

**FINDING OF NO SIGNIFICANT IMPACT (FONSI)
FOR THE ENVIRONMENTAL ASSESSMENT (EA) OF THE
ARMY AVIATION SUPPORT FACILITY AND
ADMINISTRATIVE SUPPORT FACILITY
AND THE
JOINT FORCES HEADQUARTERS (JFHQ), READINESS CENTER
AND FIELD MAINTENANCE SHOP (FMS)
AT F.E. WARREN AFB, CHEYENNE, WYOMING**

An Environmental Assessment of the Army Aviation Support Facility and Administrative Support Facility and the Joint Forces Headquarters, Readiness Center and Field Maintenance Shop at F.E. Warren AFB, Cheyenne, Wyoming was completed for the Proposed Action described below. The EA is attached and incorporated by reference.

DESCRIPTION OF THE PROPOSED ACTION

On September 8, 2005, the Defense Base Realignment and Closure (BRAC) Commission recommended certain realignment actions at F.E. Warren AFB. These recommendations were approved by the President on September 23, 2005 and were forwarded to Congress, and on November 9, 2005, the recommendations became law. The BRAC Commission recommendations must now be implemented as provided for in the Defense Base Realignment and Closure Act of 1990 (Public Law 101-510), as amended. The BRAC Commission recommended the closure of the Wyoming Army National Guard (WYARNG) Army Aviation Support Facility (AASF) in Cheyenne, Wyoming and the relocation of Army National Guard units and aviation functions to a new WYARNG AASF with Administrative Support Facility and JFHQ with Readiness Center and FMS on F.E. Warren AFB. The new FMS and Readiness Center at F.E. Warren AFB will have the capability to accommodate Army National Guard units from the existing JFHQ Complex in Cheyenne, Wyoming.

Accordingly, the Proposed Action implements the Congressionally-mandated recommendations. The Proposed Action includes closing a WYARNG AASF and two WYARNG armories and constructing an AASF with Administrative Support Facility and JFHQ with Readiness Center and FMS on F.E. Warren AFB. The Proposed Action reduces costs for maintaining existing facilities by consolidating with other units in the Cheyenne area into a single facility onto an existing Air Force Base. The State of Wyoming will close the Thermopolis Armory (currently vacant with no relocating units) and the JFHQ Armory (adjacent to F.E. Warren AFB). The Proposed Action will also have the capability to accommodate units from the JFHQ Armory if the state decides to relocate those units. The Proposed Action also provides the opportunity for other local, state or Federal organizations to partner with the WYARNG to enhance homeland security and homeland defense at a reduced cost to those agencies. An estimated \$22.2M will be avoided in mission facility renovation costs and procurement avoidances associated with meeting anti-terrorism/force protection construction standards and altering existing facilities to meet unit training and communications requirements.

ALTERNATIVES CONSIDERED

Five alternatives for the Proposed Action and the "No Action" alternative were initially considered. However, all alternatives except for Alternative One (the Preferred Alternative) were eliminated from consideration because operational, safety, geographic, and/or existing facility and mission constraints precluded their implementation. The Preferred Alternative is

Report Documentation Page

*Form Approved
OMB No. 0704-0188*

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1. REPORT DATE 23 FEB 2007		2. REPORT TYPE		3. DATES COVERED 00-00-2007 to 00-00-2007	
4. TITLE AND SUBTITLE Environmental Assessment for the Army Aviation Support Facility and Administrative Support Facility and the Joint Forces Headquarters, Readiness Center, and Field Maintenance Shop at Francis E. Warren Air Force Base, Cheyenne, Wyoming				5a. CONTRACT NUMBER	
				5b. GRANT NUMBER	
				5c. PROGRAM ELEMENT NUMBER	
6. AUTHOR(S)				5d. PROJECT NUMBER	
				5e. TASK NUMBER	
				5f. WORK UNIT NUMBER	
7. PERFORMING ORGANIZATION NAME(S) AND ADDRESS(ES) Ageiss Environmental Inc.,1202 Bergen Parkway Suite 310,Evergreen,CO,80439				8. PERFORMING ORGANIZATION REPORT NUMBER	
9. SPONSORING/MONITORING AGENCY NAME(S) AND ADDRESS(ES)				10. SPONSOR/MONITOR'S ACRONYM(S)	
				11. SPONSOR/MONITOR'S REPORT NUMBER(S)	
12. DISTRIBUTION/AVAILABILITY STATEMENT Approved for public release; distribution unlimited					
13. SUPPLEMENTARY NOTES					
14. ABSTRACT					
15. SUBJECT TERMS					
16. SECURITY CLASSIFICATION OF:			17. LIMITATION OF ABSTRACT Same as Report (SAR)	18. NUMBER OF PAGES 197	19a. NAME OF RESPONSIBLE PERSON
a. REPORT unclassified	b. ABSTRACT unclassified	c. THIS PAGE unclassified			

analyzed in the EA and considers the AASF and Administrative Support Facility at the northwestern corner of the base and the JFHQ, Readiness Center and FMS at the eastern side of the base. The "No Action" alternative is carried forward in the EA as required by the Council on Environmental Quality (CEQ). Since the Proposed Action is being mandated by Congress, the No Action Alternative cannot be implemented and is carried forward solely to have a benchmark against which to evaluate the Proposed Action.

The proposed AASF and Administrative Support Facility will support 149 and 167 personnel respectively to permit all personnel to perform the necessary tasks to improve the unit's readiness posture. Approximately 139,793 square feet of facilities will be constructed for the AASF and approximately 50,634 square feet of facilities will be constructed for the Administrative Support Facility.

The proposed JFHQ Complex and FMS will support 632 personnel and 4 personnel respectively to perform the necessary tasks to improve the unit's readiness posture. An approximate total of 186,523 square feet of facilities will be constructed for the JFHQ Complex and an approximate total of 20,371 square feet of facilities will be constructed for the FMS.

In addition to these two groups of facilities, associated utilities, roads and other ancillary/support facilities will be constructed within the exterior boundaries of the base.

ENVIRONMENTAL IMPACTS

The environmental impacts to the natural, cultural, and socioeconomic resources of F.E. Warren AFB and surrounding areas will be negligible to minor and short-term (associated with the construction phase of the project). Longer term impacts will occur during the operational phase, but those impacts also will be negligible to minor. Impacts from implementing the Proposed Action are considered insignificant.

Impacts on the environmental aspects of F.E. Warren AFB due to implementation of the Proposed Action are summarized as follows.

Land Use: The Proposed Action is contained within the boundaries of F.E. Warren AFB, which sets its own land use and zoning designations. The proposed land use will require land use re-designation in some areas on base, but will not conflict with currently planned uses. Also, the proposed land use is generally compatible with existing and planned uses in surrounding areas, and does not present conflicts or nonconformance with current local or state land use or zoning designations. Land use impacts are minor and considered insignificant.

Aesthetics and Visual Resources: The Proposed Action will cause short-term visual impacts resulting from ground disturbance associated with construction of the facilities, access road, and utility corridor, but these short-term impacts will be ameliorated by the reclamation of disturbed areas after construction. Long-term visual impacts include the addition of facilities to previously open land, helicopter operations, automobile traffic resulting from the use of facilities and the addition of lighting to previously unlit areas. These impacts are minor and considered insignificant.

Air Quality: The Proposed Action will cause short-term air quality impacts from temporary and localized construction activities. Contaminants will include particulate matter, vehicle emissions, and increased wind-borne dust. Potential long-term impacts include emissions resulting from proposed heating requirements and from one 15,000-gallon Above-ground Storage Tank (AST) holding JP-8 fuel for fueling helicopters. Once the construction permits have been issued and after 120 days of operation, the WYARNG will apply for an operating permit at each construction site. Expected air emissions are negligible and considered insignificant.

Noise: The Proposed Action will generate temporary noise impacts from standard construction equipment. To minimize noise impacts, construction activities will be scheduled on normal workdays during normal working hours. Anticipated long-term sources of noise include grounds maintenance activities, vehicular traffic, helicopter operations and training operations, but will be limited to certain times of the day. Noise is expected from routine training operations of UH-60 aircraft. Based on the limited number of planned daily helicopter flight corridors, flight tracks and training areas, there will be no A-weighted day/night average sound level noise contours of 65 dBA or greater.

There is the potential for aircraft noise to cause annoyance leading to possible complaints while entering/exiting the airspace. A total of 1,230 acres are affected off-base. The 1,230 acres of land off-base are designated as private and public ownership to the north and private ownership to the west. However, no particular noise-sensitive areas or facilities, such as schools or churches, are located within this area. There are no current concentrated residential areas to the north or west within the buffers. Therefore, potential noise annoyance impacts are minor and localized to a small population of rural/residential homes near the base. These impacts are considered insignificant.

Geology and Soils: Construction impacts to geology and soils will be localized to the construction site of the facilities and access road. The area may require some slight grading, but will not require or generate any cut or fill since the area is relatively flat. The percent of the base covered with paved areas and buildings will increase less than one percent due to large areas that will remain undeveloped. Therefore, potential impacts to geology and soils from the Proposed Action are negligible.

Water Resources: Water resources include surface water and groundwater. No surface water, jurisdictional wetlands or riparian areas are located in the footprints of the proposed facilities and the facilities will not be located within the 100-year floodplain. By capping the subsoil with impervious surfaces, the proposed facilities will reduce groundwater recharge locally by reducing the infiltration of precipitation. However, the proposed facilities will increase the amount of impervious surfaces on base less than one percent. Additionally, the WYARNG will not use local surface water or groundwater in the proposed facilities. Therefore, potential impacts to water resources from the Proposed Action are negligible and considered insignificant.

Biological Resources: Construction of the proposed facilities will result in the long-term direct loss of approximately one percent of shortgrass prairie habitat on the base. Construction may affect on-site wildlife through this relatively small loss of habitat and by direct mortality of individuals occurring in construction zones. Operation of the proposed access road may result in an increase in pronghorn-vehicle collisions. However, through maintenance of desired pronghorn population levels and the use of public education, and because pronghorn are drawn to the water sources near the center of the base, the impact of increased collisions along the access road is expected to be low. There are no wild threatened or endangered species located in the vicinity of the Proposed Action. The U.S. Fish and Wildlife Service has concurred that the Proposed Action is unlikely to adversely affect any threatened or endangered species. Potential impacts to biological resources from the Proposed Action are negligible and considered insignificant.

Cultural Resources: The Proposed Action will not affect any National Register of Historic Places (NRHP)-eligible archeological sites. The proposed facilities have been sited to avoid effects on historic structures and the portion of the base within the boundaries of the National Historic Landmark District. The preliminary finding of no effect by the Base Historic Preservation Office has been concurred in by the Wyoming State Historic Preservation Officer.

Therefore, potential impacts to cultural resources from the Proposed Action are none to negligible with potential short-term minor impacts during construction. These impacts are considered insignificant.

The Proposed Action will not affect federally recognized tribal interests. No comments have been received, or concerns raised by the tribes notified of the Proposed Action. Potential effects on Native American concerns are negligible.

Socioeconomics: The Proposed Action will generate a short-term increase in jobs during construction, which is a minor positive impact to local socioeconomic resources. The Proposed Action consolidates other WYARNG units in the Cheyenne area into a single facility (the AASF with Administrative Support Facility and JFHQ with Readiness Center and FMS) on an existing Air Force Base, resulting in no net change in the number of personnel or jobs in the Cheyenne area. Therefore, there will be no long-term effects on socioeconomic factors from the Proposed Action. Additionally, as any adverse impacts from the Proposed Action identified in this EA are not localized and do not fall disproportionately upon minority and/or low-income populations, no environmental justice impacts will occur.

Transportation: A small increase in vehicular traffic is expected to occur during the construction and road improvement projects. This impact will be temporary and will not exceed the capacity of the existing roadways. Heavy machinery required for site preparation and trenching will be transported by trailer or flatbed to reduce impacts to area roads. Construction activities are expected to be routed to Gate 5.

Long-term impacts associated with the Proposed Action will involve an increase in traffic on and surrounding F.E. Warren AFB. Based on the most current information provided at the issuance of the EA, Gate 5 (Central Avenue west of Bishop Avenue) will be the gate used for incoming and outgoing traffic associated with the Proposed Action. The use of Gate 5 may have localized impacts especially during security threat levels. These impacts may increase traffic volume and gate transit time at peak commute hours. To further evaluate impacts on Central Avenue and I-25 access road, a traffic study may be required by the WYARNG prior to implementation of the Proposed Action.

In addition to an increase in traffic near Gate 5, there will be an added increase of traffic on F.E. Warren AFB. Facilities near the northwestern section of the base will require an access road that will be located within an unpopulated area. Because the majority of the personnel are expected during weekend hours, weekday traffic for most of the on-base personnel should not be affected. Overall, potential impacts to transportation from the Proposed Action are minor and considered insignificant.

Utilities: Specific design parameters for utilities have not yet been developed for the Proposed Action at the time of the EA. However, it is anticipated that the WYARNG will privatize all utilities and will not utilize any of F.E. Warren AFB's easements. As part of storm water management, the WYARNG would construct appropriate storm water devices, such as retention ponds, and consider the use of structures to reduce storm water discharges, such as semi-pervious asphalt, in the construction of the AASF, Administrative Support Facility and access road. Overall, potential impacts to utilities from the Proposed Action are minor and considered insignificant.

Hazardous and Toxic Substances: The proposed AASF may generate hazardous wastes, which may include adhesives, byproducts used in painting touch-up parts on helicopter aircraft (zinc chromate), and oil and lubricants. Oil and lubricant waste will be recycled. However, hazardous wastes are not expected to increase from last year's inventory. No hazardous wastes are expected to occur from the proposed JFHQ Complex. Therefore, potential impacts

to hazardous and toxic substances from the Proposed Action are negligible and considered insignificant.

Safety and Occupational Health: The entire northern part of the base, including the locations of the Proposed Action, was used extensively as an impact area for various munitions and is currently being investigated under the signed Federal Facilities Agreement with the U.S. Environmental Protection Agency and the WDEQ. While the Installation Restoration Program will provide a construction area as clear of Unexploded Ordnance (UXO) as possible, the potential for construction workers to encounter UXO will remain and cannot be avoided. The 90th Space Wing Safety office is forwarding the UXO remediation after-action report to allow the Department of Defense Explosive Safety Board (DDESB) to clear the proposed construction sites for use. The proposed road and sewer line sites must be remediated for UXO, then approved by DDESB. Until the DDESB clearance is received, no real property permit shall be issued. Once appropriate clearances are received and activities are permitted, all site workers will be trained in identification and proper reporting of UXO to reduce safety risks. The AASF and Administrative Support Facility will not overlay current explosives safety Quantity-Distance (Q/D) zones and therefore, no impacts are expected. The JFHQ Complex may impact a Q/D zone associated with a number of storage bunkers located to the west of the proposed complex. The proposed layout of the JFHQ Complex will need to be designed so that the established Q/D zones do not overlay any of the proposed occupied facilities.

Long-term impacts from the AASF and Administrative Support Facility may result from potential accidents from UH-60 aircraft. The WYARNG anticipate using 12 UH-60 aircraft for routine training and mission operations. Based on the safety records, the WYARNG had only one Category I accident since 1978. Therefore, a significant accident potential is not anticipated from the UH-60 on or near F.E. Warren AFB. Long-term impacts from the JFHQ Complex may result from an accident potential zone, which is located near the northern perimeter of the proposed complex. Since certain land use restrictions apply in this accident potential zone, the proposed layout of the JFHQ Complex will be developed to avoid this zone. Overall, potential impacts to safety and occupational health from the Proposed Action are minor to moderate. These impacts are considered insignificant.

Cumulative Effects: Cumulative effects are those environmental impacts that result from the incremental effects of the Proposed Action when compounded by other past, present, or reasonably foreseeable future actions. Ten future projects and one ongoing project were identified on F.E. Warren AFB. One reasonably foreseeable action was identified within 1 mile surrounding the base. No past or present actions were identified in the area 1 mile surrounding the base. Impacts are expected to be negligible to minor, with one minor to moderate impact. The cumulative effects are considered insignificant.

FINDING OF NO SIGNIFICANT IMPACT

The EA was prepared and evaluated in accordance with the National Environmental Policy Act (NEPA) of 1969 and implementing regulations issued by the President's CEQ and the U.S. Air Force Environmental Impact Analysis Process (32 CFR 989), as well as guidance provided by the 2005 Army BRAC NEPA Manual.

I have concluded that the Preferred Alternative for the Proposed Action does not constitute a "major federal action significantly affecting the quality of the human environment" when considered individually or cumulatively and including both direct and indirect impacts. Therefore, an environmental impact statement is not necessary.

REWM

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Major General, USAF
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25 Jan 07

Date

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23 Feb 07

Date

**ENVIRONMENTAL ASSESSMENT
FOR THE
ARMY AVIATION SUPPORT FACILITY AND ADMINISTRATIVE SUPPORT
FACILITY
AND THE
JOINT FORCES HEADQUARTERS, READINESS CENTER, AND FIELD
MAINTENANCE SHOP
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CHEYENNE, WYOMING**

U.S. Army Corps of Engineers, Mobile District

August 2006

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MAINTENANCE SHOP
AT FRANCIS E. WARREN AIR FORCE BASE,
CHEYENNE, WYOMING**

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EXECUTIVE SUMMARY

This environmental assessment (EA) documents and analyzes the Army's Proposed Action to close a Wyoming Army National Guard (WYARNG) Army Aviation Support Facility (AASF) and two WYARNG armories and construct an AASF with Administrative Support Facility and Joint Forces Headquarters (JFHQ) with Readiness Center and Field Maintenance Shop (FMS) on Francis E. Warren Air Force Base (F. E. Warren AFB). The Air Force and Army are working jointly on this EA; however, the ultimate decision regarding the Proposed Action lies with the Vice Commander of the Air Force Space Command. The Proposed Action reduces costs for maintaining existing facilities by consolidating with other units in the Cheyenne area into a single facility onto an existing Air Force Base.

The EA was developed in accordance with the National Environmental Policy Act (NEPA) of 1969 and implementing regulations issued by the President's Council on Environmental Quality (CEQ) and the U.S. Air Force Environmental Impact Analysis Process (EIAP) (32 CFR 989), as well as guidance provided by the 2005 Army Base Realignment and Closure (BRAC) NEPA Manual.

The proposed AASF and Administrative Support Facility would support 149 and 167 personnel respectively to permit all personnel to perform the necessary tasks to improve the unit's readiness posture. Approximately 139,793 square feet of facilities would be constructed for the AASF and approximately 50,634 square feet of facilities for the Administrative Support Facility.

The proposed JFHQ Complex and FMS would support 632 personnel and four personnel respectively to perform the necessary tasks to improve the unit's readiness posture. An approximate total of 186,523 square feet of facilities would be constructed for the JFHQ Complex and an approximate total of 20,371 square feet of facilities would be constructed for the FMS.

Six alternatives were screened for inclusion in this EA, including the No Action Alternative required by CEQ Regulations to serve as a benchmark against which the Proposed Action can be evaluated. Screening criterion consisted of operational constraints, safety constraints, geographic constraints, and existing facility and mission constraints. Four alternatives were deemed not to meet the screening criteria for further development.

Under the Preferred Alternative, the AASF and Administrative Support Facility would be located on the northwestern side of F. E. Warren AFB and the JFHQ, Readiness Center, and FMS would be located on the eastern side of the base.

Potential impacts were classified at one of four levels: major, moderate, minor, and none to negligible. Major impacts (as defined in CEQ guidelines 40 CFR 1500-1508) are those effects that are most substantial and, therefore, should receive the greatest attention in the decision-making process. Major impacts are considered significant. Moderate impacts are those impacts associated with a proposed action that would be noticeable to the public and surrounding community but would fail to meet the criteria used to define significant impacts. Minor impacts are those impacts that result in changes to the existing environment that could not be easily detected. Negligible impacts are those that would not alter the existing environment. Moderate, minor, and negligible impacts are considered insignificant but may still require mitigation.

Twelve environmental and human resource areas were characterized and evaluated for potential impacts from the Preferred Alternative and the No Action Alternative. No potential impacts were classified as significant for the Preferred Alternative. Impacts were classified as negligible to minor, with one resource area having impacts ranging from minor to moderate. Potential impacts identified for each resource area from the Preferred Alternative are summarized below.

Land Use. The Preferred Alternative would be contained within F. E. Warren AFB, which sets its own land use and zoning designations and would not present conflicts or nonconformance with current local or state land use or zoning designations. The proposed land use would require some land-use redesignations on-base, but would not conflict with currently planned uses, and it would be generally compatible with surrounding land uses and planned uses. Potential impacts to land use from the Preferred Alternative would be minor and are considered insignificant.

Aesthetics and Visual Resources. The Preferred Alternative would cause short-term visual impacts resulting from ground disturbance associated with construction of the facilities, access road, and utility corridor. However, the reclamation of disturbed areas would remove these visual impacts. Long-term visual impacts include the addition of facilities to previously open land, helicopter operations, automobile traffic resulting from the use of facilities, and the addition of lighting to previously unlit areas. However, potential impacts to aesthetics and visual resources from the Preferred Alternative would be minor and are considered insignificant.

Air Quality. The Preferred Alternative would cause short-term air quality impacts from temporary and localized construction activities. Contaminants would include particulate matter, vehicle emissions, and increased wind-borne dust. Potential long-term impacts include emissions resulting from proposed heating requirements and from one 15,000-gallon above-ground storage tank (AST) holding JP-8 fuel for fueling helicopters. The WYARNG would need to apply for a construction permit with the Wyoming Department of Environmental Quality (WDEQ) in addressing the potential increase of these emissions. A construction permit for each construction site would be required. The construction permit considers both temporary and permanent air emissions. Upon review of the construction permit, WDEQ may issue a waiver if the source of emissions is minor. Based on the expected emissions, a waiver would be likely. Once the construction permits have been issued and after 120 days of operation, the WYARNG would apply for an operating permit at each construction site. Expected air emissions from the Preferred Alternative would be negligible and are considered insignificant.

Noise. The Preferred Alternative would generate temporary noise impacts from standard construction equipment. To minimize noise impacts, construction activities would be scheduled on normal workdays during normal working hours. Anticipated long-term sources of noise include grounds maintenance activities, vehicular traffic, helicopter operations, and training operations, but would be limited to certain times of the day. Noise is expected from routine training operations of UH-60 aircraft. Rotary Noise Model (RNM) aircraft noise modeling software was used to interpret noise data resulting from UH-60 operations from baseline and anticipated noise environments in the vicinity of the AASF and Administrative Support Facility. Based on the limited number of planned daily helicopter flight corridors, flight tracks, and training areas, there would be no A-weighted day-night average sound level noise contours of 65 dBA or greater. Therefore, there is not sufficient qualifying sound to generate contours using the

currently approved noise models. Additional analysis increasing flight operations by 100 percent does not generate any recognizable noise difference above ambient noise levels.

Although noise contours were not generated based on day and night averages, there is the potential for aircraft noise to cause annoyance leading to possible complaints while entering/exiting the airspace. A total of 1,230 acres are affected off-base. The 1,230 acres of land off-base are designated as private and public ownership to the north and private ownership to the west. However, no particular noise-sensitive areas or facilities, such as schools or churches, are located within this area. There are no current concentrated residential areas to the north or west within the buffers. Therefore, potential noise annoyance would be minor and localized to a small population of rural/residential homes near the base.

Geology and Soils. Construction impacts to geology and soils would be minor and localized to the construction site of the facilities and access road. The area may require some slight grading, but would not require or generate any cut or fill since the area is relatively flat. The percent of the base covered with paved areas and buildings would increase less than one percent from implementation of the Preferred Alternative. Large areas would remain undeveloped. Therefore, potential impacts to geology and soils from the Preferred Alternative would be negligible and are considered insignificant.

Water Resources. Water resources include surface water and groundwater. No surface water, jurisdictional wetlands, or riparian areas are located in the footprints of the proposed facilities and neither would the facilities be located within the 100-year floodplain. By capping the subsoil with impervious surfaces, the proposed facilities would reduce groundwater recharge locally by reducing the infiltration of precipitation. However, the proposed facilities would increase the amount of impervious surfaces on base less than one percent. Additionally, the WYARNG would not use local surface water or groundwater in their operations associated with the Preferred Alternative. Therefore, potential impacts to water resources from the Preferred Alternative would be negligible and are considered insignificant.

Biological Resources. Construction of the proposed facilities would result in the long-term direct loss of approximately one percent of shortgrass prairie habitat on the base. Construction may affect on-site wildlife through this relatively small loss of habitat and by direct mortality of individuals occurring in construction zones. Operation of the proposed access road may result in an increase in pronghorn-vehicle collisions. However, through maintenance of desired pronghorn population levels and the use of public education, and because pronghorn are drawn to the water sources near the center of the base, the impact of increased collisions along the access road is expected to be low. There are no wild threatened or endangered species located in the vicinity of the Preferred Alternative and the U.S. Fish and Wildlife Service has concurred that the Preferred Alternative is unlikely to adversely affect any threatened or endangered species. Potential impacts to biological resources from the Preferred Alternative would be negligible and are considered insignificant.

Cultural Resources. The Preferred Alternative would not affect any National Register of Historic Places (NRHP)-eligible archeological sites. The proposed facilities have been sited to avoid effects on historic structures and the portion of the base within the boundaries of the National Historic Landmark District. The preliminary finding of no effect by the Base Historic

Preservation Office has been concurred in by the Wyoming State Historic Preservation Officer. Therefore, potential impacts to cultural resources from the Preferred Alternative would be none to negligible with minor short-term impacts during construction of the AASF and Administrative Support Facility and the Readiness Center associated with the JFHQ Complex and are considered insignificant.

Socioeconomics. The Preferred Alternative would create a short-term increase in jobs during construction. This would be a minor positive impact to local socioeconomic resources. The Preferred Alternative essentially consolidates other WYARNG units in the Cheyenne area into a single facility (the AASF with Administrative Support Facility and JFHQ with Readiness Center and FMS) on an existing Air Force Base. Therefore, there would be no long-term effects on socioeconomic factors from the Preferred Alternative.

Additionally, impacts from the Preferred Alternative identified in this EA would not be localized or placed primarily on minority and/or low-income populations and therefore no environmental justice impacts would occur.

Transportation. A small temporary increase in vehicular traffic is expected to occur during construction, but would not exceed the capacity of the existing roadways. Potential long-term impacts would include an increase in traffic near Gate 5 and on F. E. Warren AFB. The peak maximum number of personnel during weekend use expected from the Preferred Alternative would be 400 people. Peak weekday use is expected to be 195 from the Preferred Alternative. The Preferred Alternative use of Gate 5 would have minor, localized impacts, which may be exacerbated during security threat levels. These impacts may increase traffic volume and gate transit time at peak commute hours. To further evaluate impacts on Central Avenue and I-25 access road, a traffic study may be required by the WYARNG prior to implementation of the Preferred Alternative.

In addition to an increase in traffic near Gate 5, there would be an added increase of traffic on F. E. Warren AFB. The Preferred Alternative would add additional traffic to facilities near Gate 5 and near the northwestern section of the base. Facilities located near Gate 5 would keep traffic localized in one area. Facilities near the northwestern section of the base would require an access road that would be located within an unpopulated area. Because the majority of the personnel are expected during weekend hours, weekday traffic for most of the on-base personnel should not be affected. Overall, potential impacts to transportation from the Preferred Alternative would be minor and are considered insignificant.

Utilities. Specific design parameters for utilities have not been completed for the Preferred Alternative at the time of this EA. However, it is anticipated that the WYARNG would privatize all utilities and would not utilize any of F. E. Warren AFB's easements. As part of storm water management, the WYARNG would construct appropriate storm water devices, such as retention ponds, and consider the use of structures to reduce storm water discharges, such as semi-pervious asphalt, in the construction of the AASF, Administrative Support Facility, and access road. Overall, potential impacts to utilities from the Preferred Alternative would be minor and are considered insignificant.

Hazardous and Toxic Substances. The proposed AASF may generate hazardous wastes, which may include adhesives, byproducts used in painting touch-up parts on helicopter aircraft (zinc

chromate), and oil and lubricants. Oil and lubricant waste would be recycled. However, hazardous wastes are not expected to increase from last year's inventory. No hazardous wastes are expected to occur from the proposed JFHQ Complex. Therefore, potential impacts to hazardous and toxic substances from the Preferred Alternative would be negligible and are considered insignificant.

Safety and Occupational Health. The entire northern part of the base, including the locations of the Preferred Alternative, was used extensively as an impact area for various munitions and is currently being investigated under the signed Federal Facilities Agreement with EPA and the WDEQ. While the IRP program will provide a construction area as clear of UXO as possible, the potential for construction workers to encounter UXO will remain. All site workers would be trained in identification and proper reporting of UXO to reduce safety risks. The AASF and Administrative Support Facility would not overlay current explosives safety quantity-distance (Q/D) zones and therefore, no impacts are expected. The JFHQ Complex may impact a Q/D zone associated with a number of storage bunkers located to the west of the proposed complex. The proposed layout of the JFHQ Complex will need to be such that the established Q/D zones do not overlay any of the proposed occupied facilities.

Long-term impacts from the AASF and Administrative Support Facility may result from potential accidents from UH-60 aircraft. The WYARNG anticipate using 12 UH-60 aircraft for routine training and mission operations. Based on the safety records, the WYARNG had only one Category I accident since 1978. Therefore, a significant accident potential is not anticipated from the UH-60 on or near F. E. Warren AFB. Long-term impacts from the JFHQ Complex may result from an accident potential zone, which is located near the northern perimeter of the proposed complex. Since certain land use restrictions apply in this accident potential zone, the proposed layout of the JFHQ Complex will need to be developed outside of the zone. Overall, potential impacts to safety and occupational health from the Preferred Alternative would be minor to moderate and are considered insignificant.

Cumulative Effects. Cumulative effects are those environmental impacts that result from the incremental effects of the Proposed Action when compounded by other past, present, or reasonably foreseeable future actions. Ten future projects and one ongoing project were identified on F. E. Warren AFB. One reasonably foreseeable action was identified within 1 mile surrounding the base. No past or present actions were identified in the area 1 mile surrounding the base. Most impacts are expected to be negligible to minor, and cumulative effects are expected to be insignificant.

Mitigation. No mitigation measures are required for the Preferred Alternative discussed in this EA, because resulting impacts are negligible or minor for 11 resource areas and minor to moderate for safety and occupational health.

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LIST OF ABBREVIATIONS/ACRONYMS

AASF	Army Aviation Support Facility
AGL	above ground level
AICUZ	Air Installation Compatible Use Zone
APZ	accident potential zone
AST	above ground storage tank
AT/FP	anti-terrorism/force protection
BHPO	Base Historic Preservation Officer
BOPU	Board of Public Utilities
BRAC	Base Realignment and Closure
CAAA	Clean Air Act Amendments of 1990
CEQ	Council on Environmental Quality
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
CNG	compressed natural gas
CO	carbon monoxide
dB	decibel
dBA	A-weighted decibel
DERP	Defense Environmental Restoration Program
DoD	U.S. Department of Defense
DOT	Department of Transportation
EA	environmental assessment
ECM	Erosion Control Measure
EIAP	Environmental Impact Analysis Process
EO	Executive Order
EPA	U.S. Environmental Protection Agency
F. E. Warren AFB	Francis E. Warren Air Force Base
FAA	Federal Aviation Administration
FMS	Field Maintenance Shop
FONSI	Finding of No Significant Impact
FUDS	Formerly Utilized Defense Sites
HAP	hazardous air pollutant
HUD	U.S. Department of Housing and Urban Development
HVAC	heating, ventilation, and air conditioning
I-25	Interstate Highway I-25
I-80	Interstate Highway I-80
ICRMP	Integrated Cultural Resources Management Plan
IGPBS	Integrated Global Presence and Basing Strategy
INM	Integrated Noise Model
INRMP	Integrated Natural Resources Management Plan
IRP	Installation Restoration Program
JFHQ	Joint Forces Headquarters
Ldn	day-night average sound level
MBtu	million British Thermal Units

LIST OF ABBREVIATIONS/ACRONYMS (continued)

MCF	million cubic feet
MGD	million gallons per day
MVA	Megavoltamperes
NAAQS	National Ambient Air Quality Standards
NAGPRA	Native American Graves Protection and Repatriation Act
NEPA	National Environmental Policy Act
NHL	National Historic Landmark
NHPA	National Historic Preservation Act
NO ₂	nitrogen dioxide
NO _x	nitrogen oxides
NPL	National Priorities List
NRHP	National Register of Historic Places
O ₃	ozone
OSHA	Occupational Safety and Health Administration
Pb	lead
PM ₁₀	particulate matter with an aerodynamic size less than or equal to 10 microns
PM _{2.5}	particulate matter with an aerodynamic size less than or equal to 2.5 microns
PM ₅	particulate matter with an aerodynamic size less than or equal to 5 microns
POL	petroleum, oil, and lubricant
psi	per square inch
Q/D	quantity/distance
RCRA	Resource Conservation and Recovery Act
RNM	Rotary Noise Model
ROI	region of influence
SARA	Superfund Amendments Reauthorization Act
SEL	Sound Exposure Level
SHPO	State Historic Preservation Office
SO ₂	sulfur dioxide
SO _x	sulfur oxides
SWPPP	Storm Water Pollution Prevention Plan
tpy	tons per year
UXO	unexploded ordnance
VOC	volatile organic compound
WAPA	Western Area Power Authority
WDEQ	Wyoming Department of Environmental Quality
WPDES	Wyoming Pollutant Discharge Elimination System
WYARNG	Wyoming Army National Guard

1.0 PURPOSE, NEED AND SCOPE

1.1 Introduction

On September 8, 2005, the Defense Base Realignment and Closure Commission (BRAC Commission) recommended certain realignment actions at Francis E. Warren Air Force Base (F. E. Warren AFB), Wyoming. These recommendations were approved by the President on September 23, 2005, and forwarded to Congress. The Congress did not alter any of the BRAC Commission's recommendations, and on November 9, 2005, the recommendations became law. The BRAC Commission recommendations must now be implemented as provided for in the Defense Base Realignment and Closure Act of 1990 (Public Law 101-510), as amended.

The BRAC Commission recommended the closure of the Wyoming Army National Guard (WYARNG) Army Aviation Support Facility (AASF) in Cheyenne, Wyoming and the relocation of Army National Guard units and aviation functions to a new WYARNG AASF with Administrative Support Facility and Joint Forces Headquarters (JFHQ) with Readiness Center and Field Maintenance Shop (FMS) on F. E. Warren AFB. To enable implementation of this recommendation, the Army proposes to provide necessary facilities to support the changes in force structure. The new FMS and Readiness Center shall have the capability to accommodate Army National Guard units from the JFHQ Complex in Cheyenne, Wyoming if the state decides to relocate those units. This environmental assessment (EA) analyzes and documents environmental effects associated with the Army's Proposed Action at F. E. Warren AFB. Details of the Proposed Action are described in Section 2.2.

