations for implementing the NEPA, 40 CFR 1500, direct economic analyses of federal actions that would affect local or regional economies. Economic effects are commonly expressed in terms of the number and types of jobs supported, changes in income, the number of visitors, and the resulting changes in local tourism spending.

Assessment Methodology

Socioeconomic impacts were determined based on applied logic, professional expertise, and professional judgment.

Context of Impact

Socioeconomic impacts were considered for the Portland-Vancouver-Hillsboro, Oregon/Washington MSA.

Impact Intensities

Adverse impacts are those effects that are generally recognized to diminish the established social environment, decrease economic benefits, or diminish the environment for particular populations or communities.

Duration of Impact

Short-term effects are those that occur during and in response to the planning, design, construction, and major maintenance of buildings, trails, parking lots, and other improvements associated with federal spending. These effects diminish or disappear after the project is completed. "Short-term" may also describe the first or early response in social or economic conditions to more fundamental changes in the park or reserve management and operations and to changes in visitor use, but which give way to broader changes over time. Generally, "short-term" describes those effects that may last up to 5 years.

Long-term effects are those that last longer than 5 years, including some that may not begin until after completion of direct activities associated with the initial federal government spending or changes in management.

Intensity of Impact

Negligible: No effects would occur or the effects on socioeconomic conditions would be below or at the level of detection. The effect would be slight and no long-term effects on socioeconomic conditions would occur. Little or no noticeable change would occur in economic activity, employment and income levels, regional population or land use. The impact is barely detectable and/or would affect few neighbors.

Minor: The effects on socioeconomic conditions are small but detectable, and only affect a small number of businesses and/or a small portion of the population. The impact is slight, not detectable outside the affected area, and/or would affect a minority of neighbors.

Moderate: The impact is readily apparent and/or would affect many neighbors on a local scale (e.g. a gateway community) within the affected area, but would not alter basic socioeconomic structure or functions. Impacts would most likely be long-term.

Major: The effects on socioeconomic conditions are readily apparent with widespread, substantial changes in overall economic activity, employment and income levels, or regional population or land use. Measurable changes in social or economic conditions at the county or regional level occur. The impact is severely adverse within the affected area and/or would affect the majority of neighbors.

Alternative A – No Action

Under alternative A, the National Park Service would assume and retain ownership and all structures and properties within the East and South Barracks. The National Park Service would use some of the buildings in the barracks for their own use, but would not proactively seek tenants so the vast majority of buildings would remain empty. These empty buildings could also attract vandalism, which would increase maintenance costs. They would not generate any income for the building upkeep, park, or community, nor would any new jobs be created.

Use of the land would change from U.S. Army functions (offices, training, and operations restricted from the public) to NPS functions such as office and public open space.

U.S. Army personnel have been transferred from the Vancouver Barracks to a new installation in the eastern part of Vancouver, which has resulted in no immediate job losses in Clark County. There may be some shift in economies from the west side of Vancouver to the east side of town, but this should have little overall effect to the economy of the city as a whole, or of Clark County. This should result in long-term negligible economic impacts.

When the property is relinquished, there would be some immediate and long-term beneficial effects to Contemporary Tribal Communities due to the changes in ownership and management from military to National Park Service. Cultural Resources would be protected under NPS management, in accordance with the NPS Organic Act of 1916 which states resources are to be “preserved for future generations.” There is also the potential for increased interpretation and consultation efforts regarding northwest tribal history.

Cumulative Impacts

Potential mitigation for the CRC project is a Community Connector that would provide a pedestrian friendly crossing over Interstate 5. This project, as well as the completed Land Bridge, contributes beneficial cumulative effects to the East and South Barracks project because these connections have, and would, allow more people to access downtown Vancouver to, and from, the Barracks. As the buildings eventually become rehabilitated and leased, employees of the Barracks would likely spend money within Vancouver. The City of Vancouver’s City Center vision, which includes redevelopment on the waterfront, is also expected to add socioeconomic benefits to this alternative for similar reasons.

Conclusion

There would be both a short-term and a long-term negligible to minor adverse impact to the economy of the MSA under alternative A due to the loss of jobs in the Barracks and potential for increased vandalism and maintenance. This includes effects to the local real estate market (negligible short-term and long-term impacts), and the potential change in local employment (negligible short-term and long-term impacts).

Alternative B – A Vibrant, Urban District in a Historic Setting

In this alternative, the National Park Service would assume and retain ownership of all structures and properties within the East and South Barracks after their relinquishment from the U.S. Army. Some structures would be used by the National Park Service and its partners, and others would be rehabilitated for a mix of offices, businesses, shops, restaurants, art galleries, and residences.

U.S. Army personnel and operations would no longer function in the Barracks. Instead, the National Park Service would use some of the buildings for their own purposes as well as lease buildings out for a variety of other functions. In order to identify future uses that would be economically successful for the National Park Service, as well as the local and regional community, the National Park Service completed a Limited Market Analysis Study, which was prepared by Booz Allen Hamilton (2011). The analysis was developed based on competitor leasing data in order to assist in developing future demand expectations for commercial leasing in the Barracks.

The analysis found that Fort Vancouver NHS would likely have success in leasing the buildings in the future, and that the reuse proposals in the *Environmental Assessment* have “strong potential to add tremendous value to the park, the National Park Service, the Fort Vancouver partnership, and the larger Vancouver community.” It also stated, “[t]he environment offered in Fort Vancouver is unparalleled in the region as there are no other leasing opportunities like it; it provides public open space in an historical setting.” Some of the draw and allure that attracts visitors and future tenants to the area include the proximity to the Vancouver central business district, proximity to Portland, lack of an income tax in the state of Washington, and great neighborhoods and schools (Booz Allen Hamilton 2011). However, successful commercial leasing would require great care in planning, marketing, and managing the endeavor, including attracting and maintaining the right mix of tenants and visitors. The study recommended that a good mix of all proposed building uses – office, retail, restaurant, residential (multifamily) and public benefit/public use is the ideal scenario for reuse of the East and South Barracks.

The buildings that would be available for lease for these purposes are Class C buildings. There is currently a surplus of vacant Class A and B office space in Vancouver. Companies and organizations seeking to lease Class A or B buildings rarely switch to a Class C because they require buildings with high quality building infrastructure, good access and locations, and professional management. Therefore, Class C buildings generally do not compete against A and B classes. Tenants that seek out historic buildings (which are generally Class C) are a niche market that rarely considers Class A or B properties.

This is evidenced by the low vacancy rate in the Officers’ Row properties managed by the Fort Vancouver National Trust, as well as Vancouver’s generally lower vacancy rates for older buildings. Therefore, adding East and South Barracks to the real estate supply is not expected to negatively impact Class A & B markets within the MSA. Furthermore, absent a funding source, the leasing of the Barracks buildings would most likely be phased. As such, lease properties would enter the market slowly over time, reducing the likelihood of an oversupply of Class C office space. Since there is a slight chance of the Barracks buildings competing with

other office space, the effect would be adverse; however it would be negligible, meaning that the effects on the leasing market in the MSA would be slight, below or at the level of detection. If a phased approach is taken to bringing the buildings to the real estate market, then it would be effective to offer the building uses that command the highest demand up front, including (in priority order), residential, office, and some public benefit/public use. This phasing strategy would help to achieve financial feasibility and to elicit a critical mass of people traffic to support a subsequent implementation of the building uses that require such traffic for success, such as retail and restaurant.

U.S. Army personnel have transferred out of the Barracks, and there could be a loss of jobs and revenue in Clark County, in the short-term, until the buildings are leased and rehabilitated. But in the long-term, the *Environmental Assessment* would contribute to an increase in jobs in Clark County. New business would move into the Barracks and would contribute to, and benefit, the local economy. People visiting, working, and living in the Barracks would also provide benefits to the economy because they would be spending money and generating tax revenues within the MSA. There would also be an increase in jobs associated with development of infrastructure upgrades. As such, alternative B is expected to result in beneficial effects to the job market and contribute to a reduction in unemployment.

While the primary land use would be federal use with approximately 29,150 square feet to be used by the National Park Service for offices, maintenance, storage, and curatorial functions, there would be a heavy emphasis on commercial uses with this alternative. In alternative B, the desired mix of uses appropriate to the site include: 36.1% office, 17.3% residential (this could include apartments) 26.1% retail, 7.9% restaurants, and 11.9% public benefit/use.

New uses of the buildings and grounds that invite public use would also contribute positively to the social and recreational environment of the local area, if not southwestern Washington. It is anticipated that people living in nearby communities and counties could visit the Barracks for special events, museum exhibits, or dining and shopping experiences. During times of economic instability, the public's recreational use of national parks increases because of the low cost of access. Over the past several years of economic down turn, park visitation has increased and it is anticipated that the proposed new uses for the Barracks would bring even more visitors to the park and surrounding area.

The reuse plans could also result in a small increase in population in the MSA, as businesses move into the Barracks. This business may bring in staff that may be new to the area or the state, thus increasing the productive tax base of the area.

Because of plans for new offices, businesses, shops, restaurants, art galleries, and residences for the general public, there would be obvious benefits to the local economy from increased employment, and changes to business activity, as well as improvements to the social/recreational environment. The proposed uses under alternative B would also complement the uses of the West Barracks buildings and the rest of the VNHR, both in theme and number of buildings for lease. While there would be some similar uses, a partnership approach can ensure complementary uses of both sites. While there would be residential functions in both the East and West Barracks, there is significant demand for this housing (currently, the VNHR residential properties boast a 90-100% occupancy rate and there is a waiting list for available units). It is anticipated that rentals in the East Barracks would not be numerous enough to negatively affect occupancy rates in the West Barracks. The intent of the combination of uses for alternative B is to create a mixed urban use community where people could eat, work, and recreate. This could have long-term, minor adverse impacts to downtown Vancouver as people might spend more money in the East and South Barracks, but these are expected to be no greater than negligible impact.