1.2 Purpose and Need

The purpose of the Proposed Action is to implement the BRAC Commission's recommendations pertaining to F. E. Warren AFB.

The need for the Proposed Action is to improve the ability of the Nation to respond rapidly to challenges of the 21st century. The Federal and state mission of the WYARNG is to maintain properly trained and equipped units available for prompt mobilization for war, national emergency, state emergency, or as otherwise needed. The Army is legally bound to defend the United States and its territories, support national policies and objectives, and defeat enemies responsible for aggression that endangers the peace and security of the United States. To carry out these tasks, the Army must adapt to changing world conditions and must improve its capabilities to respond to a variety of circumstances across the full spectrum of military operations. The following discusses four major initiatives that contribute to the Army's need for the Proposed Action.

Base Realignment and Closure. In previous rounds of BRAC, the explicit goal was to save money and downsize the military in order to reap a "peace dividend." In the 2005 BRAC round, the U.S. Department of Defense (DoD) sought to reorganize its installation infrastructure to most efficiently support its forces, increase operational readiness, and facilitate new ways of doing business. Thus, BRAC represents more than cost savings. It supports advancing the goals of transformation, improving military capabilities, and enhancing military value. The Army must carry out the BRAC recommendations at F. E. Warren AFB in order to achieve the objectives for which Congress established the BRAC process. Current facilities are old and undersized, are not

operational for new equipment, and require personnel to work at various locations rather than from a centralized location.

Army Transformation and the Army Modular Force. On October 12, 1999, the Secretary of the Army and the Chief of Staff articulated a vision about people, readiness, and transformation of the Army to meet challenges emerging in the 21st century and the need to be able to respond more rapidly to different types of operations requiring military action. The strategic significance of land forces continues to lie in their ability to fight and win the Nation's wars and in their providing options to shape the global environment to the benefit of the United States and its allies. Transformation responds to the Army's need to become more strategically responsive and dominant at every point on the spectrum of operations. In February 2002, the Army published its *Programmatic Environmental Impact Statement for Army Transformation* (U.S. Army Corps of Engineers, Mobile District 2002) for its proposal to conduct a multiyear, phased, and synchronized program of transformation. Over a 30-year period, the Army will conduct a series of transformation activities affecting virtually all aspects of Army doctrine, training, leader development, organizations, installations, materiel, and soldiers. On April 11, 2002, the Army issued a Record of Decision reflecting its intent to transform the Army. This EA evaluates a Proposed Action that comports with the transformation process, which is designed to provide the Nation with combat forces that are more responsive, deployable, agile, versatile, lethal, survivable, and sustainable.

Restructuring of Army organizations is needed to create forces that are more stand-alone and alike ("modular") while retaining their broad-spectrum capability. The Army needs to change its forces in order to: create a larger pool of units to fulfill strategic commitments; standardize combat unit designs; make units more adaptable to the range of missions – from peacekeeping to war; move from division-level (larger) to brigade-level (smaller) stand-alone units; make units capable of deploying more rapidly; and improve the Army's ability to tailor units and integrate them among components and with other Services and nations.

Integrated Global Presence and Basing Strategy (IGPBS). At the request of the Chairman of the Joint Chiefs of Staff, combatant commanders submitted a series of recommendations for overseas basing plans for their respective areas of responsibility. The recommendations were part of an interagency assessment of the DoD's long-term overseas force projection and basing needs. The assessment resulted in a series of recommendations known as the IGPBS, the blueprint outlining the size, character, and location of long-term overseas force presence. On the basis of the IGPBS results, the Secretary of Defense announced that some forces currently based overseas will return to the United States over a period of years. The 2005 BRAC recommendations take into account, and adopt some of, the basing recommendations of the IGPBS.

Installation Sustainability. On October 1, 2004, the Secretary of the Army and the Chief of Staff issued *The Army Strategy for the Environment* (Department of the Army 2004). The strategy focuses on the interrelationships of mission, environment, and community. A sustainable installation simultaneously meets current and future mission requirements, safeguards human health, improves quality of life, and enhances the natural environment. A sustained natural environment is necessary to allow the Army to train and maintain military readiness.

1.3 Scope

This EA was developed in accordance with the National Environmental Policy Act (NEPA) of 1969 and implementing regulations issued by the President's Council on Environmental Quality (CEQ) and the U.S. Air Force (32 CFR 989-Environmental Impact Analysis Process (EIAP)), as well as guidance provided by the 2005 Army BRAC NEPA Manual. The Proposed Action is an Army action, which occurs on an Air Force Base. The Air Force and Army are working jointly on this EA; however, the ultimate decision regarding the Proposed Action lies with the Vice Commander of the Air Force Space Command.

The purpose of the EA is to inform decision makers and the public of the likely environmental consequences of the Proposed Action and alternatives. The EA identifies, documents, and evaluates environmental effects of WYARNG realignments at F. E. Warren AFB, Wyoming. The EA encompasses F. E. Warren AFB and areas immediately adjacent (within 0.5 mile) to the base perimeter. The cumulative impacts analysis addresses past, present, and reasonably foreseeable projects on both F. E. Warren AFB and areas within approximately 1 mile surrounding the base. An interdisciplinary team of environmental scientists, biologists, planners, economists, engineers, archaeologists, historians, and military technicians analyzed the Proposed Action and alternatives in light of existing conditions and identified relevant beneficial and adverse effects associated with the actions.

The Defense Base Realignment and Closure Act of 1990 specifies that NEPA does not apply to actions of the President, the Commission, or the DoD, except "(i) during the process of property disposal, and (ii) during the process of relocating functions from a military installation being closed or realigned to another military installation after the receiving installation has been selected but before the functions are relocated" (Sec. 2905(c)(2)(A), Public Law 101-510, as amended). The law further specifies that in applying the provisions of NEPA to the process, the Secretary of Defense and the secretaries of the military departments concerned do not have to consider "(i) the need for closing or realigning the military installation which has been recommended for closure or realignment by the Commission, (ii) the need for transferring functions to any military installation which has been selected as the receiving installation, or (iii) military installations alternative to those recommended or selected" (Sec. 2905(c)(2)(B)). The Commission's deliberation and decision, as well as the need for closing or realigning a military installation, are exempt from NEPA. Accordingly, this EA does not address the need for realignment.

The decision to be made is whether, having taken potential environmental effects into account, the WYARNG may utilize the selected locations at F. E. Warren AFB for the cited purposes, and, as appropriate, carry out mitigation measures that would reduce effects on resources. The decision will be based on strategic, operational, environmental, and other considerations, including the results of this analysis.

1.4 Public Involvement

The Air Force and Army invite public participation in the NEPA process. Consideration of the views and information of all interested persons promotes open communication and enables better decision-making. All agencies, organizations, and members of the public having a potential

interest in the Proposed Action, including minority, low-income, disadvantaged, and Native American groups, are urged to participate in the decision-making process.

Public participation opportunities with respect to this EA and decision-making on the Proposed Action are guided by the 2005 Army BRAC NEPA Manual, which implements the Army's policies and responsibilities for the early integration of environmental considerations into BRAC planning and decision-making. The EA will be made available to the public for 30 days, along with a draft Finding of No Significant Impact (FONSI). At the end of the 30-day public review period, the Air Force and Army will consider all comments submitted by individuals, agencies, or organizations on the Proposed Action, the EA, and draft FONSI. As appropriate, the Air Force may then execute the FONSI and the WYARNG may proceed with implementation of the Proposed Action. If it is determined prior to issuance of a final FONSI that implementation of the Proposed Action would result in significant impacts, the Air Force will publish in the *Federal Register* a notice of intent to prepare an environmental impact statement, commit to mitigation actions sufficient to reduce impacts below significance levels, or not take the action. In the event that mitigation actions would be taken, a FONSI would still be prepared.

Throughout this process, the public may obtain information on the status and progress of the Proposed Action and the EA through the WYARNG by calling Major Samuel House at 307-772-5049.

1.5 Regulatory Framework

A decision on whether to proceed with the Proposed Action rests on numerous factors such as mission requirements, schedule, availability of funding, and environmental considerations. In addressing environmental considerations, F. E. Warren AFB is guided by relevant statutes (and their implementing regulations) and Executive Orders (EOs) that establish standards and provide guidance on environmental and natural resources management and planning. These include the Clean Air Act, Clean Water Act, Safe Drinking Water Act, Noise Control Act, Endangered Species Act, National Historic Preservation Act, Archaeological Resources Protection Act, Resource Conservation and Recovery Act, and Toxic Substances Control Act. EOs bearing on the Proposed Action include EO 11988 (*Floodplain Management*), EO 11990 (*Protection of Wetlands*), EO 12088 (*Federal Compliance with Pollution Control Standards*), EO 12580 (*Superfund Implementation*), EO 12898 (*Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations*), EO 13045 (*Protection of Children from Environmental Health Risks and Safety Risks*), EO 13101 (*Greening the Government Through Waste Prevention, Recycling, and Federal Acquisition*), EO 13123 (*Greening the Government Through Efficient Energy Management*), EO 13148 (*Greening the Government Through Leadership in Environmental Management*), EO 13175 (*Consultation and Coordination with Indian Tribal Governments*), and EO 13186 (*Responsibilities of Federal Agencies to Protect Migratory Birds*). The Wyoming Department of Environmental Quality (WDEQ) Rules and Regulations and the Wyoming Environmental Quality Act are also relevant and applicable. These authorities are addressed in various sections throughout this EA when relevant to particular environmental resources and conditions. The full text of the laws, regulations, and EOs is available on the Defense Environmental Network & Information Exchange Web site at <http://www.denix.osd.mil>. Although not an EO, the Annotated Policy Document of the Department of the Defense American Indian and Alaska Native Policy (27 Oct 99) was used as guidance in consultation with Native American Tribes.

2.0 PROPOSED ACTION

The Proposed Action includes closing a WYARNG AASF and two WYARNG armories and constructing an AASF with Administrative Support Facility and JFHQ with Readiness Center and FMS on F. E. Warren AFB. The Proposed Action reduces costs for maintaining existing facilities by consolidating with other units in the Cheyenne area into a single facility onto an existing Air Force Base. The State of Wyoming would close the Thermopolis Armory (currently vacant with no relocating units) and the JFHQ Armory (adjacent to F. E. Warren AFB). The Proposed Action would have the capability to accommodate units from the JFHQ Armory if the state decides to relocate those units.

The Proposed Action also provides the opportunity for other local, state, or Federal organizations to partner with the WYARNG to enhance homeland security and homeland defense at a reduced cost to those agencies.

An estimated \$22.2 M will be avoided in mission facility renovation costs and procurement avoidances associated with meeting anti-terrorism/force protection (AT/FP) construction standards and altering existing facilities to meet unit training and communications requirements.

2.1 Introduction

The Secretary of Defense recommendation transforms Reserve Component facilities in the State of Wyoming. Implementation of this recommendation will enhance military value, improve homeland defense capability, greatly improve training and deployment capability, create significant efficiencies and cost savings, and is consistent with the Army's force structure plans and Army transformational objectives.

2.2 Implementation Proposed

The implementation proposed for accomplishing the Proposed Action is described below for each facility. Cumulatively, the Proposed Action would result in an addition of approximately 1.8 million square feet or about 41 acres of impervious surface, which includes facilities, a 2.5-mile access road, sidewalks, curb and gutter, aircraft taxiway, and associated aprons.

2.2.1 AASF AND ADMINISTRATIVE SUPPORT FACILITY

The proposed AASF is a specially designed aviation facility of permanent masonry and steel construction with built-up roof, concrete floor, and mechanical and electrical equipment. This project would support 149 people and would permit all personnel to perform the necessary tasks that would improve the unit's readiness posture.

The AASF would consist of the following buildings:

- 121,658 square foot hangar, operations, and maintenance facility
- 4,520 square foot ground support equipment storage facility
- 400 square foot flammable storage building
- 300 square foot controlled waste handling facility
- 12,916 square foot unheated aircraft storage facility

Force protection and energy management control systems would also be included. Supporting facilities would include paving for aircraft parking/tie down pads, ground support equipment, hover lanes, fuel storage/dispensing system, exterior aircraft wash facility, exterior lighting, fire protection, and fencing. Physical security measures would be incorporated into the design including maximum feasible standoff distance from roads, parking areas and vehicle unloading areas, berms, heavy landscaping, and bollards to prevent access when standoff distance cannot be maintained. An approximate total of 139,793 square feet of facilities would be constructed at this location.

The Administrative Support Facility would consist of a permanent masonry type construction to serve the peace time missions of the assigned unit. The space would permit 167 personnel to perform the necessary tasks that would improve the unit's readiness posture.

The Administrative Support Facility would include the following facilities:

- 40,113 square foot Administrative Support Facility
- 100 square foot flammable materials facility
- 300 square foot controlled waste facility
- 5,909 square foot unheated metal storage building
- 3,332 square foot unheated enclosed/shed vehicle storage building

Supporting facilities would include weapons storage area, maintenance, military vehicle parking and access roads and privately-owned vehicle parking, security fencing with dark motor pool lighting, exterior vehicle wash system, fuel storage, loading ramp, flammable material storage, controlled waste handling facility, and sidewalks. An approximate total of 50,634 square feet of facilities would be constructed at this location.

2.2.2 JFHQ, READINESS CENTER, AND FMS

The proposed JFHQ Complex would include the JFHQ with add-on of the 115th Readiness Center, new FMS, and add-on to the State Maintenance Shop. The existing Raper Armory would continue to be used. The JFHQ Complex would consist of a permanent masonry type construction, brick and concrete block units with concrete floors, and a built-up or single membrane roof. The JFHQ would be a two-story structure and all other buildings would be single-story structures with mechanical and electrical equipment. This project would support 632 personnel (upper end estimate) to perform the necessary tasks in improving the unit's readiness posture.

The JFHQ Complex would consist of the following facilities:

<u>Building</u>	<u>Existing SF</u>	<u>New SF</u>	<u>Total SF</u>	<u>Total Personnel</u>
The JFHQ	0	104,422	104,422	424
115th Readiness Center	0	55,800	55,800	122
New FMS	0	20,371	20,371	4
State Maintenance Shop	4,878	5,930	10,808	8
Raper Armory	37,614	0	37,614	74

Outside supporting facilities to be included in the JFHQ Complex would be military and privately-owned vehicle parking, fencing, sidewalks, exterior fire protection, outside lighting, access roads, detached facility sign, exterior wash platform, fuel storage and dispensing system, and flagpole. Physical security measures would be incorporated into the design including maximum feasible standoff distance from roads, parking areas, and vehicle unloading areas, berms, heavy landscaping, and bollards to prevent access when standoff distance cannot be maintained. Cost effective energy conserving features would be incorporated into the design, including energy management control systems and high efficiency motors, lighting, and heating, ventilation, and air conditioning (HVAC) systems. An approximate total of 186,523 square feet of facilities would be constructed at this location.

The FMS would consist of three maintenance work bays, a general work area plus administrative and personnel space. The facility would be constructed of masonry block with brick veneer, concrete floors, masonry block partitions with a built-up or single membrane roof system. The FMS would consist of a flammable materials facility, controlled waste facility, unheated metal storage building, and unheated enclosed/shed vehicle storage. This project would support four personnel to perform the necessary tasks that would improve the unit's readiness posture.

Anti-terrorism/force protection would also be included. Supporting facilities would include military and customer parking, fencing, wash platform, fuel storage and dispensing system, lube and inspection rack, load ramp, control waste handling facility, sidewalks, outside lighting, and access roads. Physical security measures would be incorporated into the design including maximum feasible standoff distance from the roads, parking areas, vehicle unloading areas, berms, heavy landscaping, and bollards to prevent access when standoff distance cannot be maintained. An approximate total of 20,371 square feet of facilities would be constructed at this location.

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3.0 ALTERNATIVES

This section discusses all alternatives considered feasible, including all site locations, facilities, the Preferred Alternative, and the No Action Alternative.

3.1 Introduction

In an effort to support and sustain its current and future mission, WYARNG has programmed the construction of new or use of existing facilities, including structures, roads, and parking lots. Details for each of the proposed alternatives are described below in Section 3.2. Section 3.3 discusses which alternatives are carried forward in this EA and Section 3.4 discusses the alternatives eliminated from detailed evaluation.

3.2 Alternatives Screened

Six alternatives were screened for inclusion in this EA. Screening criteria consist of operational constraints, safety constraints, geographic constraints, and existing facility and mission constraints. The following describes the constraints considered in the evaluation process. Table 3-1 summarizes the selection criteria of each site. Based on the results of the screening, Alternative 1 is the Preferred Alternative.

Safety Constraints – AASF and Administrative Support Facility

Engineering (Explosive Arc);
Operational safety

Safety Constraints – JFHQ, Readiness Center, and FMS

Engineering;
Operational safety

Geographic Constraints – AASF and Administrative Support Facility

Availability of sufficient land area for anticipated footprint – at least 23 acres required;
Access and security availability

Geographic Constraints – JFHQ, Readiness Center, and FMS

Availability of sufficient land area – at least 13 acres required;
Access and security availability;
Proximity to operationally related facilities and utilities

Existing Facility and Mission Constraints – AASF and Administrative Support Facility and JFHQ, Readiness Center, and FMS

Interference on existing missions and training;
Infrastructure demand (increase in water, electricity, and other needs)

Operational Constraints – AASF and Administrative Support Facility

Interference on UH60 take-off and landings, engine runs, hover and high hover operations and taxi time

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1 **Table 3-1.** Selection Criterion of Each Site.

Alternative Component	Description	Operational Constraints	Safety Constraints	Geographic Constraints	Existing Facility and Mission Constraints	Carried Forward to EA or Dismissed?
Alternative Number 1						
1A	AASF and Administrative Support Facility at northwestern side of base	None	None	None	None	Considered in EA
1B	JFHQ, Readiness Center, and FMS at eastern side of base	None	None	None	None	
Alternative Number 2						
2A	AASF and Administrative Support Facility at northern side of base	None	Located within an Accident Potential Zone from the Cheyenne Municipal Airport	Slope is greater than 15 percent; closer to Western Hills, an adjacent off-base residential development	None	Dismissed
2B	JFHQ, Readiness Center, and FMS at eastern side of base (same as 1B)	None	None	None	None	
Alternative Number 3						
3A	AASF and Administrative Support Facility at north central side of base	None	Located within an Accident Potential Zone from the Cheyenne Municipal Airport	Slope is greater than 15 percent; closer to Western Hills, an adjacent off-base residential	None	Dismissed
3B	JFHQ, Readiness Center, and FMS at eastern side of base (same as 1B)	None	None	None	None	

Alternative Component	Description	Operational Constraints	Safety Constraints	Geographic Constraints	Existing Facility and Mission Constraints	Carried Forward to EA or Dismissed?
Alternative Number 4						
4A	AASF and Administrative Support Facility at southern side of base	Flight and hoist operations would be impaired due to prevailing western winds; the weapons storage area 4,000 foot emergency cordon zone extends out over the proposed parcel, which could affect operations.	Safety concerns on flight operations associated with western winds and proximity to weapons storage area	Potential conflicts with remediation of a groundwater contamination plume	None	Dismissed
4B	JFHQ, Readiness Center, and FMS at eastern side of base (same as 1B)	None	None	None	None	
5	AASF and Administrative Support Facility and JFHQ, Readiness Center, and FMS – Reuse of Existing Facilities	Existing facilities do not meet requirements	None	Existing facilities do not meet requirements	None	Dismissed
6	AASF and Administrative Support Facility and JFHQ, Readiness Center, and FMS – No Action	Not applicable	Not applicable	Not applicable	Not applicable	Considered in EA

- 2 AASF Army Aviation Support Facility
- 3 EA environmental assessment
- 4 FMS Field Maintenance Shop
- 5 JFHQ Joint Forces Headquarters

Details of the six alternatives are described below.

3.2.1 ALTERNATIVE 1

Under Alternative 1, the AASF and Administrative Support Facility would be located at the far northwestern side of F. E. Warren AFB (refer to Figure 3-1, site 1A). The proposed buildings and supporting facilities to be constructed are discussed in Section 2.0. Utility, water, and sewer easements and an access road are proposed for this alternative. The utility easements would run parallel with the proposed access road. Sewer easements would transverse to the east to existing easements and water lines would be to the south also towards existing easements.

Under Alternative 1, the JFHQ, Readiness Center, and FMS would be located at the eastern side of F. E. Warren AFB (refer to Figure 3-1, site 1B-4B) within a developed area. The proposed buildings and supporting facilities to be constructed are discussed in Section 2.0. Existing access roads and utility, water, and sewer easements would be used at this location.

3.2.2 ALTERNATIVE 2

Under Alternative 2, the AASF and Administrative Support Facility would be located on the northern side of F. E. Warren AFB (refer to Figure 3-1, site 2A). The proposed buildings and supporting facilities to be constructed are discussed in Section 2.0. Utility, water, and sewer easements and an access road are proposed for this alternative. The utility easements would run parallel with the proposed access road. Sewer easements would transverse to the east to existing easements and water lines would be to the south also towards existing easements.

Under Alternative 2, the JFHQ, Readiness Center, and FMS would be located as described under Alternative 1.

3.2.3 ALTERNATIVE 3

Under Alternative 3, the AASF and Administrative Support Facility would be located on the north central side of F. E. Warren AFB (refer to Figure 3-1, site 3A). The proposed buildings and supporting facilities to be constructed are discussed in Section 2.0. Utility, water, and sewer easements and an access road are proposed for this alternative. The utility easements would run parallel with the proposed access road. Sewer easements would transverse to the east to existing easements and water lines would be to the south also towards existing easements.

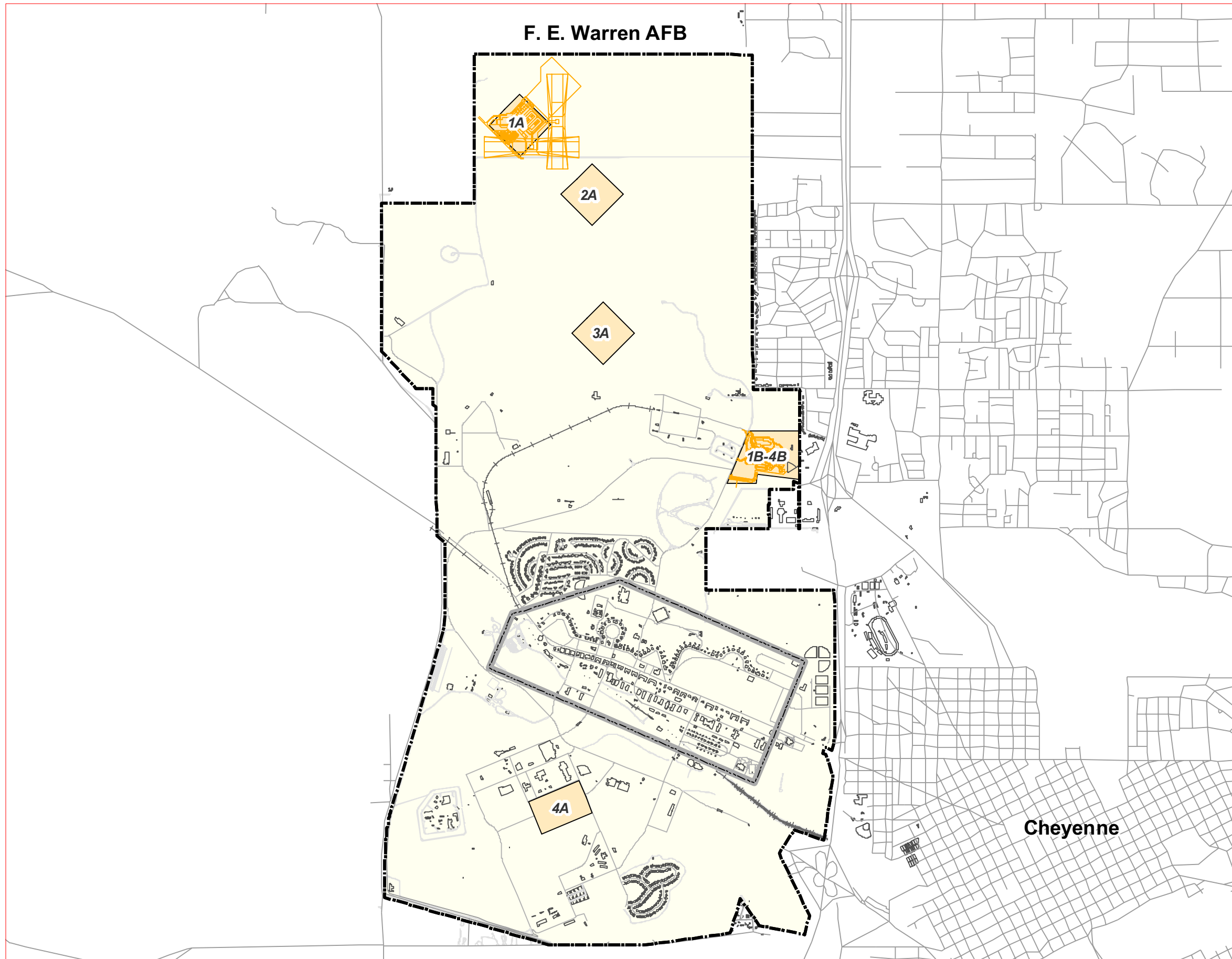
Under Alternative 3, the JFHQ, Readiness Center, and FMS would be located as described under Alternative 1.

3.2.4 ALTERNATIVE 4

Under Alternative 4, the AASF and Administrative Support Facility would be located on the southern side of F. E. Warren AFB (refer to Figure 3-1, site 4A) within the compounds of an existing aviation facility currently in use by the Air Force. The existing Air Force aviation facility would continue its operations. The proposed buildings and supporting facilities to be constructed are discussed in Section 2.0. Utility, water, and sewer easements would tie into existing easements and no additional access roads would be necessary.

Under Alternative 4, the JFHQ, Readiness Center, and FMS would be located as described under Alternative 1.

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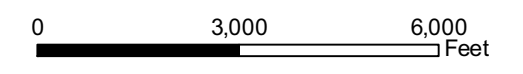
LEGEND

- Buildings
- Roads
- +— RR Tracks
- Historic District Boundary
- Proposed AASF & JFHQ
- Proposed Site Locations
- Installation Boundary

Screened Alternatives:

1A, 2A, 3A, 4A:
Army Aviation Support Facility (AASF)
and Administrative Support Facility

1B-4B: Joint Forces Headquarters (JFHQ),
Readiness Center,
& Field Maintenance Shop (FMS)



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and Administrative Support Facility and the
JFHQ, Readiness Center, and FMS
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Date Revised: 07/19/06

Figure 3-1

Proposed Site Locations



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3.2.5 ALTERNATIVE 5 – REUSE OF EXISTING FACILITIES

Alternative 5 considers the reuse of existing facilities. However, there are no existing facilities available that could adequately house or support the mission of the proposed AASF and Administrative Support Facility and the JFHQ, Readiness Center, and FMS. All WYARNG facilities in the area have been surveyed and none can be expanded to meet this requirement.

3.2.6 ALTERNATIVE 6 – NO ACTION ALTERNATIVE

Since the Proposed Action is being mandated by Congress, the No Action Alternative cannot be implemented and is carried forward solely to have a benchmark against which to evaluate the Proposed Action.

3.3 Alternatives Carried Forward

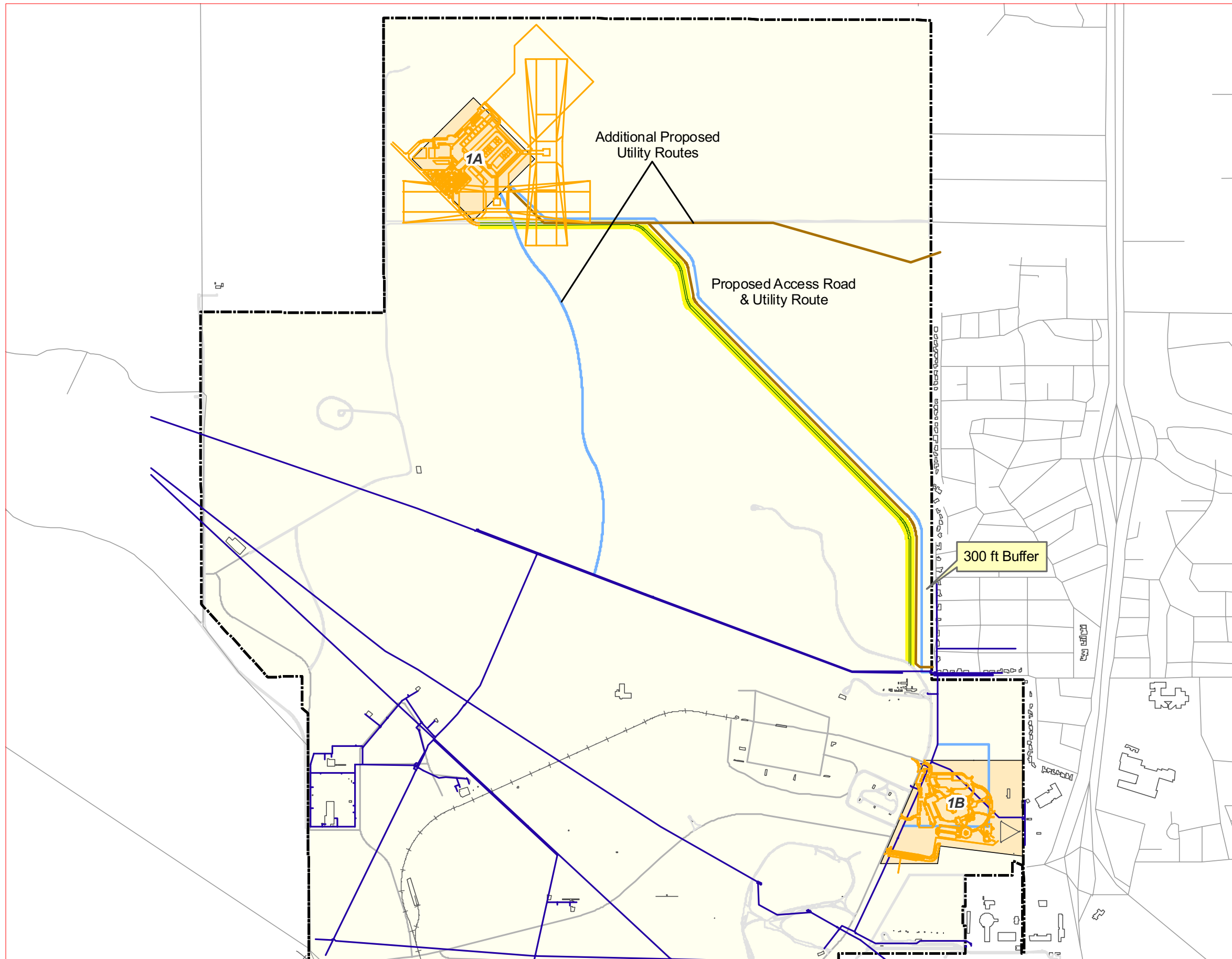
Alternatives 1 and 6 are carried forward and evaluated in this EA. Under Alternative 1, the AASF and Administrative Support Facility would be located on the northwestern side of F. E. Warren AFB and the JFHQ, Readiness Center, and FMS would be located on the eastern side of F. E. Warren AFB as described in Section 3.2 (refer to Figure 3-2, sites 1A and 1B). Alternative 1 is the Preferred Alternative because the selected locations do not have operational, safety, geographic, or existing facility and mission constraints. Alternative 6, No Action, is required to be carried forward by CEQ. Since the Proposed Action is being driven by Congress, the No Action Alternative is carried forward solely to have a benchmark against which to evaluate the Proposed Action.

3.4 Alternatives Considered and Not Carried Forward

The following alternatives are deemed not to meet the criteria for further development, based upon the criteria discussed in Section 3.2, and will not be carried forward for environmental analysis and design/construct practicability.

- Alternative 2 – AASF and Administrative Support Facility, northern side of F. E. Warren AFB, discussed in Section 3.2.2 (refer to Figure 3-1, site 2A). This area is not feasible due to its location within an accident potential zone (APZ) from the Cheyenne Municipal Airport. Therefore, this location was dismissed and Alternative 2 is not carried forward.
- Alternative 3 – AASF and Administrative Support Facility, north central side of F. E. Warren AFB, discussed in Section 3.2.3 (refer to Figure 3-1, site 3A). This area is not feasible due to its location within an APZ from the Cheyenne Municipal Airport. Therefore, this location was dismissed and Alternative 3 is not carried forward.

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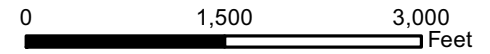
LEGEND

- Buildings
- Proposed 8" or 10" Sewer
- Proposed 12" Water Main
- Roads
- RR Tracks
- Historic District Boundary
- Proposed Road
- Existing Water Lines
- Proposed AASF & JFHQ
- 100 ft Buffer
- ▭ Installation Boundary
- ▭ Proposed Site Locations

Screened Alternatives:

1A: Army Aviation Support Facility (AASF) and Administrative Support Facility

1B: Joint Forces Headquarters (JFHQ), Readiness Center, & Field Maintenance Shop (FMS)



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Environmental Assessment for the AASF and Administrative Support Facility and the JFHQ, Readiness Center, and FMS Francis E. Warren Air Force Base, WY

Date Revised: 07/19/06

Figure 3-2

Preferred Alternatives & Proposed Utilities



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- Alternative 4 – AASF and Administrative Support Facility, southern side of F. E. Warren AFB, discussed in Section 3.2.4 (refer to Figure 3-1, site 4A). The following factors prevent this location from being useful to the WYARNG:
 - Flight operations – This location has prevailing western winds that would influence flight operations. Furthermore, a weapons storage area is located west of the proposed helipads. Flight operations to the west would not be available due to safety concerns associated with western winds and proximity to weapons storage area. Hoist operations and large sling loads would also be affected due to prevailing winds, which could require more helicopter power requirements.
 - Hazardous wastes – A trichloroethylene plume is located in the area of the proposed location. Remediation activities, on-site monitoring, and health and safety issues would arise, which may pose cost and time constraints.

Therefore, based on the above mentioned reasons, Alternative 4 is not considered to be a feasible option and is not carried forward.

- Alternative 5 – Reuse of Existing Facilities, discussed in Section 3.2.5. There are no other facilities available to adequately house or support the mission of the proposed AASF and Administrative Support Facility and the JFHQ, Readiness Center, and FMS. All WYARNG facilities in the area have been surveyed and none can be expanded to meet this requirement. Therefore, Alternative 5 is not carried forward.

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4.0 AFFECTED ENVIRONMENT AND CONSEQUENCES

4.1 Introduction

This chapter describes the existing environmental and human resources that could potentially be affected by the Proposed Action and alternatives. The environment described in this chapter is the baseline for the consequences that are presented for each resource and each alternative. The region of influence (ROI), or study area, for each resource category is F. E. Warren AFB and its surroundings, unless stated otherwise in the individual resource category discussion. Most of the baseline information was taken from the F. E. Warren AFB programmatic EA (F. E. Warren AFB 2005b) or was gathered from other existing documentation.