As with alternative A, there would be beneficial effects to contemporary tribal communities due to the changes in ownership and management from military to National Park Service. Cultural Resources would be protected under NPS management, in accordance with the NPS Organic Act of 1916 which states resources are to be “preserved for future generations.” There is also the potential for increased interpretation and consultation efforts regarding northwest tribal history.

Cumulative Impacts

Potential mitigation for the CRC project is a Community Connector that would provide a pedestrian friendly crossing over Interstate 5. This project, as well as the completed Land Bridge, contributes beneficial cumulative effects to the project because these connections have, and would, generate synergies that would allow more people to access downtown Vancouver to, and from, the Barracks. Vancouver residents would likely visit the Barracks, spend money, and contribute to the economy and residents or employees of the Barracks would do the same in Vancouver. The City of Vancouver’s City Center vision, which includes redevelopment on the waterfront with Class A office space, is also expected to add socioeconomic benefits to this alternative for similar reasons.

Conclusion

It is expected that, as buildings become rehabilitated and leased, alternative B would have both short and long-term beneficial effects on the socioeconomic climate of the Portland MSA due to increased spending, employment, and local population. There could be both short and long-term negligible adverse impacts to the real estate market of the MSA due to competition with other vacancies, but by the time the buildings are leased, this impact should be barely detectable. Competition between the Barracks building uses and the building uses in Vancouver is also expected to be negligible.

Alternative C (Preferred Alternative) - A Sustainable Public Service Office Campus

The impacts of alternative C are expected to be very similar to alternative B. The differences in effects relate to the different building uses proposed under this alternative. No residential uses are proposed, so this use would not compete with residential leasing in the West Barracks. There would be less retail and restaurants, and the focus of the rehabilitation would be for office space. In this case, there could be even more benefits to the economy of the MSA because people working, recreating, and learning (such as in an environmental learning camp) in the Barracks would travel outside of the Barracks to spend money on food, lodging, etc. Having the National Park Service and other federal agencies as an anchored hub also creates benefits and stability to the campus, as this could attract conference and other special events which would also drive business to the MSA.

The primary land use would be office with approximately 68,342 square feet. In alternative C, the desired mix of uses appropriate to the site include: 40.7% office, 0% residential, 13.3% retail, 2.7% restaurant, and 13.2% public benefit/use.

Cumulative Impacts

The cumulative impacts for alternative C are the same as alternative B.

Conclusion

It is expected that the impacts for alternative C would be the same as alternative B.

Alternative D - An Historic, Educational Campus for All

The impacts of alternative D are expected to be very similar to alternative B. The differences in effects relate to the different building uses proposed under this alternative. No residential uses are proposed, so this use would not compete with residential leasing in the West Barracks. There would be fewer retail and restaurant operations and the focus of the rehabilitation would be to create office space for the National Park Service, Fort Vancouver National Trust and non-profits or community organizations, museums, an environmental learning camp and complementary commercial services. In this scenario, there would be even greater benefits to the economy of the MSA because people working, recreating, and learning (such as in an environmental learning camp) within the Barracks would travel outside of it to spend money on food, lodging, etc. Having the NPS offices as an anchor would add benefits and stability to the campus by attracting conference and other special events which would also drive business to the MSA. The addition of museums and community space also creates benefits to the social environment.

The primary land use would be public benefit with approximately 105,480 square feet. In alternative D, the desired mix of uses appropriate to the site include: 16% NPS Office, 38% Nonprofit/education office, 0% residential, 7% retail, 1% restaurant, and 38% public benefit/use.

Cumulative Impacts

Cumulative impacts are expected to be the same as Alternative B.

Conclusion

It is expected that the impacts of alternative D would be the same as alternative B.

PARK OPERATIONS, FACILITIES AND INFRASTRUCTURE

Several aspects of park operations have the potential to be affected by project implementation, as the National Park Service moves some of its operations to buildings within the East and South Barracks. In order to support this new use, utilities must be improved. Best professional judgment was used to assess impacts.

Guiding Regulations and Policies

NPS *Management Policies 2006* (National Park Service 2006a) detail the basic service-wide policies for implementation of the Organic Act, including NPS park operations. The Management Policies require that park operations achieve certain conditions related to the accomplishment of management goals through environmental leadership and the use of sustainable practices in planning, design siting, construction and maintenance. NPS *Management Policies 2006* also states that “NPS consumptive use of water will be efficient and frugal, especially in water scarce areas,” and mandates the National Park Service to use “biodegradable materials, the reuse and recycling and materials and other appropriate measures to minimize solid waste and conserve natural resources to the greatest extent possible.”