This chapter also describes potential impacts for each environmental and human resource. An impact is defined as a consequence from modification to the existing environment brought about by the implementation of a proposed action or alternative. Impacts can be beneficial or adverse, can be a primary result of an action (direct) or a secondary result (indirect), and can be permanent or long lasting (long term) or temporary and of short duration (short term). Impacts can vary in degree from a slightly noticeable change to a total change in the environment.

For this EA, short-term impacts are defined as those impacts resulting from construction, renovation, or demolition activities (e.g., those that are of temporary duration), whereas long-term impacts are those resulting from the presence of new facilities and operation of the proposed new facilities once they are constructed and commissioned for operation.

Significance criteria are developed for the affected resource categories, and for many resource categories, are necessarily qualitative in nature. Quantitative criteria can be established when there are specific numerical limits established by regulation or industry standard. These criteria are based on existing regulatory standards, scientific and environmental documentation, and/or professional judgment.

Impacts do not necessarily connote negative changes, and any detectable change is not, in and of itself, considered to be negative. In the following discussions, to highlight adverse impacts for the decision maker, the impacts are considered adverse unless identified as beneficial.

Potential impacts described in this EA are classified at one of four levels: major, moderate, minor, and none to negligible. Major impacts (as defined in CEQ guidelines 40 CFR 1500-1508) are those effects that are most substantial and, therefore, should receive the greatest attention in the decision-making process. Moderate impacts are those impacts associated with a proposed action that would be noticeable to the public and surrounding community but would fail to meet the criteria used to define significant impacts. Minor impacts are those impacts that result in changes to the existing environment that could not be easily detected. Negligible impacts are those that would not alter the existing environment.

Table 4-1 defines these levels in detail and has been developed to establish criteria for rating the severity of a potential impact and to assist the decision maker in giving full and fair consideration of the environmental factors in determining the appropriate course of action.

Table 4-1. Criteria for Rating Severity of Impacts.

Impact severity	Description
Negligible	No change in planned or existing uses for a particular resource category, or impact localized and not detectable (or at the lowest level of detection) or not perceptible; not affecting surroundings or having a discernible or measurable effect on the quality or quantity of the resource.
Minor	Impact localized and slightly detectable or perceptible but would not affect overall community or character of the resource; generally compatible with existing resource values and existing or planned uses.
Moderate	Impact clearly detectable; could affect local community or have an appreciable effect on the quality or quantity of the resource; may require mitigation or minor, easily effected changes to the proposed action to avoid impacts; baseline testing and monitoring may be required.
Major	Impact highly noticeable and would substantially influence individuals and communities, as well as the quantity or quality of the resource, or impact, if not mitigated, would exceed established numerical standards. Effects, if not mitigated, would be substantial and would permanently affect the environment negatively. Mitigation beyond minor changes to the proposed action would be required. This impact would require the preparation of a mitigation plan and/or preparation of an environmental impact statement.

The affected environment and baseline conditions are described for each resource followed by the potential impacts to the resource from the Preferred Alternative and from the No Action Alternative. Integral mitigation to the Preferred Alternative should that alternative be implemented and/or the need for additional mitigation beyond the scope of the Preferred Alternative are also discussed.

4.2 Land Use

4.2.1 AFFECTED ENVIRONMENT

This section describes existing land use conditions at and surrounding F. E. Warren AFB. It considers natural land uses and land uses that reflect human modification. Natural land use classifications include wildlife areas, forests, and other open or undeveloped areas. Human land uses include residential, commercial, industrial, utilities, agricultural, recreational, and other developed uses. Management plans, policies, ordinances, and regulations determine the types of uses that are allowable, or protect specially designated or environmentally sensitive uses.

The following sections discuss the regional geographic setting and location, installation land use, current and future development, and the surrounding airspace use.

4.2.1.1 Regional Geographic Setting and Location

F. E. Warren AFB is located in southern Wyoming, approximately 11 miles north of the Colorado border (Figure 4-1). It is approximately 100 miles north of Denver, Colorado, and 45 miles east of Laramie, Wyoming. Interstate Highway 25 (I-25) intersects Interstate Highway 80 (I-80) about 3 miles south of the Main Gate.

F. E. Warren AFB occupies 5,866 acres, or approximately 9 square miles of federally owned land, located on the western edge of the City of Cheyenne in southeastern Laramie County, Wyoming. It is located within unincorporated Laramie County, and is not within the city limits of the City of Cheyenne.

4.2.1.2 Installation Land Use

F. E. Warren AFB has completed an Integrated Natural Resources Management Plan (INRMP) (F. E. Warren AFB 2001). The plan is designed to support the military mission and protect and enhance land upon which training missions are dependent, identify recreational opportunities within the base, and use an ecosystem management approach for management of the base's natural resources.

Table 4-2 shows the existing land use classifications for the proposed facility sites. Existing land use at F. E. Warren AFB is shown on Figure 4-1.

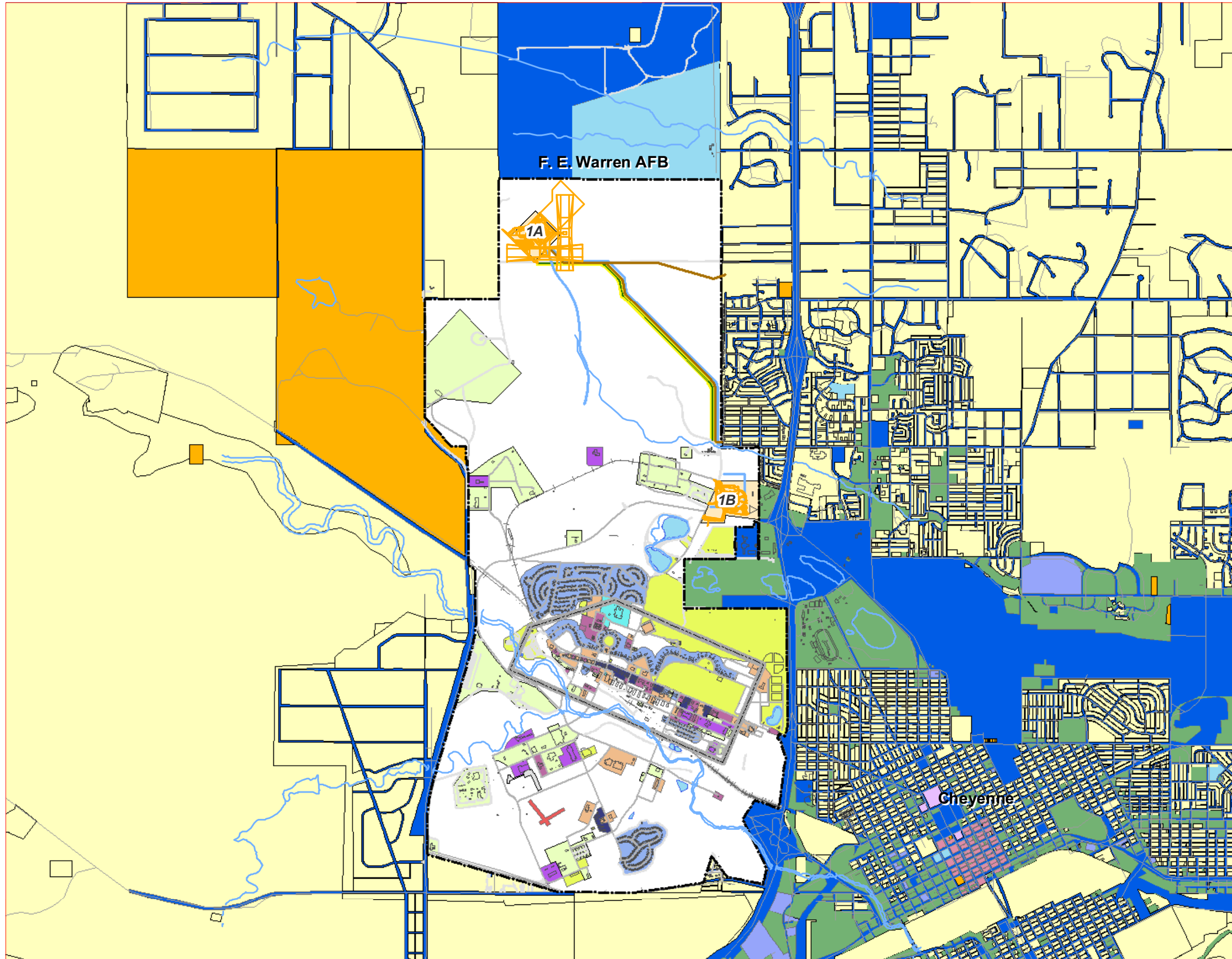
Table 4-2. Land Use Classifications (On-Base) for Lands Potentially Affected by the Proposed Action.

Grounds categories	Land use categories	Description	Facility
Improved	Mission	Aircraft and missile maintenance hangars and facilities; aircrew, missile, and training facilities; and flying and missile unit operations (and associated aircraft maintenance units)	JFHQ
Semi-Improved	Industrial	Civil engineer shops; fire stations and training; supply facilities; training ranges; transportation, maintenance, and operation facilities; utility operations; and horse stables/recreation	JFHQ
Unimproved	Open Space	Conservation and preservation areas; safety and security zones; and buffer areas	AASF, JFHQ

Source: F. E. Warren AFB 2005b
 AASF Army Aviation Support Facility
 JFHQ Joint Forces Headquarters

Within the areas that may be affected by the Proposed Action, there are large tracts of open space land use in addition to some mission and industrial land uses (Figure 4-1). Most of the lands classified as "unimproved" have been used for firing range activities, from small arms to light artillery.

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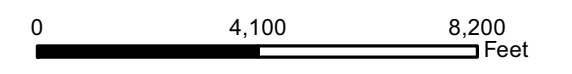


LEGEND

- | | |
|------------------------------|-----------------------|
| — Buildings | Land Use On Base |
| — Proposed 8" or 10" Sewer | Administrative |
| — Proposed 12" Water Main | Airfield Pavements |
| — Roads | Airfield |
| — RR Tracks | Community |
| — Historic District Boundary | Housing Accompanied |
| — Proposed AASF & JFHQ | Housing Unaccompanied |
| — Proposed Road | Industrial |
| Land Use Off Base | Medical |
| — Open Space/Park | Mission |
| — Public - City | Outdoor Recreation |
| — Public - County Owned | Open Space |
| — Public - Federal | 100 ft Buffer |
| — Airport | Creeks & Lakes |
| — Public - State | Installation Boundary |
| — Private Owned Land | |
| — Proposed Site Locations | |

1A: Army Aviation Support Facility (AASF) and Administrative Support Facility

1B: Joint Forces Headquarters (JFHQ), Readiness Center, & Field Maintenance Shop (FMS)



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Date Revised: 07/19/06

Figure 4-1
 Land Use and Ownership



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4.2.1.3 Current and Future Development in the Region of Influence

The areas immediately adjacent to the northern and western perimeter of F. E. Warren AFB (within 0.5-mile of the perimeter) that could be affected by the Proposed Action (the AASF and associated facilities) are lands held in private and public ownership. The privately owned lands could potentially be developed for rural/residential use. Publicly owned lands would not be developed for residential use, but would be used for public purposes or held as open space for the use and enjoyment of local residents and visitors (Cheyenne MPO 2005a). The areas immediately to the north of the current F. E. Warren AFB boundary were formerly a part of the base, and ownership of these lands was transferred to non-DoD use/management as a part of the Formerly Utilized Defense Sites (FUDS) program. These lands are now held by the U.S. Department of Interior, Bureau of Land Management (approximately 730 acres) and the Laramie County School District #1 (approximately 400 acres). These lands are currently undeveloped open space/rangeland, and likely would be utilized in a manner similar to other publicly owned/managed lands in the future (i.e., non-residential uses).

The lands immediately to the west of the western perimeter on the northern portion of F. E. Warren AFB are in private ownership (Figure 4-1). These lands are currently undeveloped ranch land. There is one developed parcel (with improvements/buildings) within 0.5 mile of the northern and western perimeter of F. E. Warren AFB where the proposed AASF and associated facilities would be located. There are several widely dispersed residences/developed parcels a mile or more from the northern and western perimeter of F. E. Warren AFB.

The off-base lands immediately to the east of the eastern perimeter on the north-central portion of F. E. Warren AFB that could be affected by proposed construction (e.g., the JFHQ and associated facilities) are also in public and private ownership. Immediately to the east, between the base perimeter and I-25, the off-base land is mainly publicly owned (State of Wyoming) and commercial/industrial land. About 0.25 mile to the south of the proposed JFHQ and other existing facilities on base, immediately adjacent to the base perimeter, the lands are used as golf courses (the Cheyenne Country Club Golf Course and the F. E. Warren AFB Golf Course). About 0.3 mile to the north of the proposed JFHQ and other existing facilities on base, immediately adjacent to the base perimeter, there are existing residential areas (Figure 4-1).

4.2.1.4 Surrounding Area Airspace Use

The Cheyenne Municipal Airport's two approach/departure flight paths, as defined by Federal Aviation Administration (FAA) clear zone criteria, overlap the base boundary and also constitute potential adjacent off-installation constraints that may influence future base development (Figure 4-1) (F. E. Warren AFB 2005b).

4.2.2 CONSEQUENCES

Considerations for impacts to land use include the land on and adjacent to each proposed project site, the physical features that influence current or proposed uses, pertinent land

use plans and regulations, and land availability. Conformity with existing land use is of utmost importance.

Potential impacts to land use are considered major if the Preferred Alternative would:

- Conflict with applicable ordinances and/or permit requirements;
- Cause nonconformance with the current general plans and land use plans, or preclude adjacent or nearby properties from being used for existing activities; or
- Conflict with established uses of an area requiring mitigation.

Potential impacts to airspace use are considered major if the Preferred Alternative would:

- Cause changes in airspace management that elevate frequency of use of airspace not currently accommodated by existing published routes and air control systems;
- Modify local routes or air control protocols; or
- Require the creation of new published routes or air control protocols through FAA coordination.

4.2.2.1 Preferred Alternative

Overall, potential impacts to land use from the Preferred Alternative would be minor and are considered insignificant. The Preferred Alternative would be contained within F. E. Warren AFB, which sets its own land use and zoning designations and would not present conflicts or nonconformance with current local or state land use or zoning designations. Existing land uses external to the base would not be foreclosed by on-base land-use decisions related to the Preferred Alternative; thus, there would be no discernible impact to these land uses.

The Preferred Alternative would require some changes to the currently planned land uses on-base. The JFHQ would necessitate the on-base land use designation to change from “mission, industrial, and open space” to “administrative,” and the AASF would necessitate the on-base land use designation to change from “open space” to “mission” subsequent to construction of the planned facilities. As the “open space” designation in the area proposed for the AASF was assigned due to the presence of unexploded ordnance (UXO), and UXO would be cleared prior to implementation of the Proposed Action, it is concluded that the impact of changing the designation would be negligible. The JFHQ is proximate to the current location of a Base Private Organization’s operation of base horse stables. Some minimal impact may occur from noise during construction and increased traffic on the proposed access road to the AASF.

The land uses are generally compatible with surrounding land uses and planned uses. Therefore, potential impacts to land use from implementation of the Preferred Alternative are considered minor.

F. E. Warren AFB does not operate any airfields associated with the use of fixed-wing aircraft for the purposes of take off and landing and has been exempted from preparing a

study documenting Air Installation Compatible Use Zones (AICUZ), resulting in no impact to this resource area by the Preferred Alternative.

4.2.2.2 No Action Alternative

Under the No Action Alternative, no changes or impacts would occur to land use.

4.3 Aesthetics and Visual Resources

4.3.1 AFFECTED ENVIRONMENT

This section describes the existing aesthetic and visual resource conditions at F. E. Warren AFB. The visual resources of F. E. Warren AFB include natural and manmade physical features that provide the landscape its character and value as an environmental resource. Landscape features that form a viewer's overall impression about an area include landform, vegetation, water, color, adjacent scenery, scarcity, and constructed modifications to the natural setting.

Safety and functionality are the primary considerations for use of F. E. Warren AFB land to support mission-related and support activities. There is no public access to F. E. Warren AFB, including the northern portion of the base. Exterior appearance of structures and landscaping are considered only when all other functional needs are fulfilled.

The visual setting for the proposed site of the AASF, Administrative Support Facility, and the northern portion of the access road is characterized by low ridges within undeveloped shortgrass prairie. Portions of this part of the base were historically used as artillery practice ranges. There is also undeveloped prairie to the north, south, and west of the site. The Western Hills housing subdivision is present off-base approximately 1 mile east of the site, but is only partially visible due to topography, and scattered residences are approximately 1 mile to the northwest of the site. The larger viewshed for this site also consists of the developed and undeveloped portions of F. E. Warren AFB, the City of Cheyenne, and surrounding areas comprised of undeveloped pastures and relatively widely scattered rural residences.

The visual setting for the proposed site of the JFHQ, Readiness Center, FMS, and the southern portion of the access road is characterized by moderately disturbed shortgrass prairie crossed by paved and unpaved roads. There are installation buildings to the south, east, and west of the proposed building site; the City of Cheyenne is approximately 400 feet to the east and 1,300 feet to the north of the proposed site; and I-25 is approximately 1,200 feet east of the site.

Although F. E. Warren AFB is not under the Bureau of Land Management's jurisdiction, the concepts used in the Bureau's Visual Resource Management System provide a useful framework in assessing a region's visual resources. The Bureau of Land Management uses four visual resource classes in the management of public lands, with associated management objectives for each class, with Class I the most valued and Class IV of least value. From a management perspective, Class I lands have the most restrictions on appropriate land actions, and Class IV is the least restrictive. Visual resources fall into

one of these management classes based on a combination of three factors: (1) scenic quality, (2) visual sensitivity, and (3) distance from travel routes.

Using the concepts of the Bureau of Land Management's Visual Resource Management System, both areas have scenic characteristics common to the area, and would fall into Visual Resource Management Class III or IV. Class III objectives allow land actions that partially retain the existing character of the landscape through moderate changes, and allow actions that attract an observer's attention without dominating the view. Class IV objectives allow land actions that entail major modifications to the existing landscape, and allow actions that would dominate an observers view if absolutely necessary.

4.3.2 CONSEQUENCES

Potential impacts to aesthetic resources are considered significant if the Preferred Alternative would substantially degrade the natural or constructed physical features at F. E. Warren AFB that provide the base its character and value as an environmental resource. The magnitude of any impact would be primarily determined by the number of viewers affected, viewer sensitivity to changes, distance of viewing, and compatibility with existing land use.

4.3.2.1 Preferred Alternative

Overall, potential impacts to aesthetics and visual resources from the Preferred Alternative would be minor and are considered insignificant. The Preferred Alternative would cause short-term visual impacts resulting from ground disturbance associated with construction of the facilities, access road, and utility corridor. However, the reclamation of disturbed areas would remove these visual impacts.

Long-term visual impacts that would result from operation of the AASF, Administrative Support Facility, and the northern portion of the access road include the addition of facilities to previously open land, helicopter operations, automobile traffic resulting from the use of facilities by up to 316 personnel, and the addition of lighting to previously unlit areas. Although the land is undeveloped, it is highly disturbed as a result of its historic use as an artillery range. The proposed buildings would introduce a minor vertical element to the otherwise flat to rolling landscape. Buildings and nighttime lights would be visible from some parts of the main base more than 2 miles to the south; from scattered off-base rural residences to the northwest; and from residences existing or under construction to the east. However, the topography directly to the east of the site would preclude views of the site from many of these residences.

Most lighting at the AASF complex and along the access road would be shielded and directed downward for the safety of pilots and to remediate the impacts of nighttime light for those in the vicinity. These nighttime lights would be insignificant relative to the light emitted by the City of Cheyenne. Small lights embedded into the helipad would be visible from above the helipad, and ramp lights and helicopter lights operated during nighttime helicopter operations would be visible to the surrounding area. On-base viewers would likely be familiar with the purpose and process of military or defense-related activities, and may accept them as a necessary part of the mission and thus be less

sensitive to the visual impacts. For all viewers, because combined nighttime take-offs and landings would average fewer than five per month, the impacts of these lights would be infrequent and of short duration.

Long-term visual impacts that would result from operation of the JFHQ, Readiness Center, FMS, and the southern portion of the access road include the addition of buildings and a road to lightly developed land and the addition of lighting. Buildings and nighttime lights would be visible from some parts of the main base approximately 0.5 mile to the southwest, from installation buildings directly adjacent to the site of the proposed JFHQ Complex, from off-base residences directly to the north and northeast, and from I-25 to the east. The southern portion of the access road and its associated lighting would be visible to off-base residences directly to the east. Lighting at the JFHQ Complex and along the access road would be shielded and directed downward for the safety of pilots and to remediate the impacts of nighttime light for those in the vicinity. Nighttime light from these facilities and the access road would be insignificant relative to the light emitted by the City of Cheyenne.

There are no regulatory requirements for measuring impacts to visual resources at F. E. Warren AFB. However, applying the concepts of the Bureau of Land Management's Visual Resource Management System to assess the magnitude of effects on visual resources yields the conclusion that the potentially affected lands are similar to Class III and IV lands. These classes allow for moderate and major modifications, respectively, to the existing character of the landscape, and the types and magnitude of impacts to aesthetic resources identified here would be consistent with allowed modifications to Class III and IV lands. Thus, impacts to aesthetics and visual resources would be minor.

4.3.2.2 No Action Alternative

Under the No Action Alternative, no changes or impacts would occur to aesthetics and visual resources.

4.4 Air Quality

4.4.1 AFFECTED ENVIRONMENT

This section describes the existing air quality conditions at and surrounding F. E. Warren AFB. Ambient air quality conditions are discussed first, followed by emission sources at F. E. Warren AFB, and regional air pollutant emissions.

4.4.1.1 Ambient Air Quality Conditions

The ambient air quality in an area can be characterized in terms of whether it complies with the primary and secondary National Ambient Air Quality Standards (NAAQS). The Clean Air Act Amendments of 1990 (CAAA) require the U.S. Environmental Protection Agency (EPA) to set NAAQS for pollutants considered harmful to public health and the environment. NAAQS have been established for seven criteria pollutants: carbon monoxide (CO); lead (Pb); nitrogen dioxide (NO₂); ozone (O₃); particulate matter with an aerodynamic size less than or equal to 10 microns (PM₁₀); particulate matter with an

aerodynamic size less than or equal to 2.5 microns (PM_{2.5}); and sulfur dioxide (SO₂). These pollutants are believed to be detrimental to public health and the environment, and are known to cause property damage. Table 4-3 lists the NAAQS values for each criteria pollutant.

Table 4-3. National Ambient Air Quality Standards.

Pollutant	Standard value
Carbon monoxide (CO)	
8-hour average	9 ppm (10 mg/m ³)
1-hour average	35 ppm (40 mg/m ³)
Lead (Pb)	
Quarterly average	1.5 µg/m ³
Nitrogen dioxide (NO₂)	
Annual arithmetic mean	0.053 ppm (100 µg/m ³)
Ozone (O₃)	
1-hour average	0.12 ppm (235 µg/m ³)
8-hour average	0.08 ppm (157 µg/m ³)
Particulate matter less than 10 microns (PM₁₀)	
Annual arithmetic mean	50 µg/m ³
24-hour average	150 µg/m ³
Particulate matter less than 2.5 microns (PM_{2.5})	
Annual arithmetic mean	15 µg/m ³
24-hour average	65 µg/m ³
Sulfur dioxide (SO₂)	
Annual arithmetic mean	0.03 ppm (80 µg/m ³)
24-hour average	0.14 ppm (365 µg/m ³)

Source: EPA 2004

µg/m³ micrograms per cubic meter

mg/m³ milligrams per cubic meter

ppm parts per million

Areas are designated as “attainment,” “non-attainment,” “maintenance,” or “unclassified” with respect to the NAAQS. General air quality monitoring is conducted in areas of high population density and near major sources of air pollutant emissions. Rural areas are typically not considered in such monitoring. Regions that are in compliance with the standards are designated as attainment areas. Areas for which no monitoring data is available are designated as unclassified, and are by default considered to be in attainment of the NAAQS. In areas where the applicable NAAQS are not being met, a non-attainment status is designated (EPA 2004).

F. E. Warren AFB is located in Laramie County within the Metropolitan Cheyenne Intrastate Air Quality Control Region as designated by the EPA. The EPA has designated the air quality of the base as attainment for all criteria air pollutants (F. E. Warren AFB 2005b).

4.4.1.2 Air Emission Sources at F. E. Warren AFB

Air pollution sources located in attainment areas require a Title V operating permit if they have the potential to emit greater than 100 tons per year (tpy) of any criteria air pollutant, 10 tpy of any single hazardous air pollutant (HAP), or 25 tpy of all hazardous pollutants combined. F. E. Warren's potential to emit from the Central Heating Plant make a Title V operating permit necessary, however, the base recently received a Synthetic Minor Title V permit issued by the WDEQ to avoid the necessity for the full Title V permit. This permit requires federally enforceable limits on potential consumption of natural gas. The permit is not expected to impact the base mission or activities, since it will be based on future operating limits set for boilers and select emergency generators. However, future activities that would cause air emissions may need to be evaluated with respect to the emission limits associated with the permit. A construction permit approved by the WDEQ and/or F. E. Warren AFB may be required for future construction that would create air emissions including fugitive dust (F. E. Warren AFB 2005b).

Emission sources on the base include: point sources such as boilers, generators, abrasive blasting units, paint booth operations, fuel storage and transfer, gasoline storage and dispersing, welding, solvent cleaning or operations, landfill/pollution remediation venting, and woodworking activities; fugitive sources such as chemical or pesticide applications, fire-fighter training, small arms firing, detonations, and surface coating for facilities or roadways. Specific air pollutants may include CO, nitrogen oxides (NO_x), lead particulate, other particulate matter with an aerodynamic size of less than or equal to 5 microns (PM₅), sulfur oxides (SO_x), volatile organic compounds (VOCs), and HAPs (F. E. Warren AFB 2005b). The actual and potential emissions for F. E. Warren AFB from the 2003 Air Emissions Inventory are shown below in Table 4-4.

Table 4-4. 2003 Air Emissions Inventory Summary of Air Emissions at F. E. Warren AFB.

Pollutant	CY03 Actual emissions (tpy)	CY03 Potential to emit (tpy)
Particulate matter (PM)	6.6	25
Particulate matter less than 10 microns (PM ₁₀)	6.5	25
Carbon monoxide (CO)	14.5	51.2
Nitrogen oxides (NO _x)	26.4	69.5
Sulfur oxides (SO _x)	0.45	2.1
Volatile organic compounds (VOCs)	19.6	56.2
Total hazardous air pollutants (HAPs)	1.4	5.0

Source: F. E. Warren AFB 2005a
tpy tons per year

4.4.1.3 Regional Air Pollutant Emissions Summary

Regional air pollutant emissions from reported values are listed below in Table 4-5 for Laramie County, Wyoming.

Table 4-5. 2002 Reported Air Emissions for Laramie County, Wyoming.

Pollutant	2002 Air emissions (tpy)
Carbon monoxide (CO)	40,000
Lead (Pb)	*
Nitrogen dioxide (NO ₂)	32,500
Ozone (O ₃)	*
Particulate matter less than 10 microns (PM ₁₀)	22,500
Particulate matter less than 2.5 microns (PM _{2.5})	4,000
Sulfur dioxide (SO ₂)	6,000

Source: EPA 2002

*Pollutant not analyzed.

tpy tons per year

4.4.2 CONSEQUENCES

Potential impacts to air quality are considered major if the Preferred Alternative would:

- Increase ambient air pollution above any NAAQS;
- Contribute to an existing violation of any NAAQS;
- Interfere with or delay timely attainment of NAAQS; or
- Impair visibility within any federally mandated Prevention of Significant Deterioration Class I area.

With respect to the General Conformity Rule, impacts to air quality would be considered significant if emissions increased a non-attainment or maintenance area's emissions inventory by ten percent or more for individual non-attainment pollutants; or exceeded *de minimus* threshold levels established in 40 CFR 93.153(b). A conformity analysis is not required in an attainment area.

4.4.2.1 Preferred Alternative

Overall, potential impacts to air quality from the Preferred Alternative would be negligible and are considered insignificant. Air contaminants generate short- and long-term impacts. Short-term air quality impacts from the Preferred Alternative would occur from construction activities associated with the movement of heavy equipment. Construction activities would be temporary and occur in a localized area. Contaminants generated from construction would include particulate matter, vehicle emissions, and fugitive dust. Long-term impacts associated with the Preferred Alternative include external combustion emissions, fuel storage tank emissions, and other emissions. Each of these is discussed below.

External Combustion Emissions. Design parameters for anticipated energy requirements and use have not been determined at this time. Therefore, it is uncertain as to whether electric, natural gas, or coal operated systems would be used (House 2006a, Thomson 2006a, and Bell 2006a). For intents and purposes of this EA, natural gas is assumed as the primary fuel based on its main use in the region, and the move by the Air

Force from the use of coal on F. E. Warren AFB (House 2006a). Long-term air quality impacts from the use of natural gas at each proposed facility would include emissions from external combustion units used to provide building heating and domestic hot water heaters. External combustion emissions were estimated based on assumptions and calculations explained in Appendix A of this EA. The estimated annual emission rates (tons per year) from the proposed furnaces to heat approximately 353,172 square feet of facilities are shown in Table 4-6 and are compared with existing emissions from F. E. Warren AFB.

Fuel Storage Tank Emissions. One 15,000-gallon above-ground storage tank (AST) would be used for fueling helicopters at the AASF. The proposed tank would hold JP-8 fuel (Thomson 2006a). Emissions from the fuel storage tank were calculated using the EPA's *TANKS 4.09* software. *TANKS* is a Windows-based computer software program, developed by the American Petroleum Institute, that estimates VOC emissions from fixed- and floating-roof storage tanks. The assumptions and results from the *TANKS* calculations can be found in Appendix A of this EA. These results indicate that the JP-8 storage tank would create a total of 8.04 pounds per year (0.004 tons per year) of VOC emissions, including 2.19 pounds per year lost as the tank is filled and emptied, and 5.85 pounds per year lost through evaporation caused by daily temperature changes.

Expected emissions from the tank are compared with existing emissions on F. E. Warren AFB in Table 4-6.

Table 4-6. Comparison of Actual Air Emissions at F. E. Warren AFB to Expected Air Emissions with the Preferred Alternative.

Pollutant	2003 Actual emissions (tpy) on F. E. Warren AFB^a	Expected annual emission rates (tpy) from proposed furnaces	Expected annual emission rates (tpy) from proposed tank
PM _{2.5}	6.6	0.54	N/A
PM ₁₀	6.5	0.54	N/A
CO	14.5	5.98	N/A
NO _x	26.4	7.12	N/A
SO _x	0.45	0.04	N/A
VOC	19.6	0.39	0.004
Total HAPs	1.4	0.28	N/A

a. Source: F. E. Warren AFB 2005a

CO carbon monoxide

HAPs hazardous air pollutants

N/A not applicable

NO_x nitrogen oxides

PM_{2.5} particulate matter less than 2.5 microns

PM₁₀ particulate matter less than 10 microns

SO_x sulfur oxides

tpy tons per year

VOC volatile organic compound

Other Emissions. One painting area is anticipated to be used at the AASF. This area would be an approximate 540-square-foot shop that would contain one overhead high velocity hood with filtration for painting small parts and touch up. Sandblasting is not expected to take place. It is undetermined at the time of this EA as to what extent this facility would be used as it would depend on the frequency needed to maintain parts. It is also undetermined whether certain compounds, such as zinc chromate, would be components in any of the paint products that would be used (Thomson 2006a). Zinc chromate is a regulated substance. Because this area is not considered to be a paint booth and all painting would take place under an adequately filtered ventilated hood, large source emissions of regulated substances or criteria pollutants should not occur; however, small source air emissions may occur if zinc chromate is used in any of the painting products. However, this would not be expected to increase ambient air pollution above any NAAQS. Nonetheless, the opacity of the painting shop may be regulated and proper record keeping of quantity and type of paint may be required from the WDEQ.

The WYARNG would need to apply for a construction permit with the WDEQ in addressing the potential increase of these emissions. A construction permit for each construction site would be required. The construction permit considers both temporary and permanent air emissions. Upon review of the construction permit, WDEQ may issue a waiver if the source of emissions is minor. Based on the expected annual emission rates, a waiver would be likely. Once the construction permits have been issued and after 120 days of operation, the WYARNG would apply for an operating permit at each construction site.

Furthermore, Erosion Control Measures (ECMs) would be implemented to prevent generation of fugitive dust. Within the construction sites, appropriate ECMs would be identified that would provide optimum soil suppression. ECMs typically utilize (but are not limited to) water suppression strategies during demolition, construction, and renovation by wetting areas of soil disturbance and debris. In addition to identifying the type of surface treatment, an alternative ECM would be identified in case the original is found to be ineffective.

Expected air emissions from the Preferred Alternative would be negligible and are considered insignificant.

4.4.2.2 No Action Alternative

Under the No Action Alternative, no changes or impacts would occur to air quality.

4.5 Noise

4.5.1 AFFECTED ENVIRONMENT

This section describes the existing noise conditions at F. E. Warren AFB and from activities of the WYARNG. Noise measurement is discussed first, followed by noise sources at F. E. Warren AFB, and noise sources from WYARNG.

4.5.1.1 Noise Measurement

Noise is considered to be unwanted sound that interferes with normal activities or otherwise diminishes the quality of the environment. It may be intermittent or continuous, steady or impulsive. It may be stationary or transient. Stationary sources are normally related to specific land uses, e.g., housing tracts or industrial plants. Transient noise sources move through the environment, either along established paths or randomly (FICUN 1980).

Noise represents one of the most prominent environmental issues associated with aircraft operations. Although many other sources of noise are present in today's communities, aircraft noise is readily identifiable. An assessment of aircraft noise requires a general understanding of how sound is measured and how it affects people and the natural environment. Of concern is the potential for physiological effects (hearing loss and non-auditory effects), behavioral effects (speech interference and performance impairment), and subjective effects (annoyance and "startle" from rapid onset noises) (ANSI 1980, FICUN 1980).

Sound is measured as a force over a unit area and presented as a logarithmic ratio with the reference sound pressure near the threshold of hearing. Different sounds have different frequency content. When describing sound and its effect on a human population, A-weighted (dBA) sound levels are typically used to account for the response of the human ear. The A-weighted noise level has been found to correlate well with people's judgments of the noisiness of different sounds and has been used for many years as a measure of community noise. The hearing threshold, or the point at which a person begins to hear sounds, starts at zero dBA (FICUN 1980). Table 4-7 depicts the typical A-weighted sound pressure levels for various sources.

Table 4-7. Typical Decibel Levels of Noises Encountered in Daily Life and Industry.

Noise	Level (dBAs)
Rustling leaves	20
Room in a quiet dwelling at midnight	32
Window air conditioner	55
Conversational speech	60
Busy restaurant	65
Loudly reproduced orchestral music in large room	82
*UH-60 Black Hawk helicopter (500 feet)	83
Beginning of hearing damage (if prolonged exposure)	85
*UH-60 Black Hawk helicopter (200 feet)	91
Heavy city traffic	92
Home lawn mower	98
150 cubic foot air compressor	100
Jet airliner (500 feet overhead)	115
F-15 aircraft (500 feet overhead, afterburner power)	123

Note: When distances are not specified, sound levels are the values at the typical location of the machine operators.

Sources: Newman and Beattie 1985, modified; *USACHPPM 1999

The noise environment around a military or civil airfield normally is described in terms of the time-average sound level generated by the aircraft operating at that facility. These operations consist of the flight activities conducted during an average day at airfields where operations generally adhere to a fixed schedule (most commercial airports) or during a typical "busy day" at airfields where operations vary from day to day or between weekdays and weekends (most military airfields). Operations generally include fixed- and rotary-wing arrivals and departures at the airfield, flight patterns in the general vicinity of the airfield, and aircraft engine "run-ups" associated with engine preflight and maintenance checks (U.S. Air Force 2005).

Individual, single noise events are described in terms of the Sound Exposure Level (SEL), in units of decibels (dBs). SEL takes into account the amplitude of a sound and the length of time during which each event occurs. It provides a direct comparison of the relative intrusiveness among single noise events of different intensities and duration (FICUN 1980).

The Federal noise measure used for assessing aircraft noise exposures in communities in the vicinity of airfields/airports is the day-night average sound level (Ldn), in units of dBs. Ldn is an average sound level generated by all aviation-related operations during an average or busy 24-hour period, with sound levels of nighttime noise events emphasized by adding a 10-dB weighting. Nighttime is defined as the period from 10 p.m. to 7 a.m. the following morning. The 10-dB weighting accounts for the generally lower background sound levels and greater community sensitivity to noise during nighttime hours. The EPA recommends, and most Federal agencies have adopted, the Yearly Average Ldn as the basis for describing community noise exposure (U.S. Air Force 2005).

Annoyance is the primary human response to environmental noise, including aircraft noise, and the degree of annoyance has been found to correlate closely with the Ldn. The EPA has identified an Ldn of 55 dB as adequate to protect human health and welfare, with an adequate margin of safety (EPA 1972). The protective levels identified by the EPA do not constitute standards since they do not account for the cost or feasibility of achievement. There are problems in interpreting predictions below Ldn 60 dB. Accordingly, the DoD, FAA, and U.S. Department of Housing and Urban Development (HUD) have determined that new construction or residential units and other noise-sensitive land uses are clearly unacceptable in areas where the noise exposure exceeds Ldn 75 dB, normally unacceptable in regions exposed to noise levels between Ldn 65 to 75 dB, and normally acceptable in areas exposed to noise levels less than or equal to Ldn 65 dB. DoD uses a variety of computer modeling techniques to evaluate the potential impacts of sound generated by its aircraft operations as described in Appendix B of this EA.

4.5.1.2 Noise Sources on F. E. Warren AFB

Major sources of noise on F. E. Warren AFB include grounds maintenance activities, local base motor vehicle traffic, vehicular traffic on adjacent I-25, base helicopter operations, and fixed-wing aircraft operating from the Cheyenne Municipal Airport. The

helicopter operations in the southern portion of the base cause limited noise impacts to the rest of the installation. The current operations are of such levels that no noticeable Ldn's are generated. F. E. Warren AFB does not operate any airfields associated with the use of fixed-wing aircraft for the purposes of take off and landing and has been exempted from preparing a study documenting AICUZ (F. E. Warren AFB 2005b).

4.5.1.3 Noise Sources from WYARNG

Major sources of noise from WYARNG include grounds maintenance activities, vehicular traffic, and helicopter operations. Helicopter operations occur at the Cheyenne Municipal Airport. Currently nine UH-60 aircraft reside at the airport. The Cheyenne Municipal Airport's Federal Aviation Regulation Part 150 Noise Exposure and Land Use Compatibility Program is the most current noise study for the airport (Cheyenne Municipal Airport 1992). According to this study, WYARNG helicopter activity is situated on the north end of the airport. Helicopter activity included approximately 2,847 annual operations in 1988 and was projected to be 3,306 in 1995. SELs for helicopter operations ranged from 82 dBA to 87 dBA for individual aircraft.

4.5.2 CONSEQUENCES

Potential noise impacts resulting from the Preferred Alternative are evaluated with respect to the potential for:

- Annoyance - noise can impact the performance of various every day activities such as communication and watching television in residential areas.
- Hearing loss - the EPA recommends limiting daily equivalent energy to 70 dBA, approximately 75 Ldn, to protect against hearing impairment over a period of 40 years.
- Sleep interference, which is of great concern in residential areas.
- Startle response of wildlife to high intensity, sporadic noise levels. However, studies have determined there are no long-term behavioral or breeding effects on animals caused by aircraft noise.

The standard threshold for determining at what point noise impacts become a nuisance is 65 Ldn.

4.5.2.1 Preferred Alternative

Overall, potential noise impacts from the Preferred Alternative would be minor and are considered insignificant. Noise associated with the Preferred Alternative would be generated by standard construction equipment such as excavators, graders, backhoes, and dump trucks. This type of equipment may generate noise levels up to 80 dBA. Construction equipment generally operates about 40 percent of the time when it is being used at a construction site (ANSI 1980). Only a minor increase in ambient noise levels is expected to occur. Noise would also be generated by increased construction traffic on area roadways, but would be limited to certain times of the day. To minimize noise

impacts, construction activities would be scheduled on normal workdays during normal working hours. Impacts would be temporary and minor.

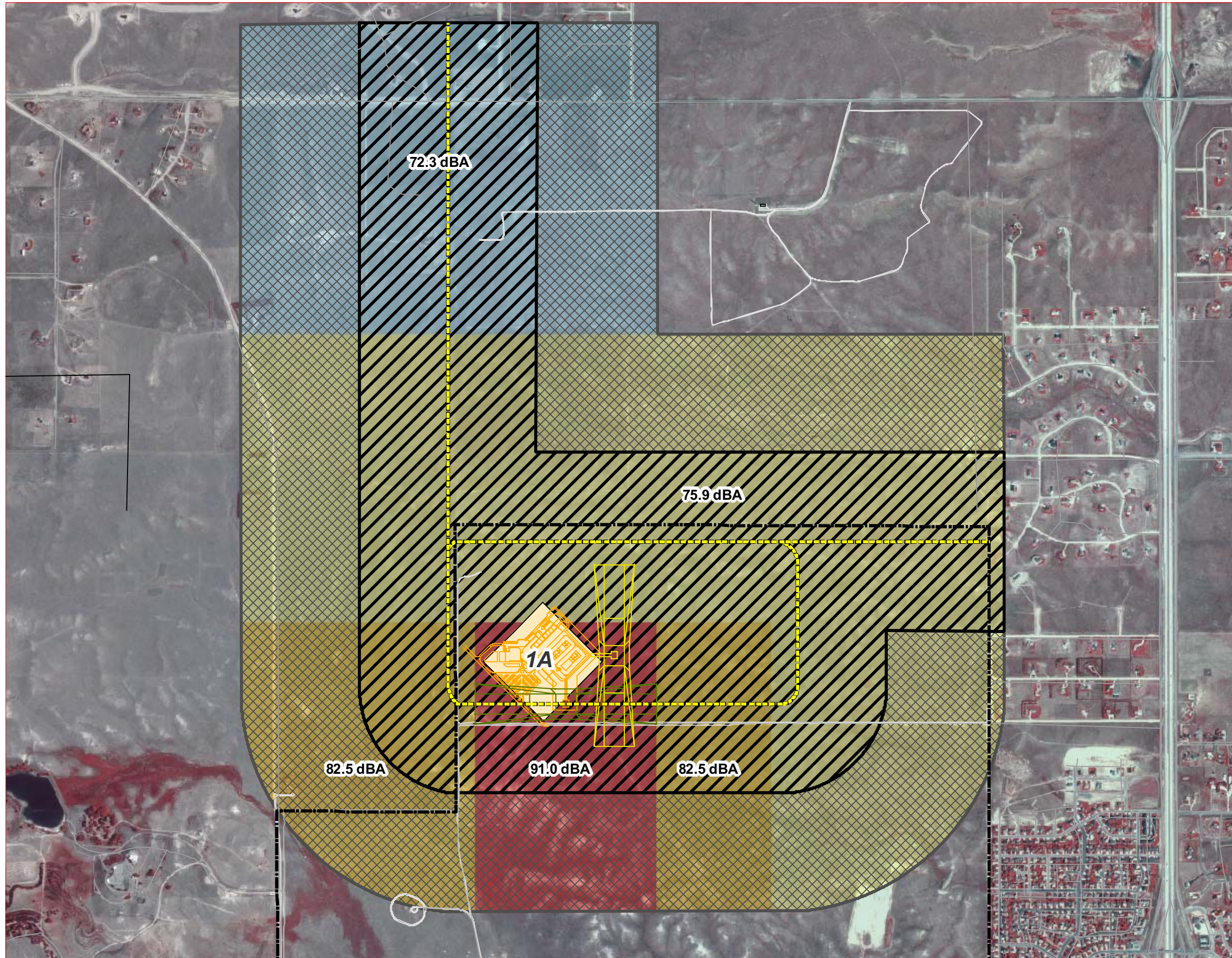
Long-term noise impacts from the Preferred Alternative are discussed separately for the AASF and Administrative Support Facility and the JFHQ Complex below.

AASF and Administrative Support Facility. Long-term sources of noise anticipated from the proposed AASF and Administrative Support Facility include grounds maintenance activities, vehicular traffic, and helicopter operations. Noise resulting from maintenance activities and vehicular traffic would be limited to certain times of the day and are expected to be minor.

Noise is expected from routine training operations of UH-60 aircraft. The WYARNG anticipate using 12 UH-60 that will arrive and depart the facility at elevations between 1,000 feet to 1,500 feet above ground level (AGL). Predominant flight track patterns would continue to be to the north or to the east (Figure 4-2). Routine training operations include takeoffs, landings, hover patterns, and closed patterns (which could include activities such as touch-and-go's or low approaches). Each takeoff or landing constitutes one operation. Training operations would be arranged to minimize noise impacts during nighttime hours and other specific time periods (Sundays, holidays, etc.). No particular noise-sensitive areas or facilities, such as schools or churches, are located near the proposed AASF and Administrative Support Facility.

The DoD computer modeling techniques were used to evaluate the potential impacts of sound generated by DoD aircraft operations. Specific modeling methods and calculations are provided for noise estimates generated for the AASF and Administrative Support Facility.

Ldn values around airfields are generated by the NOISEMAP or Rotary Noise Model (RNM) computer programs and are very similar to the program used by the FAA at civil airports, the Integrated Noise Model (INM). The INM and NOISEMAP & RNM computer program inputs include information regarding flight tracks; altitude profiles; power settings; aircraft speeds; frequency of flight operations; and the location, duration, and power settings of ground run-up operations by type of aircraft. The results are then averaged over the median number of flying days, with some compensation for seasonal variations, and noise contours are drawn from points on the ground with equal Ldn values.

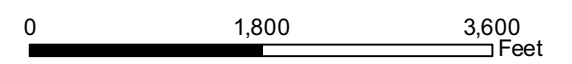


LEGEND

- +— RR Tracks
 - Historic District Boundary
 - Roads
 - Future Helipad
 - Helipad SPCL-1
 - Proposed AASF & JFHQ
 - Aircraft Traffic Pattern
 - Buildings/Structures
 - Proposed Site Locations
 - ▨ 1/3 Mile Buffer
 - ▧ 1/4 Mile Corridor
- Peak Noise Level**
- 1500 AGL (72.3 dBA)
 - 1000 AGL (75.9 dBA)
 - 500 AGL (82.5 dBA)
 - 200 AGL (91.0 dBA)

Note: Typical 1000'/minute KIAS Climb

1A: Army Aviation Support Facility (AASF) and Administrative Support Facility



Prepared for:
 Environmental Assessment for the AASF and Administrative Support Facility and the JFHQ, Readiness Center, and FMS Francis E. Warren Air Force Base, WY

Date Revised: 07/19/06

Figure 4-2
 Predominant Flight Track Patterns



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Normally, contours are produced at 5 decibel dB intervals beginning at Ldn greater than or equal to 65 dB, the maximum level considered acceptable for unrestricted residential land use. Using NOISEMAP, RNM, or INM with a geographic information system and the 2000 U.S. Census database, the number of persons exposed to Ldn greater than or equal to 65 dB can also be estimated. This assessment employs the land use compatibility guidelines supported by the FAA, EPA, HUD, DoD, the American National Standards Institute, and the Federal Interagency Committee on Urban Noise. Specifically, Ldn is used to describe the outdoor noise environment, and noise levels less than Ldn 65 dB are considered compatible with residential land uses.

RNM aircraft noise modeling software was used to interpret noise data resulting from UH-60 operations from baseline and anticipated noise environments in the vicinity of the AASF and Administrative Support Facility. Altitudes, aircraft type, flight tracks, power settings, and number of daytime (7:00 a.m. to 10:00 p.m.) and nighttime (10:00 p.m. to 7:00 a.m.) flights per day were analyzed. Helicopter pad use patterns along with aircraft fleet mix were the major factors used in determining potential noise exposures from flight operations. This is particularly true for F. E. Warren AFB where the predominant flight track patterns are to the north or to the east. For this analysis, it was assumed that two helicopter pads would be utilized for departure and landing. The north and south pad departures and arrivals were evenly split and the dominant direction of flight is anticipated to be to the north and east. There are two basic air traffic patterns in the F. E. Warren AFB region correlated with the helicopter pad use. These “flow patterns” and their estimated annual use are depicted below:

North Pad – 50 percent with (50 percent north flow & 50 percent east flow)

South Pad – 50 percent with (50 percent north flow & 50 percent east flow)

The distribution of operations between helicopter pads was determined based on the mission requirements and planned parking locations. Further distributions between day operations and night operations were based on review of WYARNG flying program information and are shown in Appendix B of this EA.

The overall number of operations is listed below:

- Total flying days per year – 288
- Yearly departures – 537
- Yearly arrivals – 540
- Daily departures – 1.85
- Daily arrivals – 1.69
- Nightly departures – 0.01
- Nightly arrivals – 0.18

The AASF departure and landing data using weighted average of takeoff times are provided in Appendix B of this EA. Based on the limited number of planned daily helicopter flight corridors, flight tracks, and training areas, there will be no A-weighted

day-night average sound level noise contours of 65 dBA or greater. Therefore, there is not sufficient qualifying sound to generate contours using the currently approved noise models. Additional analysis increasing flight operations by 100 percent does not generate any recognizable noise difference above ambient noise levels. Although noise contours were not generated based on day and night averages, there is the potential for aircraft noise to cause annoyance leading to possible complaints while entering/exiting the airspace. Figure 4-2 illustrates the projected flight paths with a 0.25-mile buffer at each side along with an additional 0.33-mile buffer. Both buffers extend off-base to the north and west. Various altitudes and associated noise levels are shown within each buffer. Based on the area impacted by using the 0.25-mile buffer approximately 1,372 acres can be considered affected of which 747 acres is localized off-base. The total area impacted by the 0.33-mile radius is 1,398 acres of which 483 acres is localized off-base. Therefore, a total of 1,230 acres are affected off-base. The 1,230 acres of land off-base are designated as private and public ownership to the north and private ownership to the west. There are no current concentrated residential areas to the north or west within the buffers (refer to Land Use section). Therefore, potential noise annoyance would be minor and localized to a small population of rural/residential homes near the base.

JFHQ Complex. Long-term sources of noise anticipated from the proposed JFHQ Complex include grounds maintenance activities, vehicular traffic, and training operations. Noise resulting from these activities would be limited to certain times of the day and are expected to be minor.

Overall, potential noise impacts from the Preferred Alternative are considered minor.

4.5.2.2 No Action Alternative

Under the No Action Alternative, no changes to noise would occur.

4.6 Geology and Soils

4.6.1 AFFECTED ENVIRONMENT

This section describes the existing geology and soil conditions at F. E. Warren AFB. Geologic and topographic conditions are discussed first, followed by soils, and prime farmland.

4.6.1.1 Geologic and Topographic Conditions

F. E. Warren AFB lies within the High Plains section of the Great Plains Physiographic Province. The topography of F. E. Warren AFB is characterized by broad plateaus that are nearly flat in the historic central, more developed part of the base and increase in slope along the ridgelines and along Crow Creek. Elevation ranges from about 6,080 feet in the southeastern corner of the base to 6,365 feet in the northern portion, where there is a predominant east-west ridgeline known as Base Line Ridge (F. E. Warren AFB 2005b).

Rocks within the region range in age from Pre-Cambrian to recent and are composed primarily of shale with small amounts of sandstone, siltstone, and limestone. The base is in Seismic Zone 1, which has minor seismic event probability. The uppermost geologic unit at the base consists of unconsolidated Quaternary deposits composed of clay, silt,

sand, gravel, cobbles, and boulders. These deposits are generally less than 25 feet thick across the base, with the thickest sections being along stream channels. The Quaternary deposits overlay the Tertiary-age Ogallala Formation, which consists of a heterogeneous mixture of clay, silt, sand, and gravel and is approximately 200 feet thick in the area of the base (F. E. Warren AFB 2005b).

4.6.1.2 Soils

The predominant soil series on F. E. Warren AFB is classified texturally as loamy, where average topsoil depth ranges from 4 to 6 inches. The subsoil is composed primarily of alluvial clay and extends from a depth of approximately 6 to 36 inches. None of these characteristics are considered construction constraints, such as would be the case with a rock or loose gravel subsurface. Throughout the base, pavement and other infrastructure reduce soil infiltration significantly. The subsoil is capped with approximately 12,772,679 square feet of pavement, including roadways, driveways, and parking areas, and approximately 3,954,986 square feet of buildings (F. E. Warren AFB 2005b). Paved areas and buildings comprise about 6.5 percent of the total land area of the base.

4.6.1.3 Prime Farmland

Prime farmland is land that has the best combination of physical and chemical characteristics for producing food, feed, forage, fiber, and oilseed crops, and is also available for these uses. Prime farmland is protected by the Farmland Protection Policy Act; however, lands that are used for national defense purposes are exempt from the provisions of the Farmland Protection Policy Act (7 CFR Parts 657 and 658).

4.6.2 CONSEQUENCES

Potential impacts to topography or soils are considered major if the Preferred Alternative would:

- Expose people or structures to major geologic hazards;
- Cause substantial erosion or siltation;
- Cause substantial land sliding; or
- Cause substantial damage to project structures/facilities.

4.6.2.1 Preferred Alternative

Overall, potential impacts to geology and soils from the Preferred Alternative would be negligible and are considered insignificant. Short-term construction impacts to geology and soils would be minor and localized to the construction site of the facilities and access road. The area may require some slight grading, but would not require or generate any cut or fill since the area is relatively flat. Some temporary short-term impacts such as increased soil erosion by wind or water from ground-disturbing activities and soil exposure may occur, but would be negligible because the contractors would be required to utilize standard erosion and sediment control mitigation measures. These measures may include the use of silt fences, hay bales, and covers during the construction. It is important that erosion and sediment control measures be in place at all times during activities since storms can come unexpectedly. Any exposed areas formed as a result of

construction would be watered to prevent the mobilization of fugitive dust until the project is complete and surfaces are paved. Post-construction erosion control would be implemented through the planting and maintenance of vegetation in areas that were graded or disturbed.

The AASF and Administrative Support Facility would result in an addition of approximately 1,206,684 square feet of impervious surface, which includes facilities, a 2.5-mile access road, sidewalks, curb and gutter, aircraft taxiway, and associated aprons. The JFHQ, Readiness Center, and FMS would result in an addition of approximately 215,455 square feet of impervious surface for the FMS and 380,479 square feet of impervious surface for the JFHQ that includes all buildings, sidewalks, curb, and gutters. While the increase in impervious surfaces on the base due to the Preferred Alternative would be approximately 11 percent, the percent of the base covered with paved areas and buildings would increase less than 1 percent due to large areas that are undeveloped. The resulting impact of the increase in impervious surfaces on storm water drainage is discussed in Section 4.12.2.1. Although 1,206,684 square feet of soil would be capped, impacts to soils are considered negligible because a large expanse of F. E. Warren AFB would remain undeveloped.

4.6.2.2 No Action Alternative

Under the No Action Alternative, no changes or impacts would occur to geology and soils.

4.7 Water Resources

4.7.1 AFFECTED ENVIRONMENT

This section describes existing water resources, including surface and groundwater resources. Surface water includes lakes, rivers, and streams and is important for a variety of reasons, including economic, ecological, recreational, and human health. Groundwater comprises the subsurface hydrogeologic resources of the base's physical environment. This section also discusses floodplains.

4.7.1.1 Surface Water

The major drainage of F. E. Warren AFB is Crow Creek, a perennial stream that occurs in the southern portion of the base. Also occurring on the southern portion of the base are the ephemeral Diamond Creek and an unnamed tributary to Crow Creek. Two reservoirs and one small pond occur on the southern and central portions of the base.

The central-to-northern portion of F. E. Warren AFB, where the Preferred Alternative is located, is primarily rolling grassland. The ephemeral Dry Creek and an unnamed tributary to Dry Creek occur on the northern half of the base; these streams do not flow during most months, nor do they flow in all years. Several isolated potholes occur on the northern portion of the base, where water presence is ephemeral in nature, based on rain periods; however, because these potholes have not retained appreciable moisture in recent years, they are too dry to be classified as functional wetlands (F. E. Warren AFB 2005b).

Wetlands are defined by the U.S. Army Corps of Engineers and the EPA based on the presence of wetland vegetation, wetland hydrology, and hydric soils with certain land area considerations. Wetlands and other surface water features, which may include intermittent and perennial streams, are generally considered “waters of the United States” by the U.S. Army Corps of Engineers, and under their definition of “jurisdictional waters/features,” are protected under Section 404 of the Clean Water Act. A wetland survey of F. E. Warren AFB was completed in December 2004, which cataloged approximately 64.7 acres and open water bodies total approximately 35 acres on the base. Of these features, jurisdictional wetlands and open water bodies within “waters of the United States” encompass approximately 62.3 and 4.2 acres, respectively (Smith Environmental Inc. 2004; Figure 4-3). No jurisdictional wetlands occur in the areas near the Proposed Action.

A 1.2-acre wetland does occur approximately 200 feet south of Central Avenue, which runs along the southern boundary of the proposed JFHQ site. This wetland would be considered waters of the State of Wyoming and pursuant to Wyoming’s non-degradation statute, may not be degraded.

4.7.1.2 Hydrogeology/Groundwater

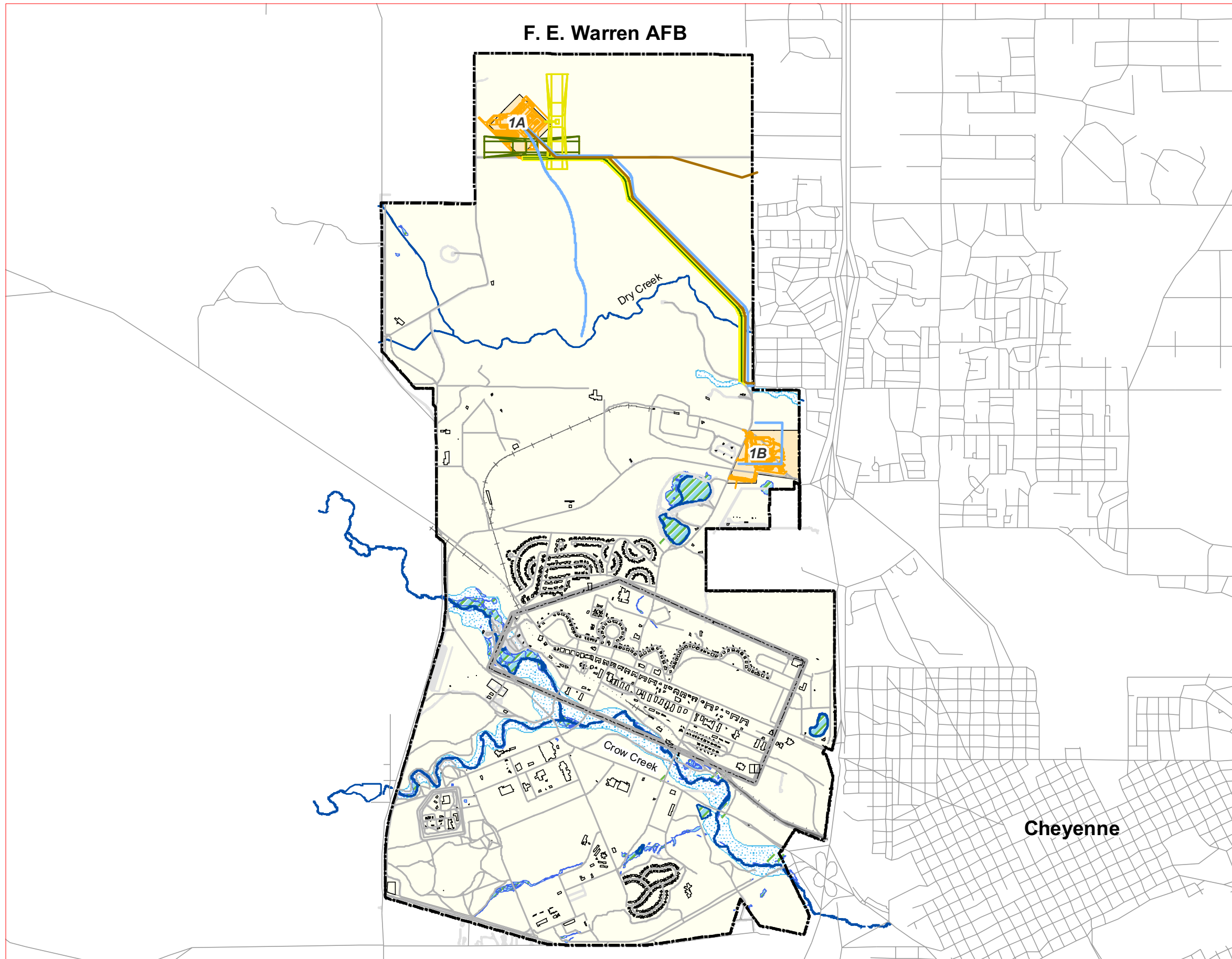
The High Plains Aquifer is the primary source for domestic and stock water supply for most of the water wells in and around the base. The High Plains Aquifer is comprised of the Quaternary-age alluvial and terrace deposits and the Tertiary-age Ogallala Formation. Where saturated with groundwater, the Quaternary deposits are hydraulically connected to the Ogallala Formation.

Depth of the groundwater in the area is variable but generally exceeds 5 feet. Groundwater depth is nearer the surface near streams and deeper further from discharge areas. The direction of groundwater flow in the shallow aquifer zone is generally toward the discharge areas of Crow Creek, Diamond Creek, and the unnamed tributary to Crow Creek. Groundwater on the installation is recharged locally through infiltration of precipitation. Groundwater is naturally discharged through evaporation in riparian areas; flow into streams; and by springs and seeps near streams (F. E. Warren AFB 2005b).

4.7.1.3 Floodplains

The portions of F. E. Warren AFB that are located within the 100-year floodplain generally follow the same boundaries that encompass the wetlands (Figure 4-3). Periodic flooding is a major consideration for proposed development and environmental management activities that may occur in the floodplain. EO 11988 requires that development in floodplains be avoided.

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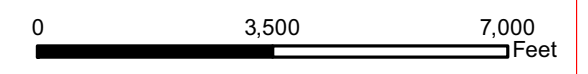


LEGEND

- +— RR Tracks
- Historic District Boundary
- Roads
- Future Helipad
- Helipad SPCL-1
- Proposed Road
- Proposed AASF & JFHQ
- Proposed 12" Water Main
- Proposed 8" or 10" Sewer
- Buildings/Structures
- ▨ Floodplain
- ▧ Wetlands
- ▭ Streams/Lakes
- 100 ft Buffer
- Proposed Site Locations
- ▭ Installation Boundary

1A: Army Aviation Support Facility (AASF) and Administrative Support Facility

1B: Joint Forces Headquarters (JFHQ), Readiness Center, & Field Maintenance Shop (FMS)



Prepared for:
 Environmental Assessment for the AASF and Administrative Support Facility and the JFHQ, Readiness Center, and FMS
 Francis E. Warren Air Force Base, WY

Date Revised: 07/19/06

Figure 4-3
 Hydrologic Features



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4.7.2 CONSEQUENCES

Potential impacts to water resources, including surface water, groundwater, wetlands, riparian areas, and wells, are considered major if the Preferred Alternative would:

- Irreversibly diminish water resource availability, quality, and beneficial uses;
- Reduce water availability or interfere with a potable supply or water habitat;
- Create or contribute to overdraft of groundwater or exceed a safe annual yield of water supply sources;
- Result in an adverse effect on water quality or an endangerment to public health by creating or worsening adverse health hazard conditions;
- Result in a threat or damage to unique hydrological characteristics;
- Violate an established law or regulation that has been adopted to protect or manage water resources of an area; or
- Destroy, lose, or degrade jurisdictional wetlands (as defined by Section 404 of the Clean Water Act).

Potential impacts related to floodplain management include:

- Potential damage to structures located in the floodplain; and
- Changes to the extent, elevation, or other features of the floodplain as a result of flood protection measures or other structures being silted in or removed from the floodplain.

EO 11988, Flood Plain Management, and EO 11990, Protection of Wetlands, require Federal agencies to avoid actions, to the extent practicable that will result in the location of facilities in floodplains and/or wetlands. Crossing floodplains or wetlands with overhead transmission lines or burying pipelines in floodplains is often unavoidable; however, most impacts to floodplains and wetlands can be mitigated.

4.7.2.1 Preferred Alternative

Overall, potential impacts to water resources from the Preferred Alternative would be negligible and are considered insignificant. No surface water, jurisdictional wetlands, or riparian areas are located in the footprints of the proposed AASF and Administrative Support Facility or the proposed JFHQ, Readiness Center, and FMS (Smith Environmental Inc. 2004; Pesenti 2006c), and neither the proposed facilities nor the access road would be located within the 100-year floodplain. The nearest perennial stream (Crow Creek) is 2.5 miles from the proposed AASF site and 1.5 miles from the proposed JFHQ site. Construction of the proposed access road and utility corridor would require installation of a culvert for potential seasonal flows at Dry Creek (Figure 4-3). Because Dry Creek is typically dry, channeling it through a culvert would result in negligible impacts.

A 1.2-acre wetland occurs approximately 200 feet south of Central Avenue, which runs along the southern boundary of the proposed JFHQ site. The proposed construction sites would be managed to control storm water runoff and detain water flow, if required, to adequately control storm water volume to prevent erosion and minimize impacts.

A Wyoming Pollutant Discharge Elimination System (WPDES) permit and Storm Water Pollution Prevention Plan (SWPPP) would be required for storm water discharge as described in Section 4.12.2.1 of this EA. The SWPPP would describe potential pollution sources and the best management practices that would be implemented for sediment and erosion control. Because of these requirements, impacts to wetlands would be negligible.

The proposed facilities would reduce groundwater recharge locally by reducing the infiltration of precipitation (see Section 4.6.2.1). However, the proposed facilities would increase the amount of impervious surfaces on base less than one percent. Thus, the resulting impact on groundwater would be negligible.

It should be noted that the WYARNG will use City water in their facilities as described in Sections 4.12.1.1 and 4.12.2.1; thus, impacts to surface water or groundwater from use in the WYARNG's operations would not occur.

4.7.2.2 No Action Alternative

Under the No Action Alternative, no changes or impacts would occur to water resources.

4.8 Biological Resources

4.8.1 AFFECTED ENVIRONMENT

This section describes existing biological resources at F. E. Warren AFB. It focuses on plant and animal species or vegetation types that are typical or are an important element of the ecosystem, are of special category importance (of special interest due to societal concerns), or are protected under state or Federal law or statute regulatory requirement. Vegetation is discussed first, followed by wildlife, and sensitive species.

4.8.1.1 Vegetation

F. E. Warren AFB is comprised of three primary vegetation communities: 1) shortgrass prairie, 2) riparian, and 3) other, including communities associated with wetland, urban, or disturbed areas.

The shortgrass prairie community (high plains grasses) dominates the base, covering over half of the area, with the largest concentrations of grasses occurring in the northern sectors of the base (F. E. Warren AFB 2005b).

The riparian communities are found along narrow strands along Crow Creek and its tributary drainages and are associated with interspersed wetland areas. The wetland community, along with the riparian community, is the most environmentally significant vegetation type on the base due to habitat that supports both the threatened Colorado butterfly plant and the Preble's meadow jumping mouse. The wetland community is found in existing drainages and along the edges of lakes and ponds (F. E. Warren AFB

2005b). Jurisdictional wetlands are discussed in more detail in Section 4.7.1.1 of this EA.

The urban and disturbed areas contain roadways, railroad track, parking lots, industrial buildings, personnel/family housing and specialized facilities, park/recreational land, parade grounds, landfill areas, and vacant previously disturbed open field areas (F. E. Warren AFB 2005b).

Of these three communities, only the shortgrass prairie and urban/disturbed communities exist in areas potentially directly affected by the Proposed Action.

Noxious weeds and their management are an important element in the base's vegetation communities. Noxious weeds are defined as those species that require control in accordance with the Federal Noxious Weed Act and the installation has legally required noxious weed management obligations based on the parameters and species present on the base. Seven noxious weeds are found on base in widely dispersed locations, and are generally intermixed with native vegetation. Noxious weed management must be considered when causing ground disturbance or when developing future grounds management requirements.

4.8.1.2 Wildlife

The diverse habitats on F. E. Warren AFB support a variety of birds, mammals, reptiles, amphibians, and invertebrates common to the region. Most visibly, a relatively large herd of pronghorn antelope (*Antilocapra americana*) remains on base year-round and their population size has ranged from 126 (in 2005) to 309 animals (in 2003). The herd is currently managed to maintain a population of approximately 150 animals, and the U.S. Fish and Wildlife Service has determined that the desirable social carrying capacity for pronghorn on the base is approximately 150 to 175 (Rosenlund 1992). This desired population number is based on providing enough animals to sustain a Watchable Wildlife Program while minimizing conflicts between humans and pronghorns and ensuring a healthy and viable pronghorn population. The primary areas of pronghorn-human conflict include roadways where vehicle-pronghorn accidents occur. Pronghorn-vehicle collisions peaked in 2003, with approximately 30 collisions, but the number of collisions has been reduced to historic levels of five to six per year with effective population-size management.

Recent wildlife management plans identify numerous wildlife species that occur or potentially occur on the base including some of the more common species such as rainbow trout (*Salmo gairdneri*), tiger salamander (*Ambystoma tigrinum*), western painted turtle (*Chrysemys picta belli*), black-tailed rabbit (*Lepus californicus melanotis*), raccoon (*Procyon lotor hirtus*), coyote (*Canis latrans*), and mule deer (*Odocoileus hemionus*).