Executive Order 13514 – Federal Leadership in the Environmental, Energy, and Economic Performance states that, “federal agencies shall increase energy efficiency; measure, report, and

reduce their greenhouse gas emissions from direct and indirect activities; conserve and protect water resources through efficiency, reuse, and stormwater management; eliminate waste, recycle, and prevent pollution; leverage agency acquisitions to foster markets for sustainable technologies.”

Assessment Methodology

Operational efficiency refers to adequacy of staffing levels and the quality and effectiveness of the infrastructure used in the operation of the park in order to adequately protect and preserve vital park resources. Impacts for each alternative were evaluated by identifying changes to operations. These effects were compared to existing operations, staffing, and funding.

Discussion of impacts to park operations focuses on (1) ability to protect and preserve resources, (2) staff size, whether staffing needs to be increased or decreased, (3) existing and needed facilities, (4) appropriate utilities (sewer, electric, water, communication) and (5) use of resources. Park staff knowledge was used to evaluate the impacts of each alternative and is based on the current description of park operations presented in the Affected Environment section of this document.

Context of Impact: Park operations impacts were considered within the project area and for Fort Vancouver NHS. Impacts on park operations would result from the need for additional staffing or changes in duties for current staff, changes in funding levels, changes in facilities, and from cost-saving measures associated with new facilities.

Type of Impact: Adverse impacts would increase staffing, operating costs or fuel consumption. Beneficial impacts would decrease these. With beneficial impacts, the efficiency of park operations would also be improved and may lower the overall cost of operation.

Impact Intensities

Negligible: Park operations would not be affected or the effect would not be noticeable or outside normal variability. No detectable changes to utility use patterns on site would occur. The effect on water supply and availability would not be measurable. No effects would occur or the effects to energy requirements and conservation potential would be below or at the level of detection. The effect would be slight and no long-term effects to energy requirements and conservation potential would occur.

Minor: The effect would be detectable but would be of a magnitude that it would not have an appreciable effect on park operations. While possibly noticeable to staff or park partners, it would not be noticeable to the public. Very small-scale effects to utility use patterns may occur.

The effects to energy requirements and conservation potential would be detectable, likely short-term. Any effects would be small and if mitigation were needed to offset potential adverse effects, it would be simple and successful. The effect on water supply and availability would be barely measurable.

Moderate: The effect would be readily apparent, resulting in discernable changes in park operations noticeable to staff, park partners, and possibly to an aware public. Changes to utility use patterns would be readily measurable. The effect on water supply and availability would be noticeable. The effects to energy requirements and conservation potential would be readily apparent and likely long-term. Any effects would result in changes to energy requirements and conservation potential on a local scale. If mitigation is needed to offset potential adverse effects, it could be extensive, but would likely be successful.

Major: The effect would be readily apparent, resulting in substantial changes in park operations in a manner noticeable to staff, park partners, and the public. Changes to utility use may mean limits for the area are close to being reached. The effects to energy requirements and conservation potential would be readily apparent, long-term, and would cause substantial changes to energy requirements and conservation potential conditions in the region. Mitigation measures to offset potential adverse effects would be extensive and their success could not be guaranteed. The effect on water supply and availability would be highly noticeable.

Alternative A – No Action

Under alternative A, the National Park Service and the Fort Vancouver National Trust would move their main administrative office functions to building 991. NPS maintenance and storage functions would likely be relocated to one or more of the buildings in the South Barracks. Currently, the space needs for administrative and maintenance functions are greater than the available space in their current building locations, warranting such a move. The current administrative headquarters building will be converted back to park housing (its original function), while the maintenance structure will be used for interim living history materials storage space. Preservation of historic structures would occur as necessary (i.e., caretaking mode) and include some minimal exterior restoration and rehabilitation to protect building envelopes. Only minimal repairs to the utility systems would occur, also on an as-needed basis. Minimal landscaping, ground and road maintenance would also occur as necessary.

Approximately five additional employees would be needed to maintain the buildings and grounds. These could include a maintenance worker, carpenter, grounds keeper, or site manager. The park is in need of additional space to house staff, museum collections and equipment. Lack of adequate museum space could create an adverse long-term moderate impact to those objects and would inhibit the National Park Service's ability to protect and preserve the resources. Further, lack of rehabilitation and habitation of the historic buildings would also hinder the preservation of those resources, resulting in additional maintenance. The effect on the infrastructure through lack of comprehensive rehabilitation would be measurable, and frequent repairs of an antiquated system could increase park operating costs. Over time, there could be measurable changes to the utilities due to their state of disrepair. This would also contribute to long-term moderate impacts. Water use would be expected to be lower than the existing use.

Some minor upgrades would be made to the buildings for energy conservation, in compliance with Executive Order 13423 (Strengthening Federal Environmental, Energy, and Transportation Management) and Executive Order 13514 (Federal Leadership in Environmental, Energy and Economic Performance), but no substantial improvements would be immediately planned to conserve energy or water in the project area. There would continue to be failures in the waterlines, which would result in a loss of water and impacts to water quality.