The rich combination of wetlands and high plains prairie grasses provide excellent bird habitat. Numerous migratory and seasonal bird species protected by the Migratory Bird Treaty Act may occur or potentially occur at F. E. Warren AFB or in the adjacent area. Numerous bird surveys have been conducted on the installation and adjacent land areas

periodically since the 1980s. These surveys have documented at least 200 species of birds that have been sighted or observed on the base (F. E. Warren AFB 2005b).

4.8.1.3 Sensitive Species

In compliance with the Endangered Species Act, consultation and coordination was initiated with the U.S. Fish and Wildlife Service by letter dated April 3, 2006, as shown in Appendix C of this EA. Under Section 7 of the Endangered Species Act, the Air Force is mandated to use their authority to ensure actions are approved, funded, or carried out to protect both flora and fauna that are considered threatened and endangered species or proposed for listing as threatened or endangered species on the installation. Two threatened species present on the base are the Preble's meadow jumping mouse (*Zapus hudsonius preblei*) and the Colorado butterfly plant (*Gaura neomexicana coloradensis*), but neither occurs in the vicinity of the Proposed Action. The threatened bald eagle has been observed on the base, but is typically drawn to areas of open water for hunting, and no suitable nesting habitat for bald eagles exists on the base (F. E. Warren AFB 2005b).

Although not found on F. E. Warren AFB in a wild state, the endangered black-footed ferret (*Mustela nigripes*) exists in a captive setting. As part of the National Species Recovery Plan, F. E. Warren AFB has been and is projected to be an active partner with the U.S. Fish and Wildlife Service and other cooperating Federal and state agencies in protecting and managing this unique species. Black-footed ferrets are brought to the installation from off-base breeding facilities to a pre-release conditioning program on the base for several weeks each summer. The on-base facility provides the opportunity for the ferrets to interact and adjust to free-ranging conditions prior to their reintroduction into the wild. This reintroduction project is of high public interest and, due to the special protective status of the ferrets, all activities that could affect the pre-conditioning program must be coordinated with the base Environmental Flight. The on-base pre-release facility is located approximately 2,000 feet northwest of the proposed JFHQ site.

4.8.2 CONSEQUENCES

Potential impacts to biological resources are considered major if the Preferred Alternative would:

- Affect a threatened or endangered species;
- Substantially diminish habitat for a plant or animal species;
- Substantially diminish a regionally or locally important plant or animal species;
- Interfere substantially with wildlife movement or reproductive behavior; or
- Result in a substantial infusion of exotic plant or animal species.

4.8.2.1 Preferred Alternative

Overall, potential impacts to biological resources from the Preferred Alternative would be negligible and are considered insignificant. Based on the amount of shortgrass prairie currently occurring on F. E. Warren AFB (Block 1995; Pesenti 2006a), construction of the proposed facilities would result in the long-term direct loss of approximately one percent of shortgrass prairie habitat on the base. Existing vegetation around the

construction sites would be expected to remain the same, and any exposed soil resulting from the construction activities would be planted with certified weed-free native grasses and vegetation. Impacts to vegetation would be negligible.

Generally, projects located in previously disturbed or industrial land use areas will have little or no effect on migratory bird species. However, all projects and their site locations should plan for and identify the possible presence of migratory bird species. If migratory bird species are encountered, protection from either disturbance or removal of their habitat should be evaluated and measures taken to mitigate any habitat loss or to protect the species. Consultation with the base Environmental Flight can help determine possible affected species types and help resolve or direct actions for possible disturbance issues.

Construction of the proposed facilities may affect on-site wildlife through the long-term direct loss of a relatively small amount of habitat and direct mortality of individuals occurring in construction zones. Excavation could kill individual mammals in underground burrows. Road and facility construction would result in loss of foraging and breeding habitat for some species, although construction would be timed to minimize any possible impacts to potential habitat for migratory/seasonal birds and their nesting sites. Ground-dwelling mammals would lose the use of the permanently impacted areas; however, they are expected to repopulate the temporarily impacted areas. Some small wildlife fatalities can be expected from vehicle activity during construction. Construction of the proposed project may also affect reptiles on site through loss of habitat and direct mortality of individuals occurring in construction zones. The level of mortality associated with construction would be based on the abundance of the species on site. Some mortality may be expected as reptiles such as lizards often retreat to underground burrows for cover or during periods of winter dormancy. Overall impacts due to construction would be negligible based on the amount of habitat that would be disturbed relative to the surrounding area.

Although short-term displacement of wildlife species may occur during construction activities, once construction activities have been completed species tolerant of urban development would likely return to the remaining habitat. Operation of the proposed access road may result in an increase in pronghorn-vehicle collisions. However, through maintenance of desired pronghorn population levels and the use of public education (such as warning signs along the road), and because pronghorn are drawn to the water sources near the center of the base, the impact of increased collisions along the access road is expected to be low. Wildlife carcasses along the access road would be promptly removed to discourage scavengers from causing further collisions. Pronghorn would be excluded by fencing from the AASF and its associated helicopter activity. Raptors and other birds have been known to collide with overhead transmission lines or electrocute themselves on power lines; however, other than directly around facilities, all utility lines would be underground with the exception of telephone lines, which would be overhead. The potential exists for collision mortality, but would not represent significant impacts to avian populations. Overall impacts to wildlife from the Preferred Alternative would be negligible.

There are no wild threatened or endangered species located in the vicinity of the Preferred Alternative. The U.S. Fish and Wildlife Service and the Wyoming Game and Fish Department have reviewed the proposed project. In a letter dated May 2, 2006, the U.S. Fish and Wildlife Service concluded that it is unlikely that the project would affect any threatened, endangered, candidate, or proposed species, as shown in Appendix C of this EA.

Because black-footed ferrets are strongly nocturnal and do not appear to be significantly sensitive to disturbance (Esch et al. 2005), black-footed ferrets at the pre-release facility located near the proposed JFHQ Complex are not expected to suffer any impacts due to the Preferred Alternative.

4.8.2.2 No Action Alternative

Under the No Action Alternative, no changes or impacts would occur to vegetation or wildlife.

4.9 Cultural Resources

4.9.1 AFFECTED ENVIRONMENT

This section describes the existing cultural resource conditions at F. E. Warren AFB. Established in 1867 and originally named in honor of Civil War Brigadier General David A. Russell (Fort D. A. Russell), F. E. Warren AFB is the oldest continuously active military installation within the Air Force. Cultural resources at F. E. Warren AFB are managed in accordance with the Integrated Cultural Resources Management Plan (ICRMP) (Air Force Space Command 2004). F. E. Warren AFB is located in an area rich in both prehistoric and historic resources and has an active historic and archeological resources preservation and interpretation program. The prehistoric and historic background of the area is summarized first, followed by the status of cultural resource inventories and Section 106 consultations, and Native American resources.

4.9.1.1 Prehistoric and Historic Background

Prehistoric. The indigenous peoples who lived in the area now utilized by F. E. Warren AFB left numerous remains and sites across the landscape. In addition, with the establishment of the military reservation in 1867, the land was shielded from much of the more modern development in Cheyenne and the areas outside the external boundaries of F. E. Warren AFB.

The prehistory of the High Plains Regions, which includes the F. E. Warren AFB area, is subdivided into four broad temporal periods: Paleoindian (9500-5500 BC), Archaic (5500 BC-AD 450), Late Prehistoric (AD 450-1750), and Protohistoric (AD 1650-1800).

The culture developed during the Paleoindian period appears to have been nomadic, dependent upon the hunting of megafauna such as mammoth and bison, on the High Plains. Sites in the area suggest that these people followed the game herds upon which their survival depended, rather than living in established villages or habitations.

A climatic change to a warmer and drier environment in the early Archaic period resulted in a gradual adaptation in the lives of early populations. As the megafauna of the

Paleoindian period became extinct, cultural patterns changed. Throughout the Archaic period, populations increased, and social groups and customs became more complex.

In the Late Prehistoric Period, about 1,500 to 1,800 years BP, the climate changed again, becoming wetter and cooler. The number of large semipermanent and permanent villages increased, and pottery became more common.

The Protohistoric Period was ushered in by the arrival of European explorers and traders. This period commenced about 300 years ago, and ended with the first written records produced by early trappers and explorers. The Historic Period followed with written records on Native Americans in this area.

Historic. In 1862, Congress enacted the Railroad Act, which chartered the Union Pacific Railroad and ensured the creation of the first transcontinental railroad. The Railroad Act provided for establishing a town and military post at the eastern base of the Rocky Mountains. In 1867, as an adjunct to the town of Cheyenne established by an Act of Congress, a spot in the Crow Creek drainage about 3 miles west of the new town site was selected to be the site of the military post. The post was named Fort David A. Russell in September 1867. In addition, a quartermaster and commissary depot was established in August 1867, located between the townsite of Cheyenne and Fort Russell; it was officially named Cheyenne Depot. However, the depot was commonly referred to by the name of the first quartermaster, Carling. Over time, the spelling of “Carling” was corrupted and the common name for the depot became Carlin Camp.

The depot was no longer needed as time went on; it was decommissioned in 1890 (the same year that Wyoming became a state), and the former depot area/site was included within the boundaries of Fort Russell. Largely due to the influence of Senator Francis E. Warren, Fort Russell was selected for expansion in 1902. An ambitious construction program to expand the post was initiated in 1903, and continued until 1913 (150 buildings were erected during this expansion program, many of which are still operational and used today). In honor of Senator Warren and his impact on the development of Fort Russell, the post was renamed Fort Francis E. Warren in 1929. In 1947, the property was transferred from the Army to the newly formed U.S. Air Force and renamed Francis E. Warren Air Force Base.

National Historic Landmark Designation. The Fort D. A. Russell National Historic Landmark (NHL) District was designated May 15, 1975 by the National Historic Landmarks program of the National Park Service. The NHL District is within the boundaries of F. E. Warren AFB on the south/central portion of the base (Figure 4-1), and is administered by the U.S. Air Force. As many of the buildings within the NHL District are still in use, the Air Force is responsible for maintenance and operation of the structures within the NHL District. Proposed activities within or near the NHL District must be evaluated for potential impacts to the District.

4.9.1.2 Status of Cultural Resource Inventories and Section 106 Consultations

Section 110 of the National Historic Preservation Act (NHPA) requires Federal agencies to locate, inventory, and nominate to the National Register of Historic Places (NRHP) all resources that are recommended eligible for inclusion in the NRHP. F. E. Warren AFB, rich in both prehistoric and historic cultural resources, has been extensively studied/inventoried. Both prehistoric and historic resources have been found in the general location of the Preferred Alternative. Prehistoric resources include a tipi ring and lithic scatter; historic resources include a foundation, glass shards, a historic scatter, and historic sites associated with Fort D. A. Russell and military ordnance training.

The cultural resource inventories conducted at F. E. Warren AFB meet the Secretary of the Interior's Standard for Archaeology and Historic Preservation (48 FR 44716-42) and the Wyoming State Historic Preservation Office (SHPO) guidelines. The ICRMP lists cultural resources studies and reports related to F. E. Warren AFB (Air Force Space Command 2004).

Section 106 of the NHPA requires consultation and coordination if there is potential for effects upon historic properties due to proposed actions ("undertakings"). The F. E. Warren AFB ICRMP establishes procedures for determining the level of consultation and coordination required for proposed activities. Per the procedures in the ICRMP, the Base Historic Preservation Officer (BHPO) has determined that the Proposed Action is an "undertaking" within the meaning of the NHPA, but has determined the Proposed Action to have "no effect" on historic properties. Accordingly, consultation/coordination in conformance with Section 106 of the NHPA was initiated with the Wyoming SHPO by letter dated April 6, 2006, as shown in Appendix C of this EA.

The proposed facilities are not sited within or near the boundaries of the NHL District, and therefore, there would be no impact to the properties within the District. Consultation/ coordination with the National Park Service or the Advisory Council on Historic Preservation is not required.

4.9.1.3 Native American Resources

An ethnohistoric and ethnographic assessment of Native American cultural affiliations was conducted for F. E. Warren AFB, which identifies tribes historically associated with the region.

F. E. Warren AFB has complied with the summary and inventory requirements of Native American Graves Protection and Repatriation Act (NAGPRA). No human remains, associated grave goods, unassociated grave goods, sacred objects, or objects of cultural patrimony have been recovered on the base or during base-associated undertakings. There are no such items in collections curated on base or in base-owned materials in care of other curation facilities (Air Force Space Command 2004).

The Shoshone and Arapaho Tribes are the federally recognized tribes that were consulted by letter dated April 17, 2006 regarding the Proposed Action, as shown in Appendix C. The tribes were contacted in accordance with the DoD's Native American Policy, DoDI4710.aa, Enclosure 3 (DoD 2006). This policy establishes the DoD's American Indian and Alaska Native Policy for interacting and working with federally-recognized American Indian and Alaska Native governments. The principles established by the policy recognize the importance of increasing understanding and addressing tribal concerns, and addressing those concerns prior to reaching decisions on matters that may have the potential to significantly affect protected tribal resources, tribal rights, or Indian lands. Installations are required to provide timely notice to tribal governments, to consult and negotiate in good faith throughout the decision-making process, and to develop and maintain effective communication and coordination with tribes, in instances where the installation may take actions that could significantly affect protected tribal resources, rights, or Indian lands.

4.9.2 CONSEQUENCES

Potential impacts to historic properties and/or archaeological resources are considered major if the Preferred Alternative would:

- Physically destroy, damage, or alter all or part of the property;
- Physically destroy, damage, alter or remove items from archaeological contexts without a proper mitigation plan;
- Isolate the property from or alter the character of the property's setting when that character contributes to the property's qualification for the NRHP;
- Introduce visual, audible, or atmospheric elements that are out of character with the property or alter its setting;
- Neglect a property resulting in its deterioration or destruction; or
- Transfer, lease, or sell the property (36 CFR 800.9[b]) without a proper preservation plan.

4.9.2.1 Preferred Alternative

Overall, potential impacts to cultural resources from the Preferred Alternative would be negligible and are considered insignificant. The Preferred Alternative would not affect any NRHP-eligible archeological sites. The proposed facilities have been sited to avoid effects on historic structures and the portion of the base within the boundaries of the NHL.

There are eight identified archeological sites in the vicinity of the Preferred Alternative. Two of the sites are associated with occupation/use by indigenous peoples (a tipi ring, destroyed in 1987, and a lithic scatter, determined to be not eligible for NRHP listing); six are historic sites. Four of these eight identified sites have been destroyed by previous activities, and two sites have been determined to be ineligible for nomination to the NRHP and the determination has been concurred in by the SHPO. One of the eight sites has been determined to be eligible for nomination to the NRHP, and eligibility of one

additional site is undetermined. Sites where eligibility has not been determined will be treated as eligible until information to the contrary can be developed.

To protect the archeological sites, a 100-foot buffer has been established between the location of the road and utilities and all the known sites, and the “footprint” of proposed new facilities has been located so as to avoid NRHP sites. As an additional precaution, both the site that is NRHP-eligible and the site with undetermined eligibility would be avoided during the siting/design process, and also would be fenced during construction activities to avoid inadvertent disturbance.

The preliminary finding of no effect by the BHPO has been concurred on by the Wyoming SHPO in a letter dated May 25, 2006, as shown in Appendix C of this EA. The SHPO included the following finding/stipulation:

“. . . We have reviewed the project report and find the documentation meets the Secretary of the Interior’s Standards for Archaeology and Historic Preservation (48 FR 44716-42). We concur with your finding that no historic properties, as defined in 36 CFR 800.16(1)(1), will be affected by the project as planned.”

“We recommend the project proceed with the following stipulation:

If any cultural materials are discovered during construction, work in the area shall halt immediately, the federal agency must be contacted, and the materials evaluated by an archeologist or historian meeting the Secretary of the Interior’s Professional Qualification Standards (48 FR 22716, Sept. 1983).”

“We concur that site number 48LA647 is not eligible . . .”

Consistent with the SHPO recommendation, if any potential cultural or archaeological resource is uncovered during construction, the BHPO would be contacted, in accordance with the ICRMP and the following Standard Operating Procedures:

- Standard Operating Procedure #5 – Unanticipated Discovery of Archeological Deposits
- Standard Operating Procedure #6 – Inadvertent Discovery of Native American Human Remains and Associated Funerary Objects, Sacred Objects, or Objects of Cultural Patrimony
- Standard Operating Procedure #9 – Unanticipated Impact to Archeological Deposits by Spill Response Efforts

The federally recognized tribes contacted in connection with this undertaking may respond and raise concerns regarding issues of importance to the tribes (Appendix C). As of July 19, 2006, there has been no response from the federally recognized tribes regarding the Proposed Action. If during construction, unanticipated or inadvertent discoveries are made of Native American human remains and associated funerary objects, sacred objects, or objects of cultural patrimony, Standard Operating Procedure #6, above, will be implemented to minimize or eliminate impact.

There is no impact anticipated to the NHL District, as the Preferred Alternative is not being planned for or conducted within or near the boundaries of the District.

4.9.2.2 No Action Alternative

Under the No Action Alternative, no changes or impacts would occur to cultural and archaeological resources.

4.10 Socioeconomics

4.10.1 AFFECTED ENVIRONMENT

This section describes the existing socioeconomic conditions for Cheyenne, Wyoming and Laramie County, Wyoming. Socioeconomic factors include economic development, demographics, housing, and environmental justice.

4.10.1.1 Economic Development

Strategically situated at a major transportation hub (the intersection of I-25 and I-80 and two major railroads), Cheyenne is a developing center of commerce. The Cheyenne area thrives on agriculture, ranching, and mining (Cheyenne MPO 1992). Employment opportunities are plentiful in the Cheyenne area; however, wages are somewhat lower than in other metropolitan areas. The median household income in 2000 was \$38,856.00, and the average unemployment rate was 3.3 percent. The national average unemployment rate was 4.0 percent in 2000 (U.S. Department of Labor 2006).

Most of the urbanized development in the area occurs within the city limits of Cheyenne, or on the outskirts in unincorporated Laramie County (Cheyenne MPO 1992). In 2000, the top three industries in Cheyenne/Laramie County were government (28.7 percent of total employment), retail trade (18.4 percent), and services (23.6 percent). The top four employers were F. E. Warren AFB, the State of Wyoming, the Federal Government, and Laramie County School District #1. Major private employers in the area include United Medical Centers, Union Pacific Railroad, Sierra Trading Post, Wal-Mart, Echo Star Communications, Great Lakes Aviation, Qwest Corporation, and Blue Cross/Blue Shield (F. E. Warren AFB 2005b).

4.10.1.2 Demographics

According to the U.S. Census, in 2000 the population of Cheyenne was 53,011, an increase of 3,003 persons since 1990 (six percent growth). In 2000, the Laramie County population was estimated at 81,607, up from 73,142 in 1990. The year 2000 demographics of Cheyenne are listed below in Table 4-8.

Table 4-8. Demographics of Cheyenne, Wyoming.

Race	Cheyenne urbanized area (percent of total)
White	87.7
Hispanic	5.0
Black	3.0
American Indian	0.9
Asian	1.0

Source: Cheyenne MPO 2000a

4.10.1.3 Housing

Cheyenne area housing includes subdivisions, close-in rural residences, apartments, and military housing. The average sales price of a single family home in 2004 was \$146,584 and the typical price of a close-in rural residence was \$226,729 (Cheyenne MPO 2005c).

4.10.1.4 Environmental Justice

Environmental justice is the fair treatment for people of all races, cultures, and incomes, regarding the development and implementation (or lack thereof) of environmental laws, regulations, and policies. EO 12898, *Federal Actions to Address Environmental Justice in Minority Populations and Low Income Populations*, directs Federal agencies to address environmental and human health conditions in minority and low income communities. A memorandum from the President concerning EO 12898 stated that Federal agencies would collect and analyze information concerning a project's effects on minorities or low-income groups when required by NEPA. If such investigations find that minority or low-income groups experience a disproportionate adverse effect, then avoidance or mitigation measures are necessary.

As noted above, Cheyenne, Wyoming had a median household income of \$38,856 in 2000. The Department of Health and Human Services issues guidelines of the poverty thresholds. In 2000, the poverty guideline for a family of four was an annual income of \$17,603. For a family of three, it was \$13,738. The national rate for people living in poverty was 11.3 percent in 2000 (U.S. Census Bureau News 2001).

4.10.2 CONSEQUENCES

Potential socioeconomic impacts are considered major if the Preferred Alternative would cause:

- Substantial gains or losses in population and/or employment; or
- Disequilibrium in the housing market, such as severe housing shortages or surpluses, resulting in substantial property value changes.

Potential environmental justice impacts are considered major if the Preferred Alternative would cause disproportionate effects on low-income and/or minority populations.

4.10.2.1 Preferred Alternative

Overall, potential socioeconomic impacts from the Preferred Alternative would be none to negligible with minor beneficial short-term impacts during construction and beneficial long-term impacts upon completion and are considered insignificant.

The Preferred Alternative would create a short-term increase of personnel on and around F. E. Warren AFB during construction due to the creation of jobs. This would be a minor positive increase in the local socioeconomic resources as there would be creation of jobs and increased use of hotels and businesses surrounding F. E. Warren AFB.

The Preferred Alternative essentially consolidates other WYARNG units in the Cheyenne area into a single facility (the AASF with Administrative Support Facility and JFHQ with Readiness Center and FMS) on an existing Air Force Base. Therefore, there would be no long-term negative effects on socioeconomic factors from the Preferred Alternative; however, consolidation of units is deemed a long-term positive impact as currently the 1022nd has to split its personnel between the Raper Armory and the existing AASF, due to lack of sufficient space and adequate facilities at either location. Additionally, the Preferred Alternative would provide the opportunity for other local, state, or Federal organizations to partner with the WYARNG to enhance homeland security and homeland defense at a reduced cost to those agencies.

There would be no effect on low-income personnel at F. E. Warren AFB or the surrounding area, as the housing located near the proposed locations are medium to upper income (\$146,584 and \$226,729 per year). Additionally, impacts from the Preferred Alternative identified in this EA would not be localized or placed primarily on minority and/or low-income populations.

4.10.2.2 No Action Alternative

Under the No Action Alternative, no changes or impacts would occur to socioeconomics.

4.11 Transportation

4.11.1 AFFECTED ENVIRONMENT

This section describes the existing transportation conditions at and surrounding F. E. Warren AFB. Roadways and traffic are discussed first, followed by public transportation.

4.11.1.1 Roadways and Traffic

Transportation and circulation refer to the movement of vehicles throughout a road and highway network. Primary roads are principal arterials, such as major interstates, designated to move traffic and not necessarily to provide access to all adjacent areas. Secondary roads are arterials such as rural routes and major surface streets that provide access to residential and commercial areas.

Traffic enters F. E. Warren AFB primarily through two gates, the Main Entrance Gate 1, which is reached on Randall Avenue on the east side of the installation, and Gate 2 which

can be reached via Missile Drive, located on the southeast side of the base. Both of these gates are accessible from the Cheyenne street system and from I-25 at Exit 10 (Missile Drive) and Exit 11 (Randall Avenue). Two additional gates, Gate 4 and Gate 5, are used on a limited basis and are closed to normal day-to-day traffic. Gate 5 (on Central Avenue, just west of I-25) provides access to the northern portion of the base and can be used by missile convoys. Gate 4 located at the western end of Randall Avenue has been temporarily closed due to lack of force protection resources to man the gate (F. E. Warren AFB 2005b). The gates are shown on Figure 4-4. Traffic counts for various locations on base are provided in Appendix D of this EA.

Traffic congestion normally peaks in the early morning (6:45 to 7:45 a.m.), during lunch time (12:00 to 1:00 p.m.) and at the end of the workday (4:30 to 5:30 p.m.). Congestion generally occurs at both Gate 1 and Gate 2 as people enter and exit the installation. Traffic congestion also occurs at the intersections of Randall Avenue and Missile Drive/Central Avenue, where there is no signal, but there is signage. Traffic circulation is also affected by the pronghorn antelope found on the installation (F. E. Warren AFB 2005b).

F. E. Warren AFB is in the process of implementing a phased redevelopment program. The program realigns parking lots and other physical characteristics that affect traffic circulation and parking. In addition, pedestrian and bicycle routes and paths are under continuous re-routing and upgrade often based on program funding. These programs and their current status are important considerations to ensure compatible interface of new projects and future planning actions (F. E. Warren AFB 2005b).

Off-base transportation routes supporting F. E. Warren AFB consist of inter-connecting bicycle/pedestrian routes, I-25, and I-80.

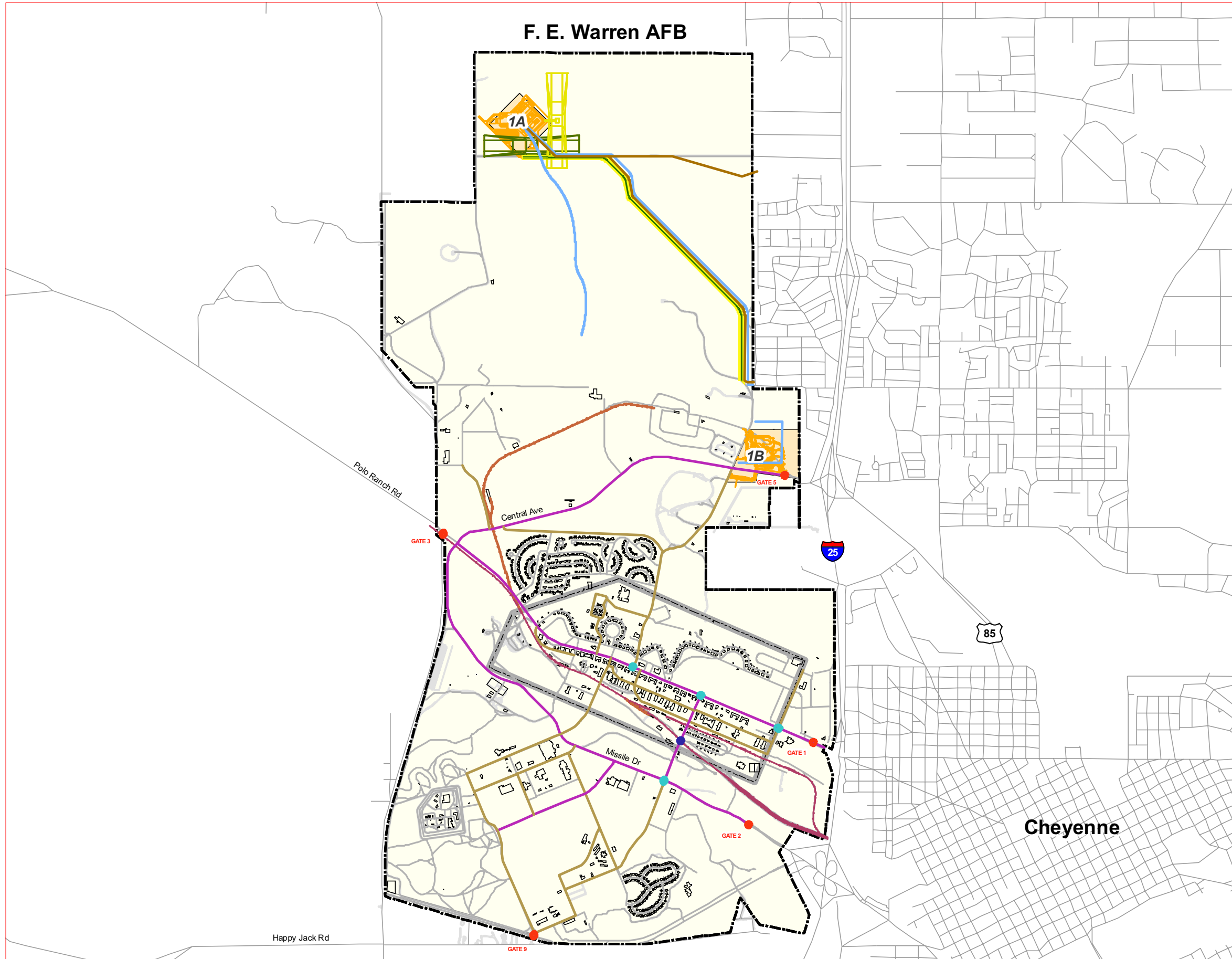
4.11.1.2 Public Transportation

Mass transit with bus service is provided by Powder River Transportation and the Cheyenne Transit System. Air service is provided at the Cheyenne Municipal Airport with connecting flights to nearby major cities and national airlines. F. E. Warren AFB also uses the Cheyenne Municipal Airport as a military passenger and military cargo terminal capable of handling Air Force C-141 type aircraft. Two national rail lines support Cheyenne and can also support F. E. Warren AFB rail transportation requirements. F. E. Warren AFB owns 2 miles of track and both Cheyenne and the base rail facilities are sufficient for support (F. E. Warren AFB 2005b).

4.11.2 CONSEQUENCES

Potential impacts to transportation are evaluated with respect to the potential for the Preferred Alternative to:

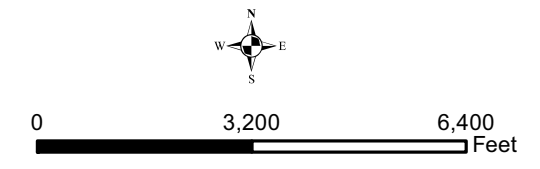
- Disrupt or improve current transportation patterns and systems;
- Deteriorate or improve existing levels of service;
- Change existing levels of safety; and
- Disrupt and deteriorate airfield activities.



- LEGEND**
- Historic District Boundary
 - Roads
 - Future Helipad
 - Helipad SPCL-1
 - Proposed Road
 - Proposed AASF & JFHQ
 - Proposed 12" Water Main
 - Proposed 8" or 10" Sewer
 - FEW Railroad
 - Arterial
 - Collector
 - Railroad
 - Gate
 - RR Signal
 - Signal
 - Buildings/Structures
 - 100 ft Buffer
 - Proposed Site Locations
 - Installation Boundary

1A: Army Aviation Support Facility (AASF) and Administrative Support Facility

1B: Joint Forces Headquarters (JFHQ), Readiness Center, & Field Maintenance Shop (FMS)



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Figure 4-4
 Transportation Routes



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4.11.2.1 Preferred Alternative

Overall, potential impacts to transportation would be minor and are considered insignificant. A small increase in vehicular traffic is expected to occur during the construction and road improvement projects. This impact would be temporary and would not exceed the capacity of the existing roadways. Heavy machinery required for site preparation and trenching would be transported by trailer or flatbed to reduce impacts to area roads. Construction activities are expected to be routed to Gate 5.

Long-term impacts associated with the Preferred Alternative would involve an increase in traffic on and surrounding F. E. Warren AFB. Based on the most current information provided at the issuance of this EA, Gate 5 (Central Avenue west of Bishop Avenue) would be the gate used for incoming and outgoing traffic associated with the Preferred Alternative (Figure 4-4). The main routes expected to be influenced by the Preferred Alternative are Central Avenue west of Bishop Avenue and Central Avenue west of I-25 (Refer to Appendix D for recent traffic counts). Based on recent traffic counts, there are no immediate areas within the vicinity of Gate 5 that are currently congested (Cheyenne MPO 2000b and 2005b).

The peak maximum number of personnel during weekend use expected from the Preferred Alternative would be 400 people. Peak weekday use is expected to be 195 from the Preferred Alternative (Thomson 2006b). It is assumed there would be one vehicle per person with an average of four trips entering and exiting the base per day. This may result in a total of 1,600 trips through Gate 5 during weekend use and 780 trips during weekday use.

The Preferred Alternative use of Gate 5 may have localized impacts especially during security threat levels. These impacts may increase traffic volume and gate transit time at peak commute hours. To further evaluate impacts on Central Avenue and I-25 access road, a traffic study may be required by the WYARNG prior to implementation of the Preferred Alternative (DeHaff 2006).

In addition to an increase in traffic near Gate 5, there would be an added increase of traffic on F. E. Warren AFB. The Preferred Alternative would add additional traffic to facilities near Gate 5 and near the northwestern section of the base. Facilities located near Gate 5 would keep traffic localized in one area. Facilities near the northwestern section of the base would require an access road that would be located within an unpopulated area. Because the majority of the personnel are expected during weekend hours, weekday traffic for most of the on-base personnel should not be affected.

Overall, potential impacts to transportation from the Preferred Alternative would be minor.

4.11.2.2 No Action Alternative

Under the No Action Alternative, no changes or impacts would occur to transportation.

4.12 Utilities

4.12.1 AFFECTED ENVIRONMENT

This section describes existing utilities at F. E. Warren AFB and utility easements of the WYARNG. In general, the utility systems on F. E. Warren AFB are classified as distribution and collection systems including water, sanitary sewer, storm drainage, electrical, natural gas, central heating, and industrial wastewater. Exceptions are the Liquid Propane Tank Farm, a back-up to the natural gas system for the majority of the base, and base pavements. The communications system and solid waste disposal are also discussed in this section.

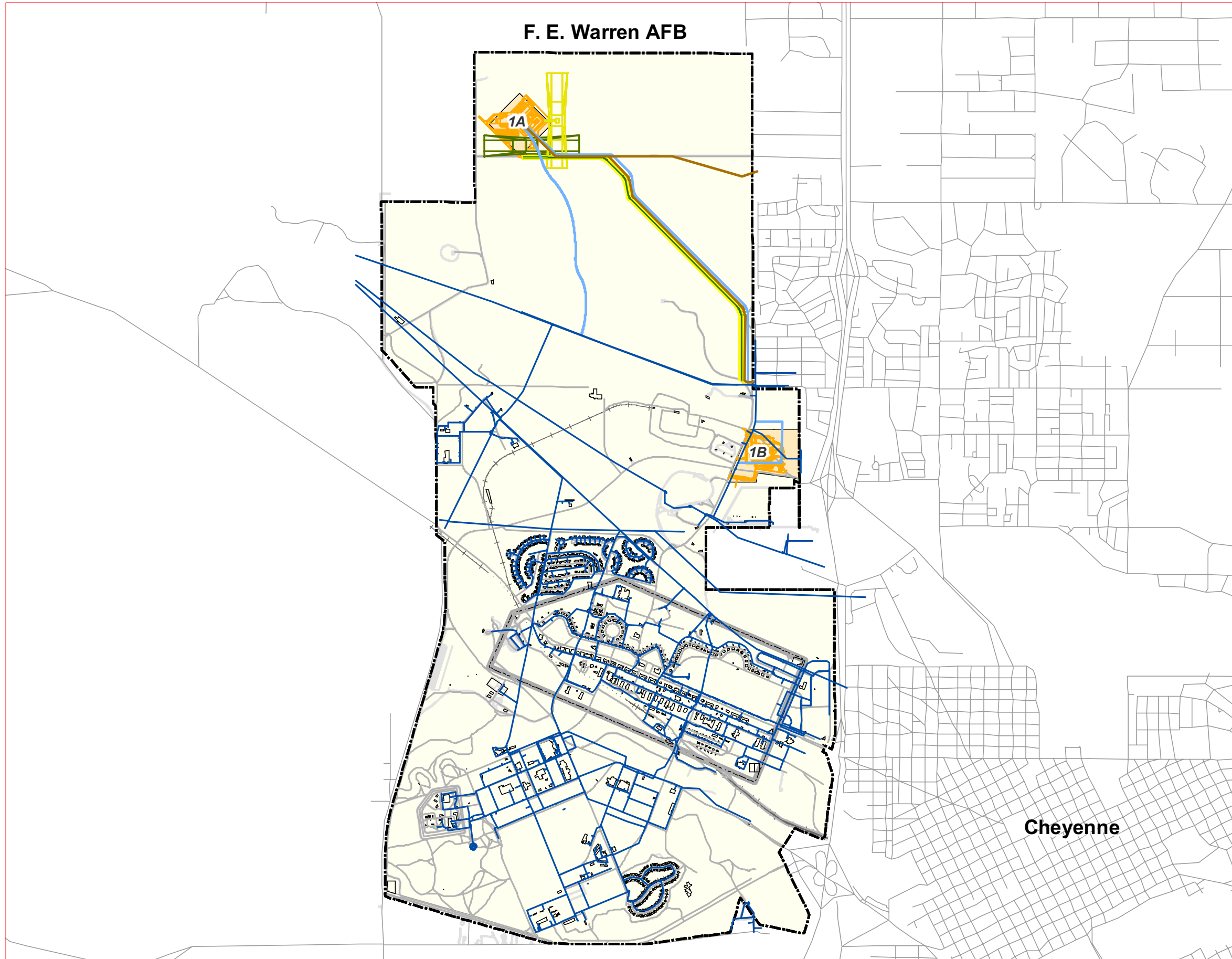
4.12.1.1 Potable Water Supply

Potable water can be defined as water fit for drinking, being free from contamination and not containing a sufficient quantity of saline material to be regarded as a mineral water. The Cheyenne Board of Public Utilities (BOPU) supplies and satisfies Cheyenne's water requirements. Cheyenne obtains water from three sources, the Little Snake/Douglas Creek System (or Stage I/II), Crow Creek, and groundwater. The R.L. Sherard Water Treatment Plant removes contaminants, disinfects, and adds fluoride prior to delivering water to homes in Cheyenne (F. E. Warren AFB 2005b). The R.L. Sherard Water Treatment Plant can process approximately 32 million gallons per day (MGD) of surface water and can treat up to 11 MGD from well heads (Billman 2006).

Water enters the base via three city-owned water mains maintained by the City of Cheyenne that cross the installation near the stage storage area from the northwest (Figure 4-5). These mains also supply the City of Cheyenne. Because water flows by gravity at very high pressure from the city storage tanks into the base, pressure reduction valves were installed at the metering stations (F. E. Warren AFB 2005b).

Water consumption on F. E. Warren AFB for FY 2004 was 250 million gallons, of which 138 million gallons were used for drinking/flushing and 112 million gallons for irrigation. Use of 320 million gallons is projected for FY 2005 with 138 million gallons projected for drinking/flushing and 182 million gallons for irrigation. The increase is due to the easing of water restriction that was in effect for 2004. The base steady use rate is 11 to 12 million gallons for both industrial and housing use (F. E. Warren AFB 2005b).

Currently, the WYARNG's Raper Armory and office buildings connect into water lines near Central Avenue and Hynd's Boulevard that are city-owned and maintained (Bell 2006a). Water consumption for the City of Cheyenne is based on a service population of 66,550 people with an average daily rate of 150 gallons per capita day. The daily average is approximately 5.1 MGD (Cheyenne BOPU 2004).

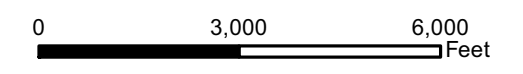


LEGEND

- +— RR Tracks
- Historic District Boundary
- Roads
- Future Helipad
- Helipad SPCL-1
- Proposed Road
- Proposed AASF & JFHQ
- Proposed 12" Water Main
- Proposed 8" or 10" Sewer
- Water System
- Buildings/Structures
- 100 ft Buffer
- Proposed Site Locations
- Installation Boundary

1A: Army Aviation Support Facility (AASF) and Administrative Support Facility

1B: Joint Forces Headquarters (JFHQ), Readiness Center, & Field Maintenance Shop (FMS)



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Figure 4-5
 Water System



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4.12.1.2 Wastewater System

An Industrial Wastewater Discharge Permit with the BOPU is in place to allow F. E. Warren AFB to discharge domestic and industrial processed wastewater into the City of Cheyenne's Wastewater Collection System. Wastewater is monitored at Talbot Court (outfall 001) (F. E. Warren AFB 2005b).

The City of Cheyenne BOPU treats all wastewater discharged by F. E. Warren AFB directly into the city's sanitary sewer system. The City of Cheyenne BOPU treats all wastewater collected in its service region at one of two treatment plants. These include the Dry Creek Treatment Plant (7 MGD capacity) and the Crow Creek Treatment Plant (4 MGD capacity) (F. E. Warren AFB 2005b). These plants are operating at 90 percent of their current capacity. The Dry Creek Treatment Plant will be expanding to 10.5 MGD by August 2006 and the Crow Creek Treatment Plant will expand to 6.5 MGD by June 2006 (Maestas 2006). Wastewater from F. E. Warren AFB is processed at the Crow Creek Treatment Plant and the Dry Creek Treatment Plant is used as back-up (Regansberg 2006).

The existing on-base sanitary sewer system includes the collection system and one lift station (Figure 4-6). The collection system consists of two distinct parts: south of Crow Creek and the Historic District. The part of the system south of Crow Creek requires a lift station in order to merge with the flow from the base cantonment area (F. E. Warren AFB 2005b).

Currently, the WYARNG's Raper Armory and office buildings connect into the City of Cheyenne BOPU sewer lines and collection system. The effluent is currently routed to the Dry Creek Interceptor prior to entering Dry Creek Treatment Plant (Bell 2006b).

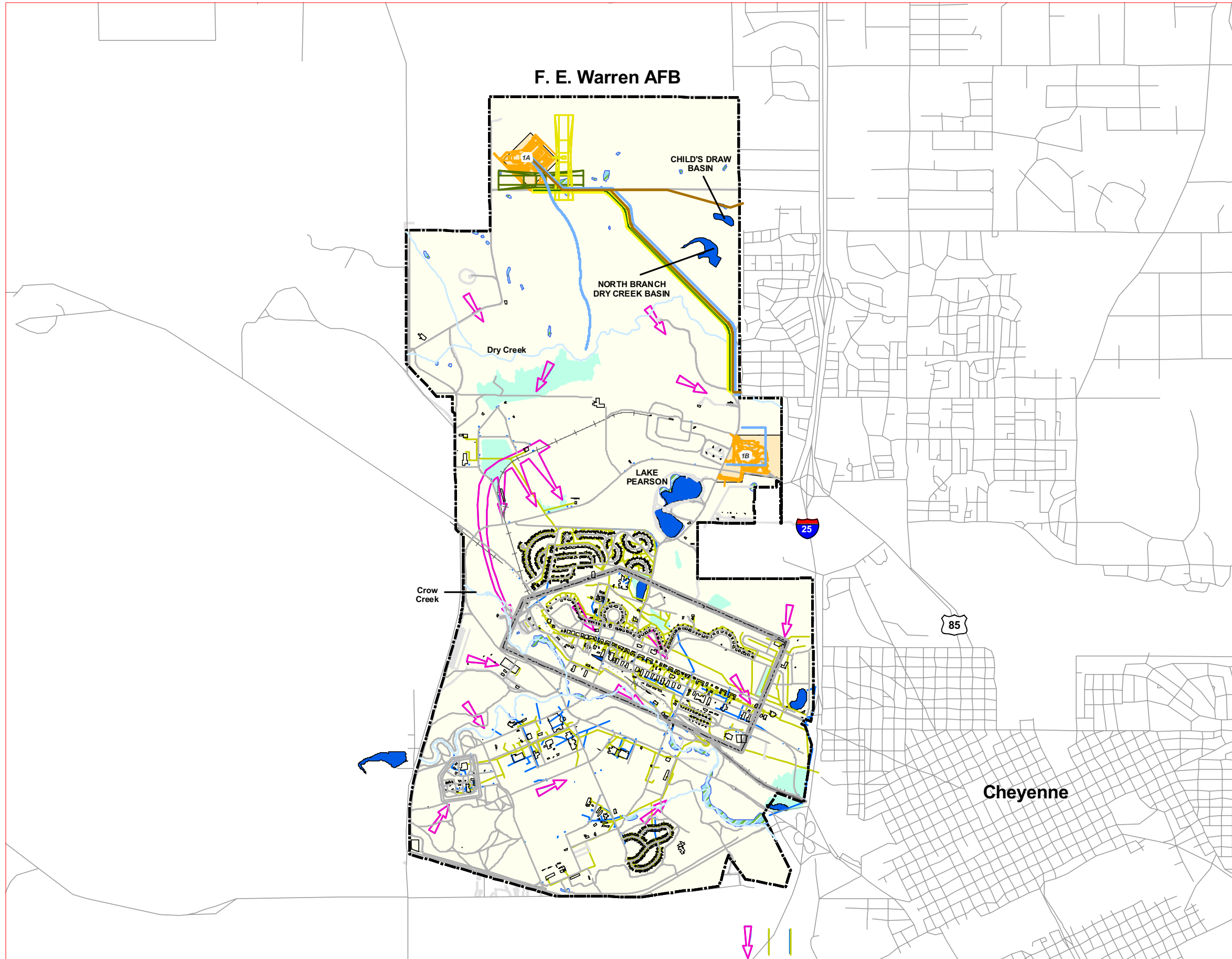
4.12.1.3 Storm Water System

Storm water is discharged into Dry and Crow Creeks pursuant to the permit issued by the WDEQ. Additional construction may impact the permit and require modifications to accommodate additional runoff. In addition, the SWPPP would need to be updated. Construction storm water permits are required for construction projects greater than 1 acre. Under the F. E. Warren AFB SWPPP, best management practices are required for many construction activities that may not require permits.

F. E. Warren AFB lies within two drainage basins (F. E. Warren AFB 2005b) (Figure 4-6). Storm drainage structures have been installed on base at various times over the past 50 years. These systems include drainage culverts, underground storm drainage systems, roadside ditches, and curb and gutters. Unfortunately, most underground systems are undersized based on current standards. Also, many are silted-in and either partially or completely ineffective (F. E. Warren AFB 2005b).

The existing system cannot handle a 10-year design storm, considered a minor event. Also, a 100-year design storm, considered a major event, would not be controlled by existing structures. As a result, the system is not reliable or safe for either minor or major storm events (F. E. Warren AFB 2005b).

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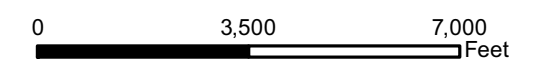


LEGEND

- +— RR Tracks
- Historic District Boundary
- Roads
- Future Helipad
- Helipad SPCL-1
- Proposed Road
- Proposed AASF & JFHQ
- Proposed 12" Water Main
- Proposed 8" or 10" Sewer
- Surface Water
- Storm Water
- Sanitary Sewer
- Buildings/Structures
- 100 ft Buffer
- Proposed Site Locations
- Existing Retention
- Proposed Storage
- Drainage Flow Direction
- ▨ Wetlands
- Installation Boundary

1A: Army Aviation Support Facility (AASF) and Administrative Support Facility

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Figure 4-6
 Wastewater and Storm Water Systems



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A storm water plan with three phases of development is proposed for F. E. Warren AFB. The first phase is planned to begin sometime in 2006 and the remaining two phases will be completed by 2011 (Bringewatt 2006). The phases will include upgrades in ditches, channels, piping, inlets, and detention ponds (Figure 4-7). The first phase will encompass the southern end of F. E. Warren AFB (Bailey 2006).

Storm water drainage from the existing Raper Armory and associated buildings flows into a storm water drainage system at the eastern perimeter of F. E. Warren AFB near Vista Lane that is city owned and operated. The drainage system eventually flows into Dry Creek (Bell 2006b).

4.12.1.4 Energy Sources

Electricity, natural gas, a central heating system, and a liquid fuels system are the available energy sources at F. E. Warren AFB.

Electricity. Western Area Power Authority (WAPA) provides electrical power to F. E. Warren AFB. The base electrical distribution system consists of one substation, two underground “express circuits” to Switchstation One, another “express circuit” to Switchstation Two, and nine feeder circuits. Figure 4-8 illustrates the normal flow of power throughout the base. The substation is connected to the WAPA regional power grid. The substation is capable of supplying 15 Megavoltamperes (MVA) redundant, or a total of 30 MVA. Redundant capability is required to quickly recover in the event of failure of one of the two substation transformers, or of the circuits serving and served by the transformers (F. E. Warren AFB 2005b).

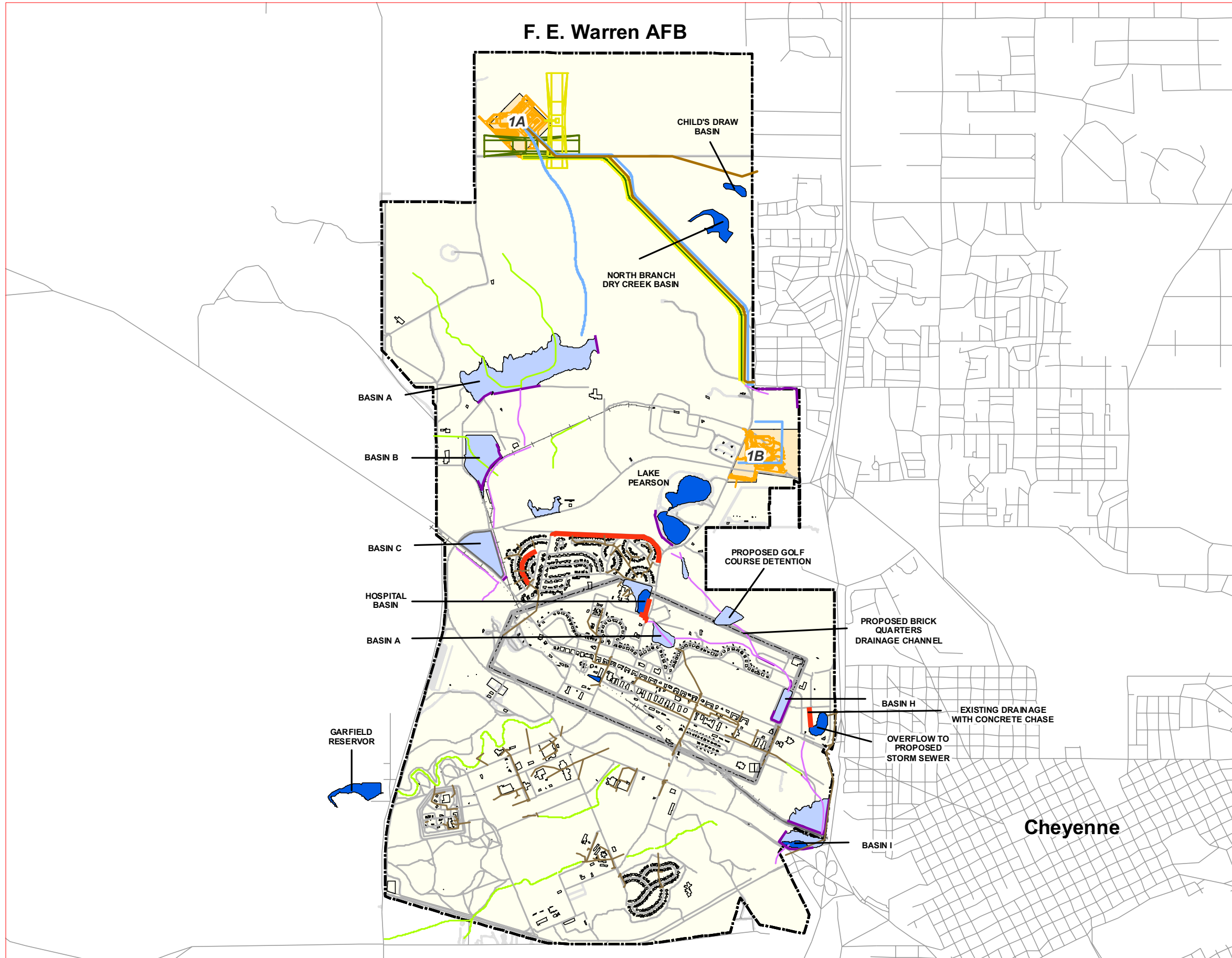
Peak demand along the line from the base substation was 7.7 MVA, which is approximately 51 percent of the base’s 15 MVA redundant capacity. A 1997 electrical distribution study surveyed the entire base system, updated record drawings, developed a computer database of system components, and computer modeled the load flow, coordination, and short-circuit analysis (F. E. Warren AFB 2005b).

Although currently outside of F. E. Warren AFB, the WYARNG’s Raper Armory and office buildings connect into the electrical system that is owned and maintained by Cheyenne Light, Fuel and Power. It should be noted that the electrical system of the current AASF does not meet the requirements and is subject to continuous power outage.

Natural Gas System. Blackhills Corporation supplies natural gas to F. E. Warren AFB. The natural gas system consists of one distribution zone (Figure 4-8). Although the metering station is capable of delivering 300,000 cubic feet of gas per hour, or 7.2 million cubic feet (MCF) per day, the 8-inch lines are maintained at an operating pressure of 8 to 9 pounds per square inch (psi), resulting in delivery of 4.8 MCF per day to the base (F. E. Warren AFB 2005b).

Although currently outside of F. E. Warren AFB, the WYARNG’s Raper Armory and office buildings connect into the natural gas system that is owned and maintained by Cheyenne Light, Fuel and Power.

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LEGEND

- RR Tracks
- Historic District Boundary
- Roads
- Future Helipad
- Helipad SPCL-1
- Proposed Road
- Proposed AASF & JFHQ
- Proposed 12" Water Main
- Proposed 8" or 10" Sewer
- Buildings/Structures
- 100 ft Buffer
- Proposed Site Locations
- Installation Boundary
- Existing Berm
- Proposed Berm
- Existing Open Channel
- Proposed Open Channel
- Storm Sewer
- Existing Retention/Detention Facility
- Proposed Storage

1A: Army Aviation Support Facility (AASF) and Administrative Support Facility

1B: Joint Forces Headquarters (JFHQ), Readiness Center, & Field Maintenance Shop (FMS)

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Feet

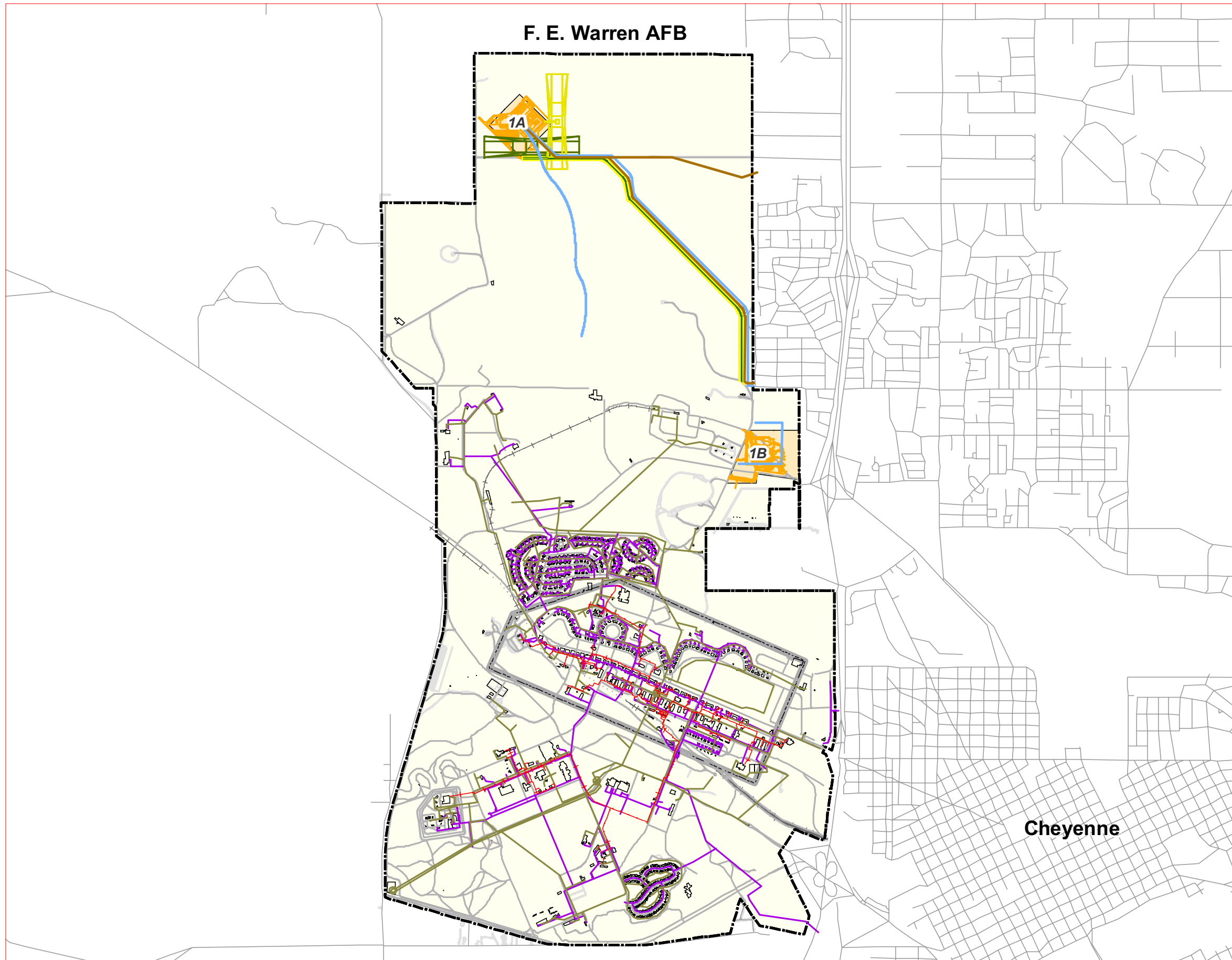
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Figure 4-7
 Storm Water Drainage Plan



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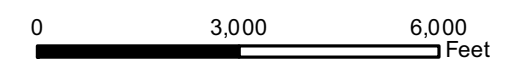


LEGEND

- +— RR Tracks
- Historic District Boundary
- Roads
- Future Helipad
- Helipad SPCL-1
- Proposed Road
- Proposed AASF & JFHQ
- Proposed 12" Water Main
- Proposed 8" or 10" Sewer
- + Heat
- Electric
- Natural Gas
- Buildings/Structures
- 100 ft Buffer
- Proposed Site Locations
- Installation Boundary

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Figure 4-8
 Electrical, Heat, & Natural Gas



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Central Heating System. F. E. Warren AFB has a central heating system (Figure 4-8), which serves most major buildings on the installation except for military family housing assets, which have individual gas furnaces. The Central Heating Plant was built in 1981. The plant has three boilers, each with a capacity of 55 million British Thermal Units (MBtu) per hour. The current peak demand requires approximately 66 MBtu, which can be satisfied by using two boilers. The natural gas-fired units allow the heat plant to utilize the base's propane backup system. Since the heat plant converted to gas-fired boilers, baseline energy consumption has not been established (F. E. Warren AFB 2005b).

Liquid Fuels System. The most significant liquid fuel system on F. E. Warren AFB is the Liquid Propane Tank Farm, which is used as an alternate fuel source when the natural gas supply is interrupted (F. E. Warren AFB 2005b).

F. E. Warren AFB also has a system to supply aviation fuel to helicopters. The aviation fuel is provided by tanks operated by the WYARNG at the Cheyenne Municipal Airport into bulk fuel trucks owned and operated by F. E. Warren AFB (F. E. Warren AFB 2005b).

F. E. Warren AFB motor vehicles are fueled at the following three locations:

- Army and Air Force's Exchange System gas station, comprised of four 10,000-gallon ASTs (two gasoline, two diesel). There is also a compressed natural gas (CNG) unit available for fueling military vehicles that utilize CNG. One additional AST is currently planned to be installed that will contain E85 fuel.
- Peacekeeper vehicle maintenance shop, one 5,000-gallon underground diesel fuel tank used to fuel government-owned trucks.
- Main military vehicle fueling station.

WYARNG motor vehicles and helicopters are fueled at the following locations (Dermody 2006):

- Vehicle fueling: Vehicles that run on JP-8 are fueled on F. E. Warren AFB from the unit fuel trucks or the AASF commercial fuel truck. Vehicles that use diesel are fueled at commercial fuel stations. The civilian van is fueled at commercial fuel stations. Privately owned vehicles are fueled at commercial fuel stations.
- Aircraft fueling: Two commercial fuel trucks (5,000 and 2,400 gallons) owned and operated by WYARNG AASF are fueled at the Air National Guard fuel storage point located on the Cheyenne Municipal Airport. The fuel from these trucks is used to fuel WYARNG helicopters and military trucks.

4.12.1.5 Communications

A communication system is a system or facility capable of providing information transfer between persons and equipment. The system usually consists of a collection of individual communication networks, transmission systems, relay stations, tributary

stations, and terminal equipment capable of interconnection and interoperation so as to form an integrated whole (F. E. Warren AFB 2005b).

The F. E. Warren AFB communication system is predominantly located within the southern section of the base and consists of twisted pair copper cable and fiber optic cable that is both underground and aboveground (F. E. Warren AFB 2005b) (Figure 4-9).

WYARNG currently uses T-1 line for internet and both copper and fiber optics and above ground and underground wire for telephone service. The service provider is Qwest Communications (Bell 2006b).

4.12.1.6 Solid Waste

F. E. Warren AFB does not manage an active solid waste landfill. Solid waste (trash) is collected, weighed, and then transported to the City of Cheyenne landfill for disposal. A local civilian contractor removes approximately 160 tons of solid waste per month from the installation's industrial areas and collects an additional 100 tons per month from military family housing (F. E. Warren AFB 2005b).

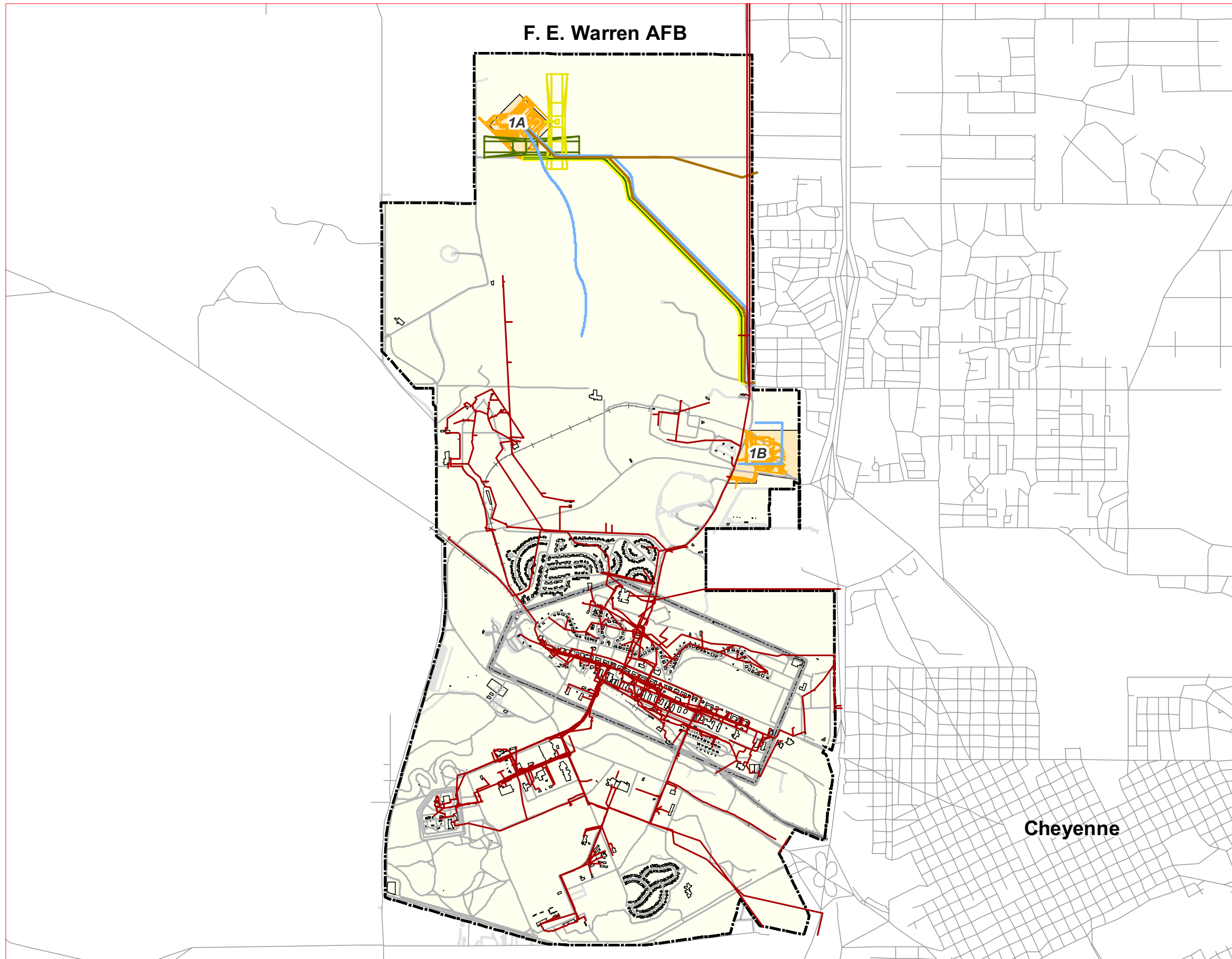
A local landfill for construction-type material may not be available depending on volume and construction debris characterization. Local landfills are reaching capacity and are selective on type and bulk construction debris (F. E. Warren AFB 2005b).

The base operates a recycling program. The base recycling facility accepts aluminum, steel, and tin cans, plastics, cardboard, office paper, mixed paper, magazines, and newspapers (F. E. Warren AFB 2005b).

Refuse from WYARNG is currently collected from a contractor or city at various dumpsters along roadsides. The solid waste is collected and taken to the City of Cheyenne landfill (House 2006b).

4.12.2 CONSEQUENCES

Effects on infrastructure are considered in terms of increases in demands on systems and the ability of existing systems to meet those demands. Potential effects to the environment could occur if the existing systems are insufficient to handle the increased demands requiring construction and operation of a new system that may affect the environment. Utility demands include both construction and operations usage. Utility demands during the operations of the Preferred Alternative are based on the additional facility square footage and personnel requirements. Individual segments that comprise the totality of the infrastructure are discussed below.

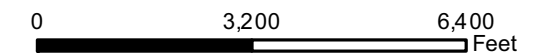


LEGEND

- +— RR Tracks
- Historic District Boundary
- Roads
- Future Helipad
- Helipad SPCL-1
- Proposed Road
- Proposed AASF & JFHQ
- Proposed 12" Water Main
- Proposed 8" or 10" Sewer
- Buildings/Structures
- 100 ft Buffer
- Proposed Site Locations
- Installation Boundary
- Communication Lines

1A: Army Aviation Support Facility (AASF) and Administrative Support Facility

1B: Joint Forces Headquarters (JFHQ), Readiness Center, & Field Maintenance Shop (FMS)



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Figure 4-9

Communications System



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Potential impacts to the potable water system are considered major if the Preferred Alternative would:

- Reduce potable water availability;
- Disrupt potable water distribution systems;
- Change water demands that affect regional potable supplies; or
- Generate contaminants that cause negative effects on water quality.

Potential impacts to storm water conveyance systems are considered major if the Preferred Alternative would:

- Cause flow obstructions and increases to the storm water drainage system;
- Accelerate deterioration of the storm water drainage system; or
- Cause long-term interruptions of storm water drainage system components.

Potential impacts to the electrical systems are considered major if the Preferred Alternative would:

- Change regional electricity demands requiring major new components such as transmission lines, transformers, and substations; or
- Cause long-term disruptions in available electrical services.

Potential impacts to the heating and cooling system are considered major if the Preferred Alternative would:

- Increase demand for heating and cooling above currently available capacities; or
- Cause long-term interruptions in heating and cooling capacities and availability.

Potential impacts to liquid fuel systems are considered major if the Preferred Alternative would:

- Cause unsafe, inadequate, or noncompliant temporary or long-term storage or distribution systems; or
- Cause unreliable distribution of liquid fuels that cannot meet the mission and support requirements.

Potential impacts to solid waste are considered major if the Preferred Alternative would increase solid waste such that it overwhelms local landfills to a crisis situation.

Potential impacts to the sanitary sewer system are considered major if the Preferred Alternative would:

- Cause additional inflow and infiltration and increased loads on the Wastewater Treatment Plant that cannot be adequately treated; or
- Change wastewater composition that would alter Wastewater Treatment Plant processes or consistently cause upsets of the Wastewater Treatment Plant.

4.12.2.1 Preferred Alternative

Overall, potential impacts to utilities from the Preferred Alternative would be minor and are considered insignificant. The following provides an evaluation of the environmental impacts to potable water supply, wastewater system, storm water system, energy sources, communications, and solid waste that may result from implementation of the Preferred Alternative. Specific design parameters for utilities have not been completed for the Preferred Alternative at the time of this EA. However, it is anticipated that the WYARNG will privatize all utilities and will not utilize any of F. E. Warren AFB's easements.

Potable Water Supply. The Preferred Alternative would involve tapping into water mains on F. E. Warren AFB that are maintained and owned by the City of Cheyenne BOPU. The WYARNG would need to obtain a User Water and Sanitary Sewer Services Agreement from the City of Cheyenne BOPU for the planned construction to the public water supply system. F. E. Warren AFB would also be part of the User Agreement as owner of the land where construction would take place. The User Agreement would require WYARNG to follow City of Cheyenne BOPU standards and policies in designing and constructing the water system, pay tap fees and system development fees, and construct a looped water system (Cheyenne BOPU 2006).

The AASF and Administrative Support Facility would require a water easement to the south in order to connect with the city line located near the central portion of the base. Two different water easement routes have been proposed (Figure 4-10). The JFHQ Complex would connect with the water line near the Raper Armory (Figure 4-10). According to the City of Cheyenne BOPU, no significant water features would be impacted from implementation of the Preferred Alternative (Gunter 2006).

Expected water consumption per day from the Preferred Alternative and percent increase to daily water consumption and to R.L. Sherard Water Treatment Plant is summarized below in Table 4-9. Regional water consumption is based on 150 gallon per capita day (Merritt 1983). No substantial increases to water consumption or demands on the R.L. Sherard Water Treatment Plant are expected with the Preferred Alternative.

Table 4-9. Preferred Alternative Percent Increases to Cheyenne Daily Water Consumption and R.L. Sherard Water Treatment Plant.