Cumulative Impacts

The remodel of the Visitor Center would presumably improve NPS operational efficiency, as would the hazardous material clean-up since it would better eliminate hazardous substances from park resources. These projects, when combined with the no action alternative, would have an adverse negligible effect on park operations. The CRC project has already created moderate impacts to park operations since there has been substantial involvement by park staff. This involvement is expected to continue over approximately the next 20 years during the remainder of planning and implementation, leaving the park with fewer resources to fulfill the mission of

the park. As such, the CRC, when combined with the no action alternative, would create both short and long-term moderate adverse cumulative impacts.

Conclusion

Alternative A would have long-term moderate adverse impacts on park operations related to reduction in efficiency caused by lack of repairs and utilization of buildings for park use. Because the National Park Service is assuming ownership of the project area, there would inevitably be an increase in operating costs for the park, which would result in a long-term minor impact on park operations. In addition, under this alternative, it is assumed that the curation facility would not move to building 405 and remain in the currently at-capacity Fur Store facility, leading to short-term minor, and long-term minor to moderate impacts on the museum collection. These impacts are partially off-set by short and long-term benefits to the park by moving maintenance operations into the South Barracks, and the headquarters function to the East Barracks.

Alternative B – A Vibrant, Urban District in a Historic Setting

Facilities and Staff

In alternative B, various buildings in the East and South Barracks would be utilized by the National Park Service and Fort Vancouver National Trust for office space, costume storage, maintenance use, and storage. Building 993 would become the NPS administrative headquarters and building 402 in the South Barracks would become a new maintenance facility. Currently, the space needs for administrative and maintenance functions are greater than the available space in their current building locations, warranting such a move. The current administrative headquarters building will be converted back to park housing (its original function), while the maintenance structure will be used for interim living history materials storage space. Building 405 would be rehabilitated as a regional museum management facility, which is critical to park operations. Use of these buildings would improve operational efficiency as there is currently not adequate space for these functions in the park. The park would be better able to preserve and protect museum collections and ultimately serve the public. Rehabilitation of all of the buildings in the project area would incorporate sustainable design development practices in order to conserve water and energy. The relocation of functions into Barracks buildings, as well as building rehabilitation, would improve efficiency and therefore result in beneficial effects to park operations.

Buildings not occupied by the National Park Service would be leased out for a variety of other functions such as offices, businesses, shops, galleries, etc. It is anticipated that the leasing and management of these building occupants would be by an entity other than the National Park Service, although there would be some NPS oversight and coordination with this entity. Therefore, this aspect of the project would have negligible adverse impacts to park operations due to the extra NPS oversight of the structures.

There are many projects contained within this alternative of the *Environmental Assessment*. Planning and implementing projects requires staff time, expertise, and assistance, which must be taken from daily duties such as visitor contacts, interpretation, resource protection, and safety. The National Park Service would need to hire additional staff to address the expanded park operations, numerous rehabilitations, cultural landscape treatments, and higher volumes of visitors. Anticipated staffing needs total approximately 13 additional positions, including a project manager, a business manager, park safety and environmental specialist, maintenance worker, historical architect, maintenance carpenter, maintenance mechanic, facilities services assistant, grounds worker, collections registrar, archivist, archeology lab director, business specialist, and bringing two existing archaeologist positions and existing maintenance staff to

full time. Maintenance staff, in coordination with cultural resources staff, would be responsible for maintaining the exterior of NPS buildings. It is likely that other maintenance responsibilities could be borne by tenants or lessees, but management of the leased property has not been determined at this time. In this alternative, ornamental plantings (with irrigation) would be more abundant and grounds-keeping could require more staff time. Operating costs are also expected to rise. Long-term minor to moderate adverse effects could result. If funding were not available for this extra staff, the effects to park operations could be moderate, as the extra workload on existing staff would be readily apparent and public services could be affected as well. If funding were available for these positions, the adverse effect would be less appreciable.

During construction of buildings and roads, there would be short-term adverse minor impacts to park operations due to construction management responsibilities, construction detours, etc.

Utilities

There would be substantial upgrades to the utilities in the East and South Barracks, as recommended in the *Schematic Design for Utility Upgrades at Fort Vancouver East and South Barracks* (2010) conducted by Kennedy/Jenks. The existing utilities include water, sanitary sewer, natural gas, storm water, electrical, and telephone. The improvements and upgrades would bring the existing utilities into compliance with current codes and standards, as well as to meet the anticipated LOS. It is the goal of the National Park Service that the City of Vancouver, Clark Public Utilities District, Qwest, and Comcast assume ownership and maintenance of the utility systems within the East and South Barracks. For them to accept ownership, the systems need to be in conformance with their requirements, and with the applicable code and State requirements. The existing sewer system throughout East Barracks is not in a condition that the City of Vancouver would accept ownership. The National Park Service would coordinate with the appropriate operating companies for all of the upgrades to ensure the systems are developed to their standards, and also to reduce impacts to sensitive NPS resources.

The planned future ownership and maintenance of much of the utility systems by the local utility companies would result in beneficial effects to park operations because the park would not be responsible for costly and time-consuming maintenance of the systems. The new systems would presumably have fewer outages and break-downs, and require less maintenance; which would allow the National Park Service to be efficient and spend more time working on other important NPS issues. The failing water lines would be replaced to increase capacity for the potable supply as well as fire suppression.

Ditches and culverts would be enlarged and replaced to improve flow of stormwater, which is anticipated to be less than the current flow because wherever possible the National Park Service will take steps to dispose of a greater amount of storm water on-site, and asphalt would be removed and replaced with permeable surfaces. Runoff from impervious surfaces would be allowed to sheet drain into the permeable soils or may be channeled into natural swales, which would help manage the storm water flow and remove sediments and pollutants before the water enters the storm sewer. There is a collection point in the South Barracks that can be sampled prior to water entering the system when required. All of these improvements to the storm water system would markedly decrease the amount of storm water that enters the storm sewer, reducing the levels of sediment and pollutants that could potentially contaminate downstream aquifers or the City of Vancouver storm water management system.

The improvements and upgrades would bring the existing utilities into compliance with current codes and standards, as well as to meet the anticipated LOS. It is assumed that the water representing the peak building potable water use (excluding that used for irrigation)

enters the waste water system. Undersized wastewater pipes in the East Barracks and for building 410 in the South Barracks would be replaced with 6 in. lateral connected to the 27 in. main to be able to handle all future loads from the Barracks when fully occupied. City of Vancouver did inform the National Park Service that there would be no issues with accepting future use wastewater loads from the East and South Barracks at the Westside Water Reclamation Facility, where wastewater would be treated.

Utility interruptions would be adverse and short-term, but there would be long-term beneficial impacts as a result of the actions proposed in this alternative. There would be no adverse effects to the existing utility systems as they will be upgraded to accommodate the increases in loads.

Use of Resources

Upgrades to energy systems would also occur in this alternative, as the existing systems are antiquated and cannot handle future load requirements. Each building must have a power meter and would likely require upgraded heating, ventilating, and air conditioning, thereby increasing the electrical load; and street lighting would need to be upgraded. Electrical lines would be upgraded and then buried underground. Renewable energy components, such as solar panels, would also be installed where appropriate. Energy efficient fixtures will be included in all building rehabilitation. Improvements to the infrastructure of both Barracks would result in beneficial effects by substantially improving the efficiency of park operations and ultimately reducing operating costs.

Demands on the public water system include domestic, fire suppression, and landscape irrigation uses. The City of Vancouver supplies water for domestic consumption as well as fire suppression. The City has informed the National Park Service that there is no issue with supplying the needed water for future uses of East and South Barracks (Cozby, personal communication, June 20, 2011). The National Park Service has an existing well used for irrigation; this high yield well is in good operating condition and will be able to irrigate any new areas in the Barracks with no loss in pressure (Kennedy/Jenks 2010).

The Kennedy/Jenks *Schematic Design Report for Fort Vancouver National Historic Site Utility System Upgrade Alternatives* (2010), states that the water system upgrades will supply the maximum domestic water demands and provide fire flow capacity for all buildings that meets both National Park Service and City of Vancouver requirements. Domestic use and fire flow was calculated on a building by building basis in accordance with the International Plumbing Code, and International Fire Code, respectively. Estimates for water demand were conservative and flexible to account for changes in building uses throughout the planning process. Therefore, calculations were not completed for the different building uses in each alternative, as the estimated water demands in each of the buildings in the East and South Barracks identified in the Schematic Design Report are assumed to be the maximum water demand needed under any circumstance or occupancy level.

Water use could increase slightly from the existing condition, which has less water use than when the Barracks were fully utilized by the U.S. Army, as the U.S. Army started to scale down its operations in the Barracks since 2000. But overall water use is expected to be no greater with implementation of the *Environmental Assessment* than when the Barracks were at full capacity by the U.S. Army. The *Environmental Assessment* proposes no new buildings or high volume consumptive uses (such as laundries or campground showers). The rehabilitated water system will repair all leaks, and the National Park Service will add water meters, providing for better management of water resources. Irrigation will be minimized to the greatest extent possible.

All buildings would be rehabilitated with energy efficient fixtures such as low flow toilets and faucets, waterless urinals, etc. And, with the inclusion of the mitigation measures below, water will be further conserved.

These water conservation measures are a critical part of the project, not only to comply with NPS policies to be “efficient and frugal” with water use, but also because research has shown that it is likely that Clark County will face an extremely high risk of water shortage by 2050 as a result of global warming (Natural Resources Defense Council, 2010). This analysis concluded that climate change will greatly increase the risk that water supplies will not be able to keep pace with withdrawals in many areas of the United States. With the inclusion of water conservation measures mentioned above and below mitigation measures, the project is expected to have negligible adverse effects on water supply.