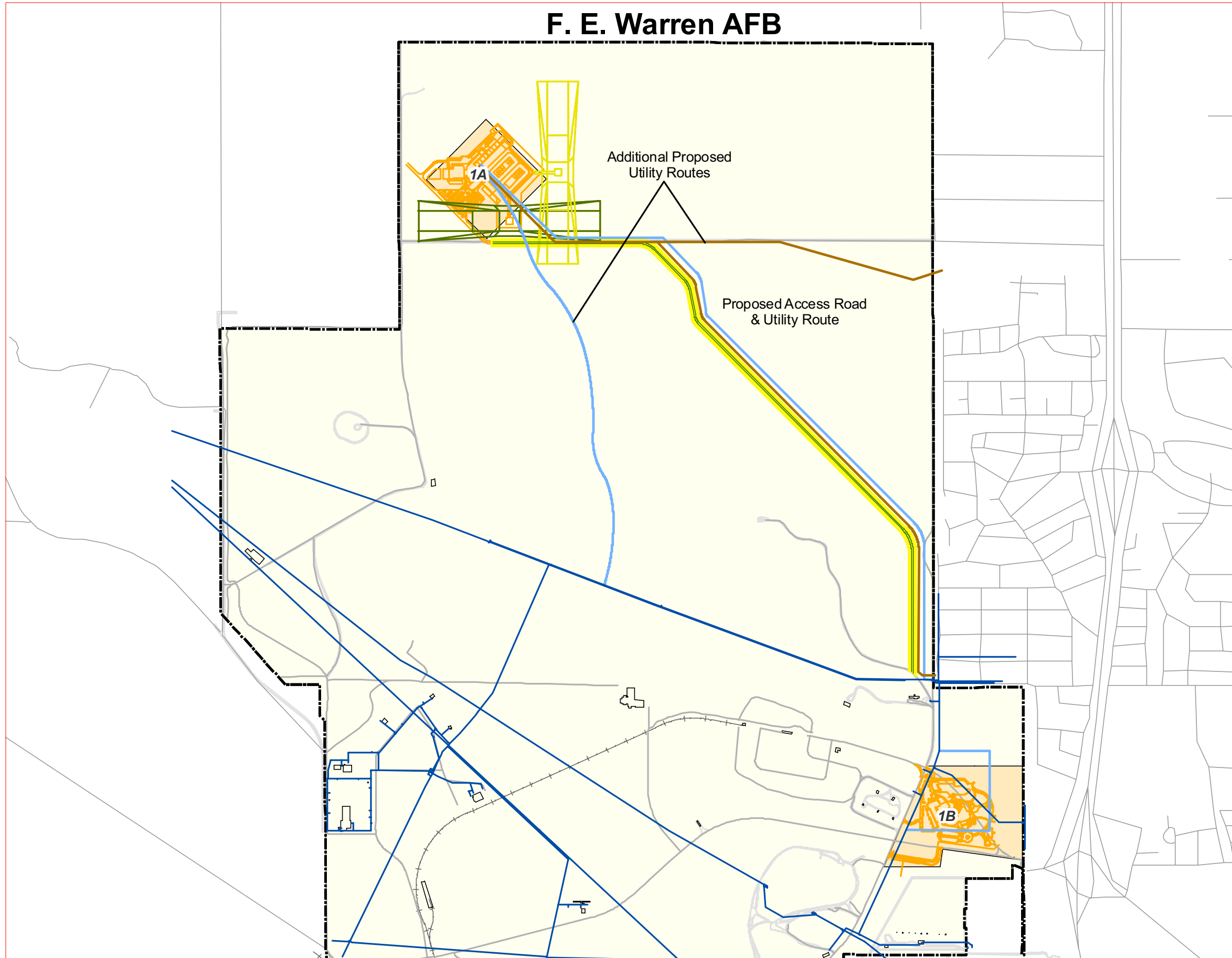
Facilities	Expected water consumption (150 gallons per capita day) (gallons)	Percent increase to Cheyenne daily water consumption (5.1 MGD)	Percent increase to R.L. Sherard Water Treatment Plant (43 MGD)
AASF and Administrative Support Facility	47,400	0.92	0.11
JFHQ Complex	94,800	1.8	0.22

AASF Army Aviation Support Facility

JFHQ Joint Forces Headquarters

MGD million gallons per day

F. E. Warren AFB

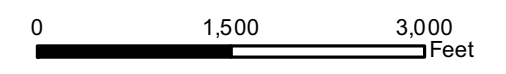


LEGEND

- +— RR Tracks
- Historic District Boundary
- Roads
- Future Helipad
- Helipad SPCL-1
- Proposed Road
- Proposed AASF & JFHQ
- Proposed 12" Water Main
- Proposed 8" or 10" Sewer
- Existing Water Lines
- Buildings/Structures
- 100 ft Buffer
- Proposed Site Locations
- Installation Boundary

1A: Army Aviation Support Facility (AASF) and Administrative Support Facility

1B: Joint Forces Headquarters (JFHQ), Readiness Center, & Field Maintenance Shop (FMS)



Prepared for:
 Environmental Assessment for the AASF and Administrative Support Facility and the JFHQ, Readiness Center, and FMS
 Francis E. Warren Air Force Base, WY

Date Revised: 07/19/06

Figure 4-10
 Proposed Utilities



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Wastewater System. The Preferred Alternative would require WYARNG to apply for a User Water and Sanitary Sewer Services Agreement with the City of Cheyenne BOPU. F. E. Warren AFB would also be part of the User Agreement as owner of the land where construction would take place. The User Agreement would require the WYARNG to follow the City of Cheyenne BOPU standards and policies in designing and constructing the sewer system, extend the existing sewer easements, and pay tap fees and development fees (Cheyenne BOPU 2006).

Preliminary planning has proposed that the AASF and Administrative Support Facility would require a sewer easement to the southeast in order to connect with the city line located near the central portion of the base. Two different sewer easement routes have been proposed (Figure 4-10). Either line would be routed to the City of Cheyenne BOPU easements that would eventually connect with the Western Hills outlet. One lift station may be required for proper gravity flow for either location. The Western Hills outlet eventually flows into the Dry Creek interceptor that is carried into the Dry Creek Wastewater plant for processing. No impacts to sewer lines are expected as a result of the AASF and Administrative Support Facility (Noe 2006).

Preliminary planning has proposed that the JFHQ Complex would require sewer easements to connect directly into existing sewer lines at the Raper Armory that are in use by the WYARNG. These lines are currently routed to the Game and Fish location, which eventually connects with the Dry Creek interceptor. No impacts to sewer lines are expected as a result of the JFHQ Complex (Noe 2006).

Expected sanitary sewer discharge from the Preferred Alternative as well as overall increase to the Crow Creek Treatment Plant and the Dry Creek Treatment Plant are shown in Table 4-10. Regional wastewater is based on 150 gallon per capita day (Merritt 1983). Substantial increases in load and inflow/infiltration as well as changes in wastewater composition are not expected with the Preferred Alternative.

Table 4-10. Preferred Alternative Wastewater Increase to Dry Creek and Crow Creek Treatment Plants.

Facilities	Expected wastewater (150 gallons per capita day) (gallons)	Percent increase to Dry Creek Treatment Plant (7 MGD*)	Percent increase to Crow Creek Treatment Plant (4 MGD*)
AASF and Administrative Support Facility	47,400	0.67	1.1
JFHQ Complex	94,800	1.3	2.3

*The Dry Creek and Crow Creek treatment plants will be expanding for future use by June and August 2006.

AASF Army Aviation Support Facility

JFHQ Joint Forces Headquarters

MGD million gallons per day

Storm Water System. The Preferred Alternative would require construction permits from the WDEQ, Water Quality Division, for storm water discharge. A SWPPP and a notice of intent to WDEQ would also be required for the proposed construction projects. The SWPPP would describe potential pollution sources and the best management practices that would be implemented for sediment and erosion control.

Currently, F. E. Warren AFB has approximately 16,727,664 square feet of impervious roads, buildings, and parking lots, which comprise 6.5 percent of the total acreage of F. E. Warren AFB. The Preferred Alternative would increase the total amount of impervious covering across the base less than 1 percent. Reduced infiltration due to the increase in imperviousness could lead to greater volumes of storm water runoff and more rapid peak discharges. Such storm water would wash over paved surfaces and the runoff would carry various pollutants that accumulate over the impervious surfaces, such as motor oil, grease, and other fluids that leak from parked vehicles. With implementation of best management practices described in the SWPPP and the fact that large amounts of land would remain undeveloped, the impacts from the increase in storm water discharge is expected to be minor. Anticipated drainage associated with the Preferred Alternative is described below.

Storm water drainage from the proposed AASF, Administrative Support Facility, and access road would most likely flow to the south as surface runoff. A railroad embankment and the general topography of the area would force water along the western perimeter of the base to eventually reach Crow Creek (Figure 4-6). Roadside ditches, curb and gutters, and possibly detention ponds would need to be constructed to accommodate anticipated runoff from the proposed structures and pavement. The WYARNG would construct appropriate storm water devices, such as retention ponds, and consider the use of structures to reduce storm water discharges, such as semi-pervious asphalt, in the construction of the AASF, Administrative Support Facility, and access road.

The base is currently implementing a storm water drainage project to upgrade the base storm water system. This project includes the construction within the next five years of three storm water detention basins to collect and divert the bulk of the runoff from the northern and western parts of the base as well as off-site areas (Figure 4-7) (Bailey 2006 and Wise 2006). The associated outlet structure will convey the storm water to Crow Creek before it enters the central base area. It is estimated that these basins will divert 1,079 cfs of water for a 100-year storm event and will ensure that these runoff flows will have no impact on the developed portions of the base, including the Historic District (90 CES/CEVP, Francis E. Warren AFB 2005).

The AASF and Administrative Support Facility would have two exterior valve wash racks. Wastewater runoff would be handled with shut off valves that divert runoff to sanitary sewer lines when in use. Otherwise when not in use, the valves would remain closed for storm water runoff (House 2006c).

Storm water drainage from the proposed JFHQ Complex would likely flow south into a ditch north of Central Avenue that conveys storm water to a central point. The central

point has one culvert that enters underneath Central Avenue to a drainage channel that flows into a wetland area just south of Central Avenue (Figure 4-6). This would likely be the storm water drainage pattern unless another system is engineered to route into the city system (Pesenti 2006b). The current city system is sufficient to handle additional storm water runoff. Adequate roadside ditches, curb and gutters, and possibly detention ponds would be required to accommodate anticipated runoff from the proposed structures and pavement. Flow obstructions, accelerated deterioration, or long-term interruptions to storm water are not anticipated with the development of the JFHQ Complex.

With implementation of the detention basins described above, and based on the abundance of unpaved land in the surrounding area, impacts to storm water drainage from the Preferred Alternative are considered minor.

Energy Sources. The following energy sources are evaluated for impacts: electricity, natural gas, the central heating system, and liquid fuels system.

Electricity and Natural Gas – Preliminary planning has proposed that the AASF and Readiness Center would require an approximate 4.5-mile utility easement to the southeast (Figure 4-10). This line would eventually connect into a system that is owned by Cheyenne Light, Fuel and Power. According to Cheyenne Light, Fuel and Power, the current system is capable of handling the electrical energy requirements associated with the addition of an AASF and Administrative Support Facility. However, the natural gas system is near full capacity and is considered a “pounds low system.” According to Cheyenne Light, Fuel and Power, a reinforcement extension would be necessary for any additional use. Cheyenne Light, Fuel and Power would provide this upgrade and any energy requirements associated with the addition of the AASF and Administrative Support Facility would be fulfilled (Wise 2006).

Preliminary planning has proposed that the JFHQ Complex would use existing electrical and natural gas utility easements that are currently used by the Raper Armory and office/maintenance buildings. These easements connect into the system that is owned and operated by Cheyenne Light, Fuel and Power. According to Cheyenne Light, Fuel and Power, their current system is capable of handling any energy requirements associated with the addition of a JFHQ Complex (Wise 2006).

Central Heating System – The Preferred Alternative would not require or use any of F. E. Warren AFB central heating systems as back-up fuel to natural gas (House 2006b).

Liquid Fuel Systems – The Preferred Alternative would not require or is not likely to use the F. E. Warren AFB Liquid Propane Tank farm as back-up fuel to natural gas (House 2006b).

The WYARNG will fuel helicopters with the proposed 15,000-gallon AST. The proposed AST would be located at the AASF and would be filled from a commercial fuel tanker. The AST would also be used for fueling commercial fuel trucks and unit fuel trucks. All other motor vehicles would fuel at commercial fueling stations (Dermody 2006).

Communications. The AASF and Administrative Support Facility would most likely involve some ground cable and fiber optic near the structures and underground buried cable and fiber optic along the proposed access road. A private company would provide the communication lines and system and no impacts are anticipated (House 2006b).

The JFHQ Complex would most likely involve ground cable and fiber optic near structures and along roads. The lines would tie into the existing system at F. E. Warren AFB. A private company would provide the service and no impacts are anticipated (Bell 2006b).

Solid Waste. The Preferred Alternative would not require any demolition, and construction wastes should be minimal. Therefore, no major constraints on local landfills associated with construction are anticipated.

Expected solid waste handling and disposal from the Preferred Alternative would remain the same. Projected solid waste and overall increase to the City of Cheyenne landfill are shown in Table 4-11. Solid waste emission is based on 20 pounds per capita day per year. Substantial increases to the City of Cheyenne landfill from the Preferred Alternative are not expected.

Table 4-11. Preferred Alternative Projected Solid Waste and Increase to City of Cheyenne Landfill.

Facilities	Expected solid waste (20 pounds per day per year) (million pounds)	Percent increase to City of Cheyenne Landfill (currently at 208 million pounds per year) ^a
AASF and Administrative Support Facility	2.3	1.1
JFHQ Complex	4.6	2.2

a. Source: Regansberg 2006
 AASF Army Aviation Support Facility
 JFHQ Joint Forces Headquarters

4.12.2.2 No Action Alternative

Under the No Action Alternative, no changes or impacts would occur to utility resources.

4.13 Hazardous and Toxic Substances

4.13.1 AFFECTED ENVIRONMENT

This section describes the existing conditions of hazardous and toxic substances at F. E. Warren AFB and of WYARNG activities. Management of hazardous materials and hazardous wastes are discussed, followed by environmental restoration sites and radon.

4.13.1.1 Hazardous Materials

For purposes of this EA, hazardous materials are those regulated under Federal, state, DoD, and Air Force regulations. Hazardous materials are required to be handled, managed, treated, or stored properly by trained personnel under the following regulations; Occupational Safety and Health Administration (OSHA) Hazardous Communication, 29 CFR 1900.1200 and 29 CFR 1926.59; Department of Transportation (DOT) Hazardous Materials, 49 CFR 172.101; EPA, 40 CFR 260 et seq. (OSHA 2006), and under the installation Hazardous Materials Program.

4.13.1.2 Hazardous Waste Disposal

F. E. Warren AFB is a large quantity generator under the Resource Conservation and Recovery Act (RCRA). Hazardous wastes are collected at 75 accumulation points on the installation and are managed by 17 separate organizations. Hazardous wastes are transferred from the accumulation points to the base's Central Collection Facility, where they are processed as to specific waste types and prepared for shipment. After processing, waste is stored in one of six hazardous waste non-permitted storage buildings. A certified contractor removes hazardous waste from F. E. Warren AFB within 90 days. The base routinely generates more than 1,000 kilograms (2,200 pounds) of waste per calendar month, which classifies the base as a large quantity generator. Wyoming has state solid waste management and hazardous waste regulations, W.S. 35-11-101 et seq. (WDEQ 2006).

A 2005 hazardous waste inventory for the WYARNG indicated 6.5 pounds of hazardous waste from the existing AASF facility (Seifert 2006). According to the inventory, the hazardous waste was adhesives used on helicopters. Additionally, 531 pounds of batteries were recycled. Reportedly, the hazardous materials storage buildings and secondary containment pads at the existing AASF are inadequate. The existing JFHQ/Readiness Center and FMS did not produce any hazardous wastes for 2005. According to information obtained from WYARNG Hazardous Waste Department, the batteries that were recycled were from radio equipment, which have since been changed to electronic format (Seifert 2006). The existing AASF also produced approximately 343.8 gallons of oil and lubricants, which were reportedly, recycled by a private company.

4.13.1.3 Environmental Restoration Sites

The Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) and the Superfund Amendments Reauthorization Act (SARA) established the nationwide process to clean up hazardous waste disposal and waste sites. The Installation Restoration Program (IRP) is a subcomponent of the DoD-wide Defense Environmental Restoration Program (DERP) that addresses the identification, investigation, and cleanup of contamination from hazardous substances and pollutants associated with past practices.

F. E. Warren AFB is on the National Priorities List (NPL) for environmental cleanup under the Federal Facility provisions of Section 120 of CERCLA. As a result of this

listing, a Federal Facilities Agreement was established among the base, the EPA, and the WDEQ. Twenty on-base sites were identified mostly within the southern portion of F. E. Warren AFB. Site types include spill sites, a fire training area, landfills, closed firing ranges, and four plumes of solvent-contaminated groundwater covering approximately 700 acres. Land use controls have been established for all IRP sites where unrestricted use and unlimited exposure is not permitted.

The entire northern part of the base, including the locations of the Preferred Alternative, is an IRP site, called Closed Base Ranges. Historically, this part of the base was used extensively as an impact area for various munitions, such as mortars and projectiles. The Closed Base Ranges are being investigated under the signed Federal Facilities Agreement with EPA and the WDEQ. The investigation includes the following steps:

1) comprehensive geophysical investigations (100 percent coverage) to locate any UXO items; 2) excavation of 100 percent of the geophysical anomalies discovered; 3) proper disposal of UXO and UXO scrap. Soil sampling will be conducted to determine if residual explosives remain in the soils at concentrations that would exceed human health or ecological risks. If necessary, a follow on cleanup will take place (Wright 2006).

4.13.1.4 Radon

Radon is a gaseous radioactive element that occurs by the decay of radium associated with the breakdown of minerals in the earth. Radon can be found in high concentrations in soils and rocks containing uranium, granite, shale, and phosphate. Atmospheric radon is diluted to insignificant levels; however, when concentrated in enclosed areas, radon can present human health risks.

F. E. Warren AFB tested positive for radon during the latest sampling events of family housing units that were conducted in 1987. According to this study, radon levels exceeded the EPA action guidelines in several of the homes that were tested. Therefore, corrective action, such as installation of a sub-slab depressurization system in each home was completed to lower radon levels (Zak 2006).

4.13.2 CONSEQUENCES

Potential impacts to hazardous materials management are considered major if the Preferred Alternative would:

- Result in noncompliance with applicable Federal and state regulations; or
- Increase the amounts generated or procured hazardous materials beyond current permitted capacities or management capabilities.

Potential impacts to the IRP are considered major if the Preferred Alternative would:

- Disturb, create, or contribute to contamination at a site resulting in potential adverse effects to human health or the environment; or
- Cause regulatory noncompliance.

4.13.2.1 Preferred Alternative

Overall, potential impacts to hazardous and toxic substances from the Preferred Alternative would be negligible and are considered insignificant. During the construction processes of the Preferred Alternative, the use and transportation of hazardous wastes that are regulated by OSHA and DOT, as well as the creation of hazardous wastes, regulated by EPA, may occur. Maintenance of construction equipment would also be conducted. The construction contractor generating the waste would coordinate the removal of waste and manifests with WYARNG and F. E. Warren AFB. The avoidance of spills and their treatment in the event of an accident are addressed through existing pollution prevention, spill response, hazardous waste, and air quality regulations. These plans address and specify procedures to be followed should previously undocumented materials be required at the facility. Equipment and vehicles parked overnight, or left for lengthy periods on-site, would be fitted with drip pans.

UXO clearance is required for construction activities to occur within the northern and central portions of F. E. Warren AFB. Potential safety issues associated with UXO are further discussed in Section 4.14 of this EA. If residual explosives are detected in the soil through the IRP program at levels that exceed human health and ecological risks, a cleanup program will be completed prior to construction. Thus, construction activities are not expected to cause spread of contamination.

The proposed AASF may generate long-term hazardous wastes, which may include adhesives, byproducts used in painting touch-up parts on helicopter aircraft (zinc chromate), and oil and lubricants (House 2006b). Oil and lubricant waste would be recycled. Hazardous wastes are not expected to increase from last year's inventory (Seifert 2006). No hazardous wastes are expected to occur from the proposed JFHQ Complex. Therefore, the Preferred Alternative would not create any significant long-term increases in the use of regulated hazardous materials or waste managed on and removed from F. E. Warren AFB.

Any long-term hazardous wastes that are generated from the Preferred Alternative would either be categorized and shipped according to F. E. Warren's Hazardous Waste Management Plan or in accordance with WYARNG hazardous waste protocol.

Best management practices to reduce potential impacts of radon would need to be implemented for the Preferred Alternative. Because the base has tested positive for radon, the potential of radon existing at the construction sites is probable. Therefore, installation of a passive system such as a sub-slab depressurization system would be necessary to allow proper ventilation of possible air-borne radon. If at a later time radon is found to exceed the EPA action guidelines, a ventilation system consisting of fans may be added to reduce radon accumulation (Zak 2006).

4.13.2.2 No Action Alternative

Under the No Action Alternative, no changes or impacts would occur to hazardous and toxic substances.

4.14 Safety and Occupational Health

4.14.1 AFFECTED ENVIRONMENT

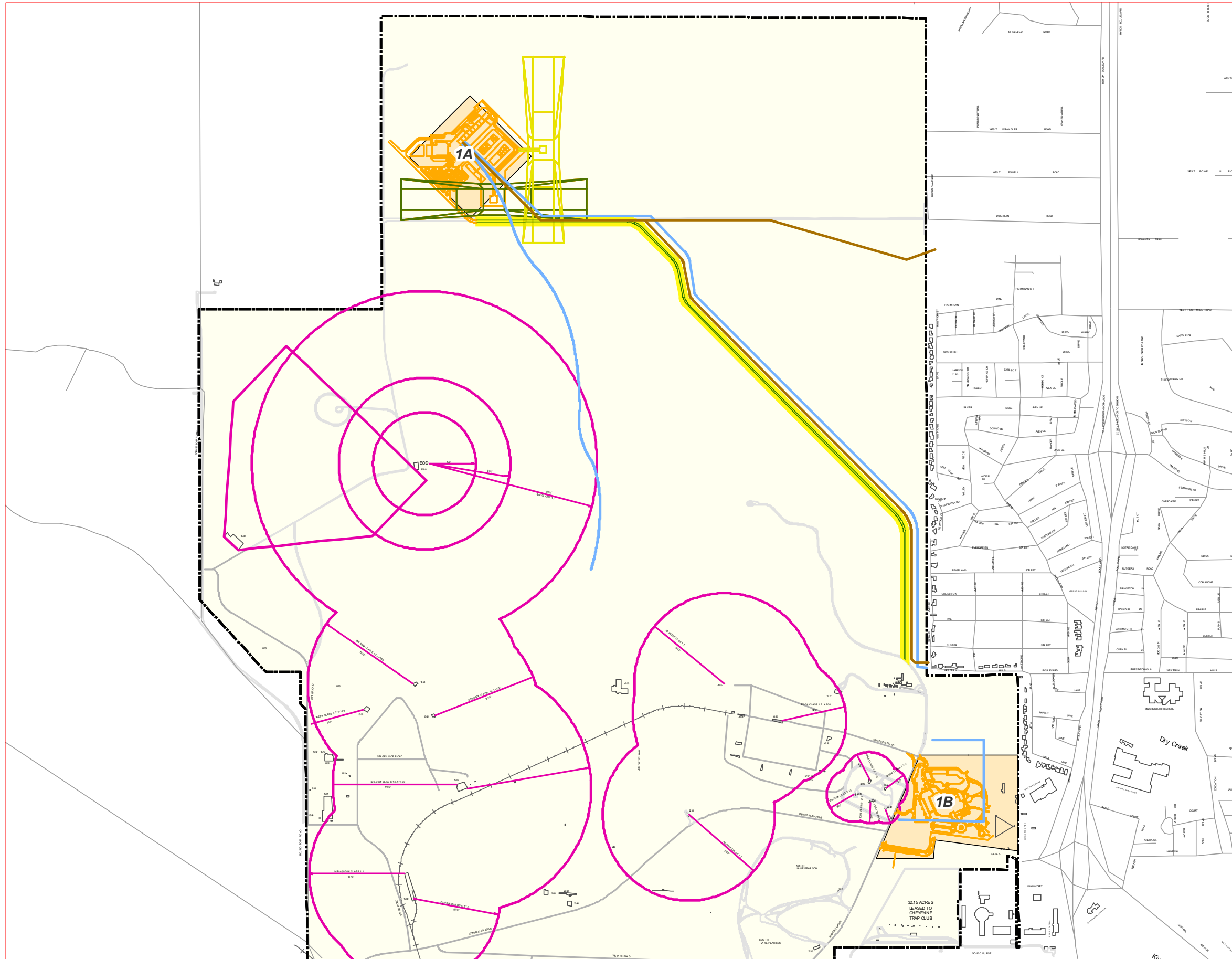
This section describes the existing safety and occupational health conditions at F. E. Warren AFB and of the WYARNG. The U.S. Government has operated military operations within the lands of F. E. Warren AFB for over 100 years. Some of these operations have caused various safety concerns, including explosives safety and flight safety.

4.14.1.1 Explosives Safety

Operations on F. E. Warren AFB have included use of high explosives. The northern part of the base, including the locations of the Preferred Alternative, was used extensively as an impact area for various munitions, such as mortars and projectiles. In recent history, fragments of mortars and artillery rounds, including fuses have been discovered on base. Many live UXO items (75 mm and 37 mm) have been found within the footprint of the proposed AASF (Wright 2006). Known or suspected UXO areas have been identified and either fenced and/or posted with UXO warnings. The northern area of the base is currently an IRP site under the signed Federal Facilities Agreement with EPA and the WDEQ as described above in Section 4.13.1.3 of this EA. The investigation should provide an area as clear of UXO as possible with today's instrumentation. However, there is always the potential for UXO to remain in a closed range.

Current use and storage of explosives on F. E. Warren AFB require the development of an Explosives Site Plan for any facility that handles or stores explosive ordnance. The Explosives Site Plan must be processed through an approval process. The Department of Defense Explosives Safety Board is the final approval authority for proposed explosive facilities.

The storage and handling of high explosives create unique safety hazards. To address these hazards, facilities that are designated to handle or store explosives are set apart from other base facilities. This separation is governed by a designated area classified as an explosive safety quantity-distance (Q/D) zone, designed to safeguard the base population and civilian community from potential explosions. All development impacted by an explosive safety zone must comply with Air Force Manual 91-201, Explosive Safety Standards. Within these zones, certain separation distances are mandated to minimize explosive hazards. These clear zones include the area within a safety arc surrounding an explosive storage facility and are shown on Figure 4-11.

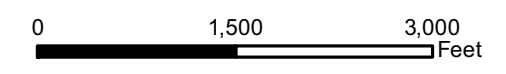


LEGEND

- Buildings
- Roads
- + + RR Tracks
- - - Historic District Boundary
- Proposed AASF & JFHQ
- Q/D Arcs
- Helipad SPCL-1
- Future Helipad
- Proposed Road
- Proposed 12" Water Main
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1A: Army Aviation Support Facility (AASF) and Administrative Support Facility

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Prepared for:
 Environmental Assessment for the AASF and Administrative Support Facility and the JFHQ, Readiness Center, and FMS Francis E. Warren Air Force Base, WY

Date Revised: 07/19/06

Figure 4-11
 Explosive Safety Quantity-Distance (Q/D) Zones



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In the northern portion of F. E. Warren AFB the following specific facilities have Q/D zones associated with them (F. E. Warren AFB 2005b):

Stage Storage Area	Q/D Zone 1,565 feet
Explosive Ordnance Disposal Area	Q/D Zone 2,500 feet
Minuteman III Missile Transfer Area	Q/D Zone 1,370 feet
Hot cargo pad	Q/D Zone 1,250 feet
Firing ranges	Q/D Zone 1,700 feet

Following coordination and approval, the hot cargo pad Q/D clear zone will expand to 1,313 feet.

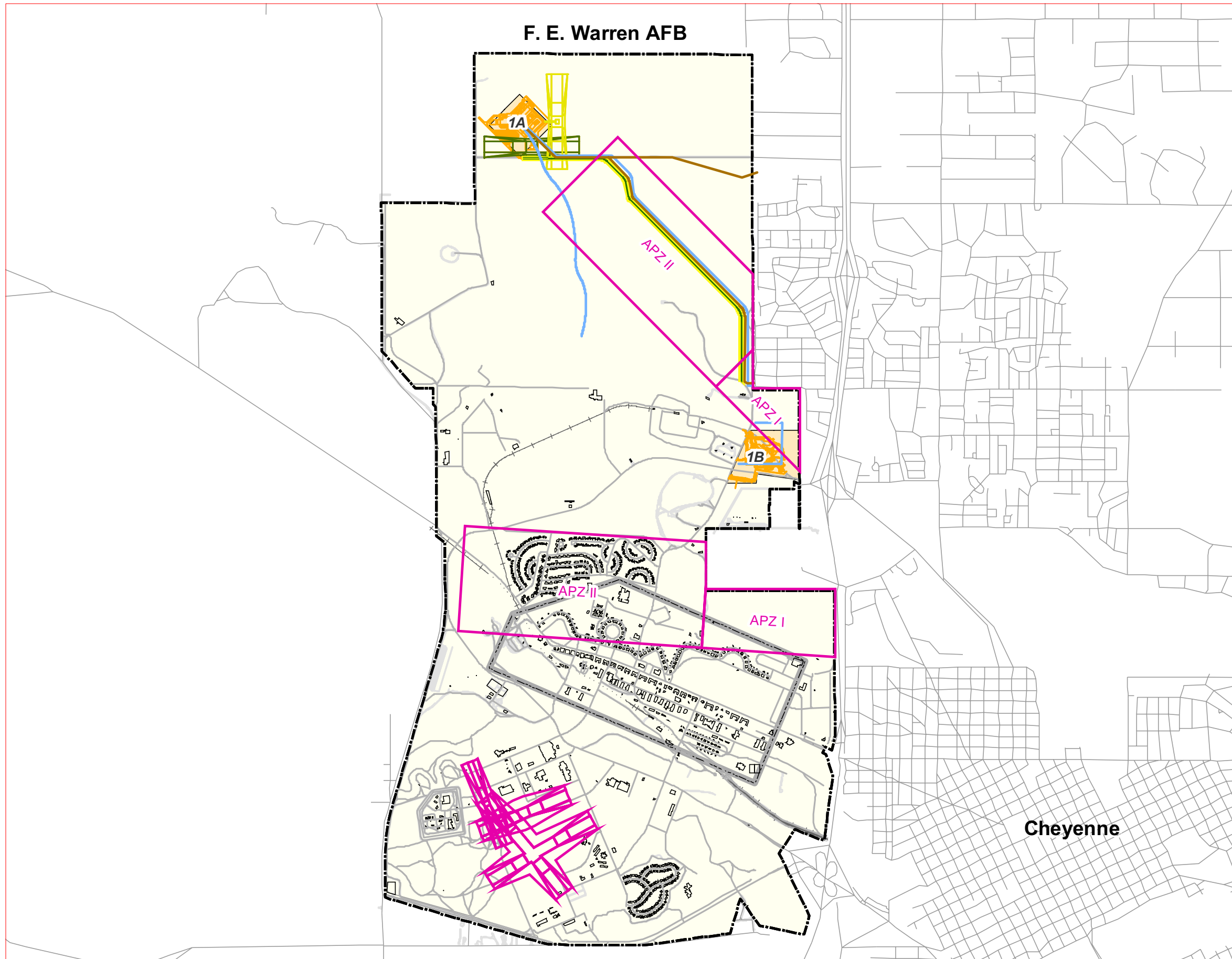
4.14.1.2 Flight Safety

The primary public concern with regard to flight safety is the potential for aircraft accidents and accidental drops over nonmilitary areas. Such mishaps may occur as a result of mid-air collisions, collisions with man-made structures or terrain, weather-related accidents, mechanical failure, pilot error, or bird-aircraft collisions. Flight risks apply to all aircraft; they are not limited to the military (U.S. Air Force 1998 and 2004).

The Cheyenne Municipal Airport has two approach/departure zones that overlay F. E. Warren AFB. Since these zones overlap an Air Force installation, land use guidelines within these zones are regulated by the Unified Facilities Criteria 3-260-01 and AICUZ. The zones are classified as APZs and are categorized into classes (I and II) and clear zones. APZs are areas on the ground located beyond a clear zone of each runway. Runway clear zones are areas on the ground, located at the ends of each runway. APZ I starts at the end of a clear zone, and is centered and measured along the extended centerline of the runway. APZ II starts at the end of APZ I, and is also centered and measured on the extended runway centerline (U.S. Army Corps of Engineers 2001). Both APZ I and APZ II from the Cheyenne Municipal Airport overlay F. E. Warren AFB. An APZ I and an APZ II are located both on the northern portion of F. E. Warren AFB and within the center section of the base (Figure 4-12). Land use restrictions apply to both APZs according to *DoD Land Use Compatibility Guidelines for Clear Zone and Accident Potential Zones* (DoD undated). According to these standards, it is not acceptable for most residential structures to be built within either APZ. Certain commercial, industrial, and transportation uses are allowed in either APZ, however, more restrictions apply to APZ I (FAA Undated).

According to Army Regulation 385-10, the Army defines four categories of accident probability: Category I, II, III, and IV. Category I mishaps result in a loss of life or permanent total disability, loss of major or mission-critical system or equipment, major property (facility) damage, severe environmental damage, mission-critical security failure, or unacceptable collateral damage. Category II mishaps result in significantly degraded mission capability or unit readiness, permanent partial disability, temporary total disability exceeding three months time, extensive damage to equipment or systems, significant damage to property or the environment, security failure, and significant collateral damage. Category III mishaps result in degraded mission capability or unit readiness, minor damage to equipment or systems, property or the environment, lost day

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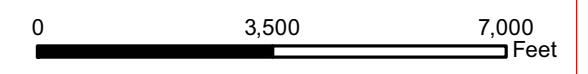


LEGEND

- +— RR Tracks
- ▭ APZ
- Historic District Boundary
- Roads
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Figure 4-12
 Accident Potential Zones (APZ)



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due to injury or illness not exceeding three months, and minor damage to property or the environment. Category IV mishaps result in little or no adverse impact on mission capability, first aid or minor medical treatment, slight equipment or system damage, but fully functional and serviceable, and little or no property or environmental damage (Department of the Army 1999 and 2000).

Currently the WYARNG uses approximately nine UH-60 helicopters for routine training and mission operations. Landing, departure, and training operations occur at the Cheyenne Municipal Airport. UH-60 take-off and landing times, engine runs, taxi-time runs, hover and high hover operations from 2005 can be found in Appendix B of this EA. Historical flight safety records from UH-60 aircraft include one Category I aircraft accident since 1978. All other mishaps since 1978 have been Category IV accidents, which have required minor maintenance and repair of aircraft (Schofield 2006).

4.14.2 CONSEQUENCES

Potential impacts to health and safety are considered major if the Preferred Alternative would:

- Expose workers, residents, or visitors to hazardous substances; or
- Cause significant aircraft mishaps.

4.14.2.1 Preferred Alternative

Overall, potential impacts to safety and occupational health from the Preferred Alternative would be minor to moderate and are considered insignificant. The Preferred Alternative would create working conditions in and around the construction activities that would require proper safety precautions. Operation of machinery, handling hazardous materials, and numerous other actions would require proper steps be taken to protect oneself and the surrounding people from unsafe conditions. Safety hazards would include possible UXO, which requires personnel to cease activities and report the suspected UXO hazard to the Wing Command Post immediately. While the IRP program will provide a construction area as clear of UXO as possible, the potential for construction workers to encounter UXO would remain. However, all site workers would be trained in identification and proper reporting of UXO to reduce safety risks. Personnel conducting construction would be subject to OSHA regulations which include, but are not limited to, 29 CFR 1910.132 General Requirements for Personal Protective Equipment, 29 CFR 1900.1200 and 29 CFR 1926.59 Hazard Communication, 29 CFR 1926 Safety and Health Regulations for Construction, and any other applicable safety regulations. Impacts to safety and occupational health from short-term construction activities would be minor to moderate.

Long-term safety and occupational health impacts associated with the Preferred Alternative are discussed below.

Explosives Safety. The AASF and Administrative Support Facility would not overlay current Q/D zones (Figure 4-11). Therefore, no impacts are expected to occur from Q/D

arcs from the AASF and Administrative Support Facility. The JFHQ Complex may impact a Q/D zone associated with a number of storage bunkers located to the west of the proposed complex (Figure 4-11). The zone's arcs range in size from 203 feet to 400 feet in radii surrounding each individual bunker. The proposed layout of the JFHQ Complex will need to be such that the established Q/D zones do not overlay any of the proposed occupied facilities. The Q/D zone can overlay certain non-structures such as parking lots (parked 24 hours or less) and non-recreational greenways.

Flight Safety. Long-term changes in safety or occupational health associated with the AASF and Administrative Support Facility may result from potential accidents from UH-60 aircraft. The WYARNG anticipate using 12 UH-60 aircraft for routine training and mission operations. It is impossible to predict the precise location of an aircraft accident, should one occur. Major considerations in any accident are loss of life and damage to property. The aircrew's ability to exit from a malfunctioning aircraft is dependent on the type of malfunction encountered. The probability of an aircraft crashing into a populated area is extremely low, but it cannot be totally discounted. Several factors limit the probability of impacts from a disabled aircraft in a populated area. These factors include: the ROI and immediate surrounding areas have relatively low population densities; pilots of aircraft are instructed to avoid direct over flight of population centers at very low altitudes; and, finally the limited amount of time the aircraft is over any specific geographic area (Department of the Army 1999 and U.S. Air Force 1998).

Secondary effects of an aircraft crash include the potential for fire and environmental contamination. Again, because the extent of these secondary effects is situational dependent, they are difficult to quantify. The terrain over flown in the ROI is diverse. For example, should a mishap occur, highly vegetated areas during a hot, dry summer would have a higher risk of experiencing extensive fires than would more barren and rocky areas during the winter. When an aircraft crashes, it may release hydrocarbons. Those petroleum, oils, and lubricants (POL) not consumed in a fire could contaminate soil and water. The potential for contamination is dependent on several factors. The porosity of the region would determine the extent and direction of the contamination plume. The locations and characteristics of surface water and groundwater in the area would also affect the extent of contamination to those resources (Department of the Army 1999 and U.S. Air Force 1998).

Based on the safety records, the WYARNG had only one Category I accident since 1978. Therefore, a significant accident potential is not anticipated from the UH-60 on or near F. E. Warren AFB. Flight profiles to be used by the WYARNG arriving and departing would be designed to avoid populated areas. Projected landing and departure zones are depicted in Figure 4-2. APZ zones associated with the Cheyenne Municipal Airport would not overlay onto the AASF and Administrative Support Facility (Figure 4-12). There should be no long-term major impacts in safety or occupational health associated with the AASF and Administrative Support Facility.

Long-term changes in safety or occupational health associated with the JFHQ Complex may result from an APZ (APZ I), which is located near the northern perimeter of the proposed complex (Figure 4-12). Since certain land use restrictions apply in APZ I, the

proposed layout of the JFHQ Complex will need to be developed outside of the zone. Facilities required to be located within APZ must be reviewed by the Vice Commander of Air Force Space Command for approval. There should be no long-term major impacts in safety or occupational health associated with the JFHQ Complex.

4.14.2.2 No Action Alternative

Under the No Action Alternative, no impacts or changes would occur to safety and occupational health.

4.15 Cumulative Effects Summary

Cumulative effects are those environmental impacts that result from the incremental effects of the Proposed Action when compounded by other past, present, or reasonably foreseeable future actions.

CEQ regulations stipulate that the cumulative effects analysis within an EA consider the potential environmental impacts resulting from the “incremental impacts of the action when added to other past, present, and reasonably foreseeable future actions regardless of what agency or person undertakes such actions” (40 CFR 1508.7). The scope must consider geographic and temporal overlaps among the Proposed Action and other actions. Cumulative impacts can result from individually minor, but collectively substantial, actions undertaken over a period of time by various agencies (Federal, state, and local) or individuals.

The scope of the cumulative effect analysis involves evaluating impacts to environmental resources by geographic extent of the effects and the time frame in which the effects would be expected to occur. Past, present, and reasonably foreseeable actions are identified first, followed by the cumulative effects that could result from these actions when combined with the Preferred Alternative. Irreversible and irretrievable commitments of resources are also discussed in this section.

4.15.1 PAST, PRESENT, AND REASONABLY FORESEEABLE ACTIONS

The geographic area analyzed for cumulative impacts includes both F. E. Warren AFB and approximately 1 mile surrounding the base. Ten future projects and one ongoing project were identified on F. E. Warren AFB. One reasonably foreseeable action was identified within 1 mile surrounding the base. No past or present actions were identified in the area 1 mile surrounding the base. The identified projects are summarized below:

- Storm Water Plan – three phases of storm water development on F. E. Warren AFB. The first phase will begin sometime in 2006 at the southern portion of the base and the remaining two phases will be completed by 2011. The phases will include upgrades or new addition of ditches, channels, piping, inlets, and detention ponds.
- Military Family Housing Privatization – construction and/or renovations of family housing within the central/southern portions of the base. The project is

planned in the future and will not occur at the same time as the Preferred Alternative.

- Transportation Phased Redevelopment Program – planned for the future and will involve realigning parking lots and other physical characteristics that affect traffic circulation and parking throughout F. E. Warren AFB.
- UXO Removal Program – an IRP investigation to remove known or suspected UXO on F. E. Warren AFB. The program involves removing UXO within the areas of the Preferred Alternative prior to the start of construction.
- Phase V of Sanitary Sewer System Repair and Design – upgrades and replacement of sewer lines and systems on F. E. Warren AFB. The program is planned for the future and will be mostly focused on the south and central portions of the base.
- Remaining Phases of High Temperature Hot Water System Repair – upgrades or replacement of high pressure lines on F. E. Warren AFB. The repair will take place in the future within mostly the central and south portions of the base.
- Add/Alter Missile Service Complex – expansion of the building. The renovations are expected to occur in the near future but will not occur at the same time as the Preferred Alternative.
- Consolidate Base Fire Station – connection of Buildings 323 and 324. The consolidations are expected to occur in the near future but will not occur at the same time as the Preferred Alternative.
- Upgrade Gate 2 – addition of a couple of facilities near Gate 2 on F. E. Warren AFB. The upgrades are planned for the future and will not occur at the same time as the Preferred Alternative. Possible redirection of traffic from Gate 2 will most likely occur to Gate 1.
- Add/Alter Primary Missile Route – resurfacing of the road located at the south end of F. E. Warren AFB. The alterations are planned for the future and will not occur at the same time as the Preferred Alternative. Possible redirection of traffic from Missile Route should stay near the south portion of the base and not occur near the Preferred Alternative.
- Learning Center – construction of a new facility adjacent to the Education Center (Building 841). The project is planned in the future and will not occur at the same time as the Preferred Alternative.
- I-25 Ramp at Randall Avenue – replacement of the current ramp on I-25 at Randall Avenue by the Wyoming DOT. This project is planned for 2012 to 2014 and will not occur at the same time as the Preferred Alternative.

4.15.2 CUMULATIVE EFFECTS

Environmental impacts by category of none to negligible, minor, and moderate are shown in Chart 4-1 for all resources affected by the Preferred Alternative as well as by the past, present, and reasonably foreseeable projects. The qualitative designations in the chart reflect the smallest to highest level of environmental concern among all resources. The cumulative effect for each resource can be ascertained by looking vertically at the column for that resource. Most impacts are expected to be negligible to minor, and the cumulative effects are expected to be insignificant. Cumulative impacts are summarized below.

4.15.2.1 Land Use

The Military Family Housing Privatization project would involve development of raw land for the purpose of constructing military housing. The construction would be to the south of the Preferred Alternative and would not interact with the future land use designation of the Military Family Housing. Therefore, cumulative impacts to land use are not expected to occur as a result of the Preferred Alternative and the future Military Family Housing Privatization project.

4.15.2.2 Air Quality

The Military Family Housing Privatization project will involve the development of family housing on F. E. Warren AFB. The increased family housing may cause increased external combustion air emissions that in combination with the Preferred Alternative may affect the base Synthetic Minor Title V air permit. Emission estimates for both the proposed family housing privatization and Preferred Alternative may require F. E. Warren AFB and WDEQ to ensure that the base remains a minor emitter for purposes of the operating permit.

4.15.2.3 Cultural Resources

The Storm Water Plan will involve three phases of development at F. E. Warren AFB. The first phase will begin sometime in 2006 at the southern portion of the base and the remaining two phases will be completed by 2011. The phases will include upgrades or new addition of ditches, channels, piping, inlets, and detention ponds. Cultural resources may be affected if areas are disturbed that contain buried artifacts.

The Military Family Housing Privatization project will involve development of family housing on F. E. Warren AFB. This may involve disturbance of land to construct housing.

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The UXO Removal Program is an IRP investigation to remove known or suspected unexploded ordnance on F. E. Warren AFB. This may involve land disturbance in order to remove UXO. Cultural resources may be affected if areas are disturbed that contain buried artifacts. Although the Preferred Alternative is not located in areas of known or suspected archaeological sites, it is located in areas of known UXO. Thus, the construction of the Preferred Alternative together with the potential invasive nature of the UXO Removal Program, as well as the implementation of the Storm Water Plan and Military Family Housing Privatization project, may cause minor cumulative impacts to cultural resources.

4.15.2.4 Socioeconomics

The Military Family Housing Privatization project will involve development of family housing on F. E. Warren AFB. This may involve the addition of individuals onto F. E. Warren AFB. Economic development, demographics, housing, and environmental justice may be affected as a result of the family housing project. However, under the Preferred Alternative, there are no changes to personnel or to socioeconomic factors. Therefore, when the Preferred Alternative is considered in conjunction with the Military Family House Privatization project, cumulative impacts to socioeconomic resources are not expected.

4.15.2.5 Transportation

The Military Family Housing Privatization project will involve development of family housing on F. E. Warren AFB. This may involve the addition of individuals onto F. E. Warren AFB. Transportation such as gate access and traffic flow may be affected as a result of the increased individuals. The Preferred Alternative is located north of the Military Family Housing Privatization project and will involve the use of a different gate and roads. Therefore, when the Preferred Alternative is considered in conjunction with the Military Family House Privatization project, cumulative impacts to transportation are not expected.

The Transportation Phased Redevelopment Program is planned for the future and will involve realigning parking lots and other physical characteristics that affect traffic circulation and parking. This may cause short-term impacts to traffic flow and gate access during the construction activities. The Transportation Phased Redevelopment in combination with the Preferred Alternative may result in traffic and gate congestion. Impacts would be moderate at worst, and could be controlled with cooperative planning and scheduling.

Gate 2 upgrades will involve the addition of a couple of facilities near Gate 2 on F. E. Warren AFB. Transportation may be affected as a result of the upgrades to Gate 2. As a result, traffic may be redirected to a different gate. If traffic is redirected to Gate 5, impacts would be moderate at worst, and could be controlled with cooperative planning and scheduling.

The Wyoming DOT replacement of the I-25 ramp at Randall Avenue is planned for 2009 or 2012. The replacement will involve temporary closure of Gate 1 and redirection of a

percentage of traffic from Gate 1 to Gate 5. The I-25 ramp replacement in combination with the Preferred Alternative may result in traffic and gate congestion. Impacts would be moderate at worst, and could be controlled with cooperative planning and scheduling.

4.15.2.6 Utilities

The future storm water plan on F. E. Warren AFB will involve upgrades to the existing storm water system on base. Increased storm water runoff from the Preferred Alternative may add additional runoff to the area of storm water design. Best management practices would need to be implemented for the Preferred Alternative to reduce impacts; however, the future base storm water improvements would include several upgrades to help reduce overall storm water runoff on base.

4.15.2.7 Hazardous and Toxic Substances

Some of the cumulative effects projects may involve the generation of hazardous wastes and handling of hazardous and toxic substances, as does the Preferred Alternative. Therefore, minor cumulative impacts to hazardous and toxic substances may occur.

4.15.2.8 Safety and Occupational Health

Some of the cumulative effects projects would create working conditions that result in similar safety and occupational health impacts to those of the Preferred Alternative. For example, operation of machinery, handling hazardous materials, and numerous other actions would require proper steps be taken to protect oneself and others from unsafe conditions. Safety hazards may also include possible UXO and would require removal under the UXO Removal Program. However, these considerations do not result in a cumulative impact related to safety and occupational health.

4.15.2.9 Aesthetics and Visual Resources, Noise, Geology and Soils, Water Resources, and Biological Resources

Cumulative effects to aesthetics and visual resources, noise, geology and soils, water resources, and biological resources have not been analyzed due to the lack of past, present, or reasonably foreseeable actions on F. E. Warren AFB or in the area 1 mile surrounding the base that would cause impacts to these resources.

4.15.3 IRREVERSIBLE AND IRRETRIEVABLE COMMITMENT OF RESOURCES

Under NEPA, a review of significant irreversible and irretrievable effects that result from development of the Proposed Action is required (40 CFR 1502.16). Irreversible commitments are those that cannot be reversed, except perhaps in the extreme long-term (e.g. fuel, wood, steel, labor, and non-retrievable resources). Irretrievable commitments are those that are lost for a period of time over the short-term (e.g. forest productivity or timber loss).

Under the Preferred Alternative, irretrievable commitments of resources would occur from the use of land resources, electrical energy, fuel, and human labor. The greatest of the irretrievable resources would be the land upon which the proposed facilities would be

developed. Other irreversible or irretrievable commitments of resources would include: a minimal amount of soil lost through either wind and water erosion during construction activities; loss of road use on Central Avenue during infrastructure construction; a small loss of native vegetation; energy use for site construction activities, and a moderate level of increased noise generated during construction activities.

Under the No Action Alternative, no irreversible or irretrievable commitments of resources would occur.

4.16 Mitigation Summary

Mitigation measures are measures that are integral to an alternative to mitigate or reduce impacts. Mitigation measures are legally binding and the proponent of the proposed action must develop mitigation plans to implement the proposed measures. No mitigation measures are required for the Preferred Alternative discussed in this EA, because resulting impacts are negligible and/or minor.

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5.0 FINDINGS AND CONCLUSIONS

5.1 Findings

The Proposed Action includes closing a WYARNG AASF and two WYARNG armories within the regional vicinity of F. E. Warren AFB and constructing an AASF with Administrative Support Facility and JFHQ with Readiness Center and FMS on F. E. Warren AFB to consolidate WYARNG units. This EA has been prepared based on data provided by F. E. Warren AFB and WYARNG, interviews with personnel familiar with locations and operations addressed in the Preferred Alternative, as well as data and interviews provided by appropriate state, city and county organizations. The locations of the new facilities addressed in the Preferred Alternative were viewed by specialists preparing the EA. The potential impacts of the Preferred Alternative were evaluated by the EA interdisciplinary team, based on readily available reports and documents and on information provided during personnel interviews. The data available were deemed more than sufficient to assess potential impacts.

Twelve environmental and human resource areas were characterized and evaluated for potential impacts from the Preferred Alternative. Significance criteria were developed for the affected resource categories. For many resource categories, these criteria are necessarily qualitative in nature. Quantitative criteria can be established when there are specific numerical limits established by regulation or industry standard. The criteria are based on existing regulatory standards, scientific and environmental documentation, and/or professional judgment.

5.1.1 CONSEQUENCES OF THE REALIGNMENT (PREFERRED) ALTERNATIVE

Evaluations of the 12 resource areas resulted in a finding of negligible or minor impacts for 11 resource areas and minor to moderate impacts for safety and occupational health from implementation of the Preferred Alternative. Findings included consideration of measures incorporated into the siting and design of the facilities proposed as a part of the Preferred Alternative.

Cumulative impacts were also addressed by considering the impacts of the Preferred Alternative in combination with impacts from other foreseeable projects. Twelve actions were identified in this EA as present or reasonably foreseeable. The scope of the cumulative effect analysis involved evaluating impacts to the 12 environmental and human resource areas cumulatively by geographic and temporal extent in which the effects would be expected to occur. Cumulative impact analysis resulted in mostly negligible or minor impacts.

5.1.2 CONSEQUENCES OF THE NO ACTION ALTERNATIVE

Under the No Action Alternative, no changes or impacts to the 12 resource areas would occur.

5.2 Conclusions

Given that impacts, including cumulative impacts, are negligible to minor, with the exception of safety and occupational health having minor to moderate impacts, no mitigation is warranted, and mitigation plans will not be prepared. If the decision is made to proceed with the Preferred Alternative, it would be implemented in accordance with Federal and state laws, F. E. Warren AFB's various management plans, and engineering and construction best management practices.

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Zak, M. (F. E. Warren AFB). 2006, July 17. Personal communication with S. Courage (J.M. Waller Associates).

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Environmental Assessment for the Army Aviation Support Facility and Administrative Support Facility and the Joint Forces Headquarters, Readiness Center, and Field Maintenance Shop at Francis E. Warren Air Force Base, Cheyenne, Wyoming

APPENDIX A

AIR EMISSIONS

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APPENDIX A. AIR EMISSIONS

This appendix provides background and supporting information on the estimation and calculation of external combustion emissions and fuel storage tank emissions.

A1.0 External Combustion Emissions

Design parameters for anticipated energy requirements and use have not been determined at this time. Therefore, it is uncertain as to whether electric, natural gas, or coal operated systems would be used. For intents and purposes of this environmental assessment (EA), natural gas is assumed as the primary fuel based on its main use in the region, and the move by the Air Force from the use of coal on Francis E. Warren Air Force Base (F. E. Warren AFB). Long-term air quality impacts from the use of natural gas at each proposed facility would include emissions from external combustion units used to provide building heating and domestic hot water heaters. Because no information is available in regards to the expected heating units at the proposed facilities, fuel consumption of a comparable building (Raper Armory) used by the Wyoming Army National Guard (WYARNG) was the basis for estimating heating capacities. The Raper Armory currently uses one furnace that has a heat input rating of 2,499,000 British thermal units per hour (Btu/hr). Based on this value, the calculation of a heating requirement of 66,438 Btu was determined for each square foot of floor space. This figure was applied to the expected floor space of each proposed facility and a modeled heat capacity in Btu was determined as shown in Table A-1. Boiler requirements were not determined as they would depend upon the number of personnel using the buildings and the type of activities. Furthermore, heating furnaces may also serve as a boiler.

Table A-1. Modeled Heat Capacity for Preferred Alternative.

Facility	Area (square feet)	Modeled Heat Capacity (Btu)
AASF	121,658	8,082,718
Administrative Support Facility	40,113	2,655,029
JFHQ	104,422	6,937,592
Readiness Center	55,800	3,707,242
FMS	20,371	1,353,409
State Maintenance Shop (including add-on)	10,808	718,062
Totals	353,172	23,454,052

AASF Army Aviation Support Facility

Btu British thermal units

FMS Field Maintenance Shop

JFHQ Joint Forces Headquarters

To estimate the seasonal variation of heating demand, the “heating hours per month” were assumed to vary from 100 percent in the four winter months to 25 percent during the summer months as shown in Table A-2. This estimation, when combined with the

proposed facilities heating capacity, yielded and annual natural gas consumption of 142,302,570 cubic feet per year.

Table A-2. Estimated Seasonal Heating Demand.

Month	Days/month	Hours/month	Assumed monthly heating rate	Estimated heating hours
January	31	744	100%	744
February	28	672	100%	672
March	31	744	75%	558
April	30	720	75%	540
May	31	744	50%	372
June	30	720	25%	180
July	31	744	25%	186
August	31	744	50%	372
September	30	720	75%	540
October	31	744	75%	558
November	30	720	100%	720
December	31	744	100%	744
Total heating hours/year				6,186

This gas consumption rate was applied to emission factors from Chapter 1 of the U.S. Environmental Protection Agency's (EPA's) *Compilation of Air Pollutant Emission Factors* (AP-42). Emissions from the combustion of natural gas in an external combustion unit would include nitrogen oxides (NO_x), particulate matter [total, particulate matter with an aerodynamic size less than or equal to 10 microns (PM₁₀), and particulate matter with an aerodynamic size less than or equal to 2.5 microns (PM_{2.5})], sulfur oxides (SO_x), volatile organic compounds (VOCs), carbon monoxide (CO), and hazardous air pollutants (HAPs). Emissions calculations are presented in the following spreadsheets.

Estimated Furnace Heating Capacities

<u>Building</u>		<u>Square Footage</u>	<u>Known / Estimated Heat Capacity (Btu)</u>	<u>Fuel Consumption Rate</u>
Raper Armory (given)	Known	37,614	2,499,000	66.4380 mBtu/sq ft
AASF	Estimated	121,658	8,082,718	
Readiness Ctr	Estimated	40,113	2,665,029	
JFHC	Estimated	104,422	6,937,592	
115 Readiness Ctr	Estimated	55,800	3,707,242	
New FMS	Estimated	20,371	1,353,409	
State Maint Shop	Estimated	10,808	718,062	
Total Base-wide Heating Capacity:			23,464,051 M Btu/hr	
Base-wide fuel consumption			23,003.97 cu ft/hr	
Estimated Annual heating hours:			6,186	
Annual Fuel Consumption:			142,302,570 cu ft/year	
Annual Fuel Consumption:			142.30 mil cu ft/year	

Criteria Pollutants:

Source	Annual Gas Consumption (Mil Cu ft / yr)	Tons/Year					Total HAPs
		PM ₁₀	SO ₂	CO	NO _x	VOC	
Boilers and Furnaces (Base-Wide)	142.30	0.54	0.04	5.98	7.12	0.39	0.28
AP-42 Emission Factor (lb/mil cu ft) =		7.6	0.6	84.0	100.0	5.5	3.9803

A2.0 Fuel Storage Tank Emissions

One 15,000-gallon above-ground storage tank (AST) would be used for fueling helicopters at the Army Aviation Support Facility (AASF). The proposed tank would hold JP-8 fuel. Emissions from the fuel storage tank were calculated using the EPA's *TANKS 4.09* software. *TANKS* is a Windows-based computer software program, developed by the American Petroleum Institute, that estimates VOC emissions from fixed- and floating-roof storage tanks. *TANKS* is based on the emission estimation procedures from Chapter 7 of EPA's *Compilation of Air Pollutant Emission Factors* (AP-42). The following spreadsheets show the tank, climate, and fuel characteristics that were used to calculate the tank emissions and the results of those calculations.

TANKS 4.0

Emissions Report - Summary Format

Tank Identification and Physical Characteristics

Identification

User Identification:	F. E. Warren 15,000
City:	Cheyenne
State:	Wyoming
Company:	US Air Force
Type of Tank:	Horizontal Tank
Description:	15,000 gallon horizontal, fixed roof tank for storage of JP-8

Tank Dimensions

Shell Length (ft):	25.75
Diameter (ft):	10.00
Volume (gallons):	15,000.00
Turnovers:	6.96
Net Throughput (gal/yr):	104,439.60
Is Tank Heated (y/n):	N
Is Tank Underground (y/n):	N

Paint Characteristics

Shell Color/Shade:	Gray/Light
Shell Condition:	Poor

Breather Vent Settings

Vacuum Settings (psig):	-0.03
Pressure Settings (psig):	0.03

Meteorological Data used in Emissions Calculations: Cheyenne, Wyoming (Avg Atmospheric Pressure = 11.76 psia)

TANKS 4.0
Emissions Report - Summary Format
Liquid Contents of Storage Tank

Mixture/Component	Month	Daily Liquid Surf. Temperatures (deg F)			Liquid Bulk Temp. (deg F)	Vapor Pressures (psia)			Vapor Mol. Weight	Liquid Mass Fract.	Vapor Mass Fract.	Mol. Weight	Basis for Vapor Pressure Calculations
		Avg.	Min.	Max.		Avg.	Min.	Max.					
Jet kerosene	All	54.14	43.49	64.78	48.38	0.0068	0.0047	0.0096	130.0000			162.00	Option 5: A=12.39, B=8933

TANKS 4.0
Emissions Report - Summary Format
Individual Tank Emission Totals

Annual Emissions Report

Components	Losses(lbs)		Total Emissions
	Working Loss	Breathing Loss	
Jet kerosene	2.19	5.85	8.04

Environmental Assessment for the Army Aviation Support Facility and Administrative Support Facility and the Joint Forces Headquarters, Readiness Center, and Field Maintenance Shop at Francis E. Warren Air Force Base, Cheyenne, Wyoming

APPENDIX B

AIRCRAFT NOISE

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APPENDIX B. AIRCRAFT NOISE

This appendix describes U.S. Department of Defense (DoD) computer modeling techniques used to evaluate the potential impacts of sound generated by DoD aircraft operations. Specific modeling methods and calculations are provided for noise estimates generated for the Army Aviation Support Facility (AASF) and Administrative Support Facility.

Day-night average sound level (Ldn) values around airfields are generated by the NOISEMAP or Rotary Noise Model (RNM) computer programs and are very similar to the program used by the Federal Aviation Administration (FAA) at civil airports, the Integrated Noise Model (INM). The INM and NOISEMAP & RNM computer program inputs include information regarding flight tracks; altitude profiles; power settings; aircraft speeds; frequency of flight operations; and the location, duration, and power settings of ground run-up operations by type of aircraft. The results are then averaged over the median number of flying days, with some compensation for seasonal variations, and noise contours are drawn from points on the ground with equal Ldn values. Normally, contours are produced at 5 decibel (dB) intervals beginning at Ldn greater than or equal to 65 dB, the maximum level considered acceptable for unrestricted residential land use. Using NOISEMAP, RNM, or INM with a geographic information system and the 2000 U.S. Census database, the number of persons exposed to Ldn greater than or equal to 65 dB can also be estimated. This assessment employs the land use compatibility guidelines supported by the FAA, U.S. Environmental Protection Agency (EPA), U.S. Department of Housing and Urban Development (HUD), DoD, the American National Standards Institute (ANSI), and the Federal Interagency Committee on Urban Noise (FICUN). Specifically, Ldn is used to describe the outdoor noise environment, and noise levels less than Ldn 65 dB are considered compatible with residential land uses.

Noise is expected from routine training operations of UH-60 aircraft at the proposed AASF and Administrative Support Facility. The Wyoming Army National Guard (WYARNG) anticipates using 12 UH-60 that would arrive and depart the facility at elevations between 1,000 feet to 1,500 feet above ground level (AGL). Routine training operations include takeoffs, landings, hover patterns, and closed patterns (which could include activities such as touch-and-go's or low approaches). Each takeoff or landing constitutes one operation. RNM aircraft noise modeling software was used to interpret noise data resulting from UH-60 operations from baseline and anticipated noise environments in the vicinity of the AASF and Administrative Support Facility. Altitudes, aircraft type, flight tracks, power settings, and number of daytime (7:00 a.m. to 10:00 p.m.) and nighttime (10:00 p.m. to 7:00 a.m.) flights per day were analyzed. Helicopter pad use patterns along with aircraft fleet mix were the major factors used in determining potential noise exposures from flight operations. This is particularly true for Francis E. Warren Air Force Base (F. E. Warren AFB) where the predominant flight track patterns are to the north or to the east. For this analysis, it was assumed that two helicopter pads would be utilized for departure and landing. The north and south pad departures and arrivals were evenly split and the dominant direction of flight is anticipated to be to the

north and east. There are two basic air traffic patterns in the F. E. Warren AFB region correlated with the helicopter pad use. These “flow patterns” and their estimated annual use are depicted below:

North Pad – 50 percent with (50 percent north flow & 50 percent east flow)

South Pad – 50 percent with (50 percent north flow & 50 percent east flow)

The distribution of operations between helicopter pads was determined based on the mission requirements and planned parking locations. Further distributions between day operations and night operations were based on review of WYARNG flying program information and are shown on the attached spreadsheets.

The overall number of operations is listed below:

- Total flying days per year – 288
- Yearly departures – 537
- Yearly arrivals – 540
- Daily departures – 1.85
- Daily arrivals – 1.69
- Nightly departures – 0.01
- Nightly arrivals – 0.18

WY AASF FLIGHT INFORMATION
April 2005 to March 2006

UH60 TAKE-OFF AND LANDINGS

Month	Prior to 10:00PM		After 10:00PM	
	Take-offs	Landings	Take-offs	Landings
January	55	56	0	0
February	36	35	0	2
March	26	26	0	0
April	50	41	1	11
May	75	65	0	13
June	72	65	0	3
July	34	30	2	9
August	39	29	1	9
September	26	26	0	0
October	26	20	0	5
November	46	46	0	1
December	48	48	0	0
Totals	533	487	4	53
AVG per MO	44	41	0	4

TAXI-TIME

Month	Minutes	
	Take-offs	Landings
January	550	560
February	360	350
March	260	260
April	500	410
May	750	650
June	720	650
July	340	300
August	390	290
September	260	260
October	260	200
November	460	460
December	480	480
Totals	5330	4870
AVG per MO	444	406

PERSONNEL

Personnel that will travel to AASF:

- Daily: 30 People (Full Time Staff)
- Weekend: 2 Days/Month, 100 People

Engine Runs (In addition to take-off and landings)

Month	Prior to 6:00PM		After 6:00 PM	
	Number	Minutes	Number	Time
January	20	600	0	0
February	20	600	0	0
March	25	750	0	0
April	20	600	0	0
May	20	600	0	0
June	25	750	0	0
July	20	600	0	0
August	20	600	0	0
September	25	750	0	0
October	20	600	0	0
November	20	600	0	0
December	25	750	0	0
Totals	260	7800	0	0
AVG per MO	22	650	0	0

HOVER

Month	Minutes	
	Take-offs	Landings
January	275	280
February	180	185
March	130	130
April	255	260
May	375	390
June	360	340
July	180	195
August	200	190
September	130	130
October	130	125
November	230	235
December	240	240
Totals	2685	2700
AVG per MO	224	225

HIGH HOVER 100'-200'/HOIST OPERATIONS

Month	Minutes
All Prior to 10:00 PM	
January	60
February	60
March	60
April	60
May	60
June	60
July	60
August	60
September	60
October	60
November	60
December	60
Totals	720
AVG per MO	60

Daylight Takeoffs	Monthly Flying Days	Av/Day	Daylight Landings	Av/Day	Night Take offs	Av/Night	Night Landings	Av/Night	
J	55	24		56					
F	36	24		35				2	
M	26	24		26					
A	50	24		41		1		11	
M	75	24		65				13	
J	72	24		65				3	
J	34	24		30		2		9	
A	39	24		29		1		9	
S	26	24		26					
O	26	24		20				5	
N	46	24		46				1	
D	48	24		48					
	533	288	1.850694	487	1.690972	4	0.013889	53	0.184028

North

Dep&Arri= Half

40% Hy/Half LT **0.185069444** 0.740278 **0.338194444** 0.676389 **0.001388889** 0.005556 **0.036805556** 0.073611

East

Dep&Arr= Half

40% Hy/Half LT **0.185069444** 0.740278 **0.338194444** 0.676389 **0.001388889** 0.005556 **0.036805556** 0.073611

West

Dep&Arr= Half

10% Hy/Half LT **0.022208333** 0.185069 **0.084548611** 0.169097 **0.000694444** 0.001389 **0.009201389** 0.018403

South

Dep&Arr= Half

10% Hy/Half LT **0.022208333** 0.185069 **0.084548611** 0.169097 **0.000694444** 0.001389 **0.009201389** 0.018403

Closed Patterns 20% of landings times 3

487 **1.014583333**

53 **0.110417**

Environmental Assessment for the Army Aviation Support Facility and Administrative Support Facility and the Joint Forces Headquarters, Readiness Center, and Field Maintenance Shop at Francis E. Warren Air Force Base, Cheyenne, Wyoming

APPENDIX C

CONSULTATION AND COORDINATION

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15 **APPENDIX C. CONSULTATION AND COORDINATION**

16 This appendix contains the following consultation and coordination letters:

- 17 • Letter sent to the U.S. Fish and Wildlife Service dated April 3, 2006 in
18 compliance with the Endangered Species Act
- 19 • Letter received from the U.S. Fish and Wildlife Service dated May 2, 2006
20 concluding that it is unlikely that the project would affect any threatened,
21 endangered, candidate, or proposed species
- 22 • Letter received from the Wyoming Game and Fish Department dated April 6,
23 2006
- 24 • Letters sent to the Wyoming State Historic Preservation Officer dated April 6,
25 2006 and May 24, 2006 in conformance with Section 106 of the National Historic
26 Preservation Act
- 27 • Letters sent to the Shoshone and Arapaho Tribes dated April 17, 2006
- 28 • Letter received from the Wyoming State Historic Preservation Officer dated May
29 25, 2006 concurring with the preliminary finding of no effect by the Base Historic
30 Preservation Office
- 31 • Letter received from the U.S. Fish and Wildlife Service dated July 14, 2006



DEPARTMENT OF THE AIR FORCE

90TH SPACE WING (AFSPC)

3 April 2006

Brian Kelly
U.S. Fish and Wildlife Service
5353 Yellowstone Road, Suite 308A
Cheyenne WY 82003

Cathryn Pesenti
90 CES/CEVP
300 Vesle Drive, Suite 600
F. E. Warren AFB WY 82005

Dear Mr. Kelly

In accordance with the most recent Base Realignment and Closure (BRAC) legislation, the Wyoming Army National Guard has been directed to relocate its helicopter operations from the Cheyenne Airport to F. E. Warren Air Force Base. Additionally, the Wyoming Army National Guard has been directed to relocate its headquarters functions to F. E. Warren Air