Cumulative Impacts

The remodel of the Visitor Center would presumably improve NPS operational efficiency, as would the hazardous material clean-up since it would better eliminate hazardous substance from park resources. This project, when combined with the impacts of alternative B, could have adverse moderate impacts on park operations. The issue of the management of the Pearson Air Museum could also contribute cumulative impacts to the project and could result in additional staff time to address both the short and long-term situation. The CRC project has already created moderate impacts to park operations since there has already been substantial involvement by park staff. This involvement is expected to continue over approximately the next 20 years during the remainder of planning and implementation, leaving the park with fewer resources to fulfill the mission of the park. As such, the CRC, when combined with alternative B, would create both short and long-term moderate to major adverse cumulative impacts. As the Vancouver-Portland area becomes more populated, water demand is anticipated to increase; as such this project could have minor cumulative adverse impacts on water use.

Conclusion

Alternative B is expected to have short-term minor impacts and long-term minor to moderate impacts as well as beneficial impacts. Cumulative impacts are expected to be adverse, and range from minor to major.

Alternative C (Preferred Alternative) - A Sustainable Public Service Office Campus

The effect on park operations for alternative C would be essentially the same as for alternative B. The buildings selected for office space, maintenance use, and storage varies, but the impacts remain the same. Currently, the space needs for administrative and maintenance functions are greater than the available space in their current building locations, warranting such a move. The current administrative headquarters building will be converted back to park housing (its original function), while the maintenance structure will be used for interim living history materials storage space. The buildings not occupied by the National Park Service would be leased out for a variety of other functions such as offices, businesses, shops, galleries, etc. Water use could be less than alternative B since there would be no residential use in the Barracks. The projects under alternative C would require the same level of staff time, expertise, and assistance as alternative B, so additional staff would be needed. For alternative C, the National Park Service estimates that approximately twelve additional staff positions would be needed. The same utility upgrades would occur under all action alternatives as well, resulting in the same effects. Resource use would essentially be the same as alternative B.

Cumulative Impacts

The cumulative impacts would be the same as alternative B.

Conclusion

Alternative C is expected to have short-term minor impacts and long-term moderate impacts as well as beneficial impacts. Cumulative impacts are expected to be adverse, and range from minor to major.

Alternative D - An Historic, Educational Campus for All

The effect on park operations for alternative D would be essentially the same as for alternative B. The buildings selected for office space, maintenance use, and storage varies, but the impacts remain the same. Currently, the space needs for administrative and maintenance functions are greater than the available space in their current building locations, warranting such a move. The current administrative headquarters building will be converted back to park housing (its original function), while the maintenance structure will be used for interim living history materials storage space. The buildings not occupied by the National Park Service would be leased out for a variety of other functions such as offices, businesses, shops, galleries, etc. Water use could be less than alternative B since there would be no residential use in the Barracks. The National Park Service estimates that approximately 15 additional staff would be needed under alternative D. The same utility upgrades would occur under all action alternatives as well, resulting in the same effects.

Cumulative Impacts

The cumulative effects would be the same as alternative B.

Conclusion

Alternative D is expected to have short-term minor impacts and long-term moderate impacts as well as beneficial impacts. Cumulative impacts are expected to be adverse, and range from minor to major.

HUMAN HEALTH, SAFETY, AND THE ENVIRONMENT

The section discusses the impacts on human health and the environment related to the exposure of hazardous substances associated with use resulting from the improvements and rehabilitation proposed in the *Environmental Assessment* alternatives.

Clean-up of the contaminated sites is a separate project, and remediation of the property would occur in accordance with the Comprehensive Environmental Response, Compensation, and Liability Act. A plan would be developed that would outline the strategy for the remediation; this would likely prioritize immediate hazards and dangers to the public. The National Park Service would not implement elements of the alternative in areas affected by contamination until the U.S. government has undertaken necessary remediation in accordance with applicable laws regarding health, safety and the environment.

Assessment Methodology

Duration

Short-term impacts are temporary, transitional, or construction-related impacts associated with project activities.

Long-term impacts are typically those effects that would last several years or more or would be permanent.

Context of Impact

Local: Vancouver National Historic Reserve

Regional: Clark County

Impact Intensities

Negligible: Public health and safety would not be affected, or the effects would be at low levels of detection and would not have an appreciable effect on public health and safety. The impact to visitor safety would not be measurable or perceptible.

Minor: The effect would be detectable and would likely be short-term, but would not have an appreciable effect on public health and safety. If mitigation were needed, it would be relatively simple and would likely be successful. The impact to visitor safety would be measurable or perceptible, but it would be limited to a relatively small number of visitors at localized areas. Impacts to visitor safety might be realized through a minor increase in the potential for visitor conflicts in current accident areas.

Moderate: The effects would be readily apparent and long-term, and would result in substantial, noticeable effects to public health and safety on a local scale. Mitigation measures would probably be necessary and would likely be successful. The impact to visitor safety would be sufficient to cause a change in accident rates at existing low accident locations or create the potential for additional visitor conflicts in areas that currently do not exhibit noticeable accident trends.

Major: The effects would be readily apparent and long-term, and would result in substantial, noticeable effects to public health and safety on a regional scale. Extensive mitigation measures would be needed, and their success would not be guaranteed. The impact to visitor safety would be substantial. Accident rates in areas usually limited to low accident potential are expected to substantially increase in the short and long-term.

Alternative A – No Action

Under this alternative, the National Park Service would abate health and safety issues within the buildings as part of rehabilitation efforts, and prior to the buildings' reuse. As part of building rehabilitation, the construction contractor would be responsible for conducting testing for lead-based paint either before or concurrent with construction activities. If found, any necessary cleanup would be done either before or concurrent with construction activities that would disturb these materials. If a building is found to contain friable asbestos, the material should either be sealed or removed by qualified contractors.

During building rehabilitation, construction workers would implement BMPs to avoid exposure to hazardous levels of lead-based paint and asbestos. The BMPs (described below) address worker safety hazards that may arise during renovation, including respiratory protection, protective clothing, housekeeping, hygiene facilities, medical surveillance, and training, among other BMPs. Abatement and remediation crews should experience no adverse impacts when the project is run properly and the long-term effect with the removal of these materials would be beneficial. Specific BMPs are as follows:

- Comply with all applicable regulations and policies during the removal and remediation of asbestos and lead paint.

- Provide on-site air monitoring during all abatement activities and perimeter monitoring to ensure no contamination of work or adjacent areas.

Major infrastructure upgrades would not occur and as such, water lines would not be replaced to meet fire suppression standards. Fire detection systems would be installed according to building codes, as would all other life safety code requirements within the buildings. This would result in a long-term moderate adverse impact to public health and safety. Police and fire services would still be provided by the City of Vancouver.

Accidental leaks or spills of hazardous materials used during construction activities (oil, grease, fuels, and chemicals such as those needed to remove lead paint), could potentially contaminate the soil or groundwater, creating a short-term minor adverse effect. To mitigate this effect, contractors would be required to develop a Spill Prevention and Response Plan prior to commencement of construction activities to contain and/or clean up any stored or spilled fuels or chemicals and prevent oil, grease, or fuel leaks from equipment.

Because hazardous substances and building code issues would be resolved prior to use by staff or the public, this alternative would result in negligible impacts to public health and safety. If spills or contamination were to occur during construction, mitigation measures would be implemented to ensure the area is blocked off and cleaned up immediately; this short-term negligible adverse impact would be barely perceptible to the public.

Cumulative Impacts

The required clean-up of contaminated sites in the East and South Barracks is a separate project, which would remediate hazardous conditions in the project area. A plan would be developed that would outline the strategy for remediation; this would prioritize immediate hazards and dangers to the public. This effect, when combined with the no action alternative, would result in long-term beneficial effects on human health, safety and the environment.

Conclusion

There would be short-term minor adverse impacts as a result of possible leaks or spills during construction and long-term moderate adverse impacts from the lack of water improvements for fire suppression. There would be cumulative long-term beneficial impacts to human health and safety.

Alternative B – A Vibrant, Urban District in a Historic Setting

The analysis for alternative B is the same as alternative A, except that in alternative B, there would be repairs to the potable water lines. This improvement would provide the East and South Barracks with sufficient water pressure for fire suppression, resulting in a long-term beneficial effect. As determined by the Level II ESA, there are significantly high levels of lead in the soils surrounding most of the historic structures in the East Barracks, apparently from lead based paint peeling off of the exteriors of these structures. As recommended by the Level II ESA, any soil disturbance in these areas necessary for the upgrades to the utility system should not be performed other than by properly trained personnel, and lead clean up procedures ahead of the utility upgrades should be considered. This improvement would provide the East and South Barracks with sufficient water pressure for fire suppression, resulting in a long-term beneficial effect.

This alternative could also contribute to benefits to public health, due to the increased recreational opportunities from expanded trail networks and pedestrian walkways.

Cumulative Impacts

The analysis for alternative B is the same as alternative A.

Conclusion

There would be short-term minor adverse impacts as a result of possible leaks or spills during construction and long-term beneficial effects from the water improvements for fire suppression. There would be cumulative long-term beneficial impacts to human health and safety.

Alternative C (Preferred Alternative) - A Sustainable Public Service Office Campus

The analysis for alternative C is the same as alternative B.

Cumulative Impacts

The analysis for alternative B is the same as alternative A.

Conclusion

The analysis for alternative C is the same as alternative B.

Alternative D - An Historic, Educational Campus for All

The analysis for alternative C is the same as alternative B.

Cumulative Impacts

The analysis for alternative C is the same as alternative B.

Conclusion

The analysis for alternative C is the same as alternative B.

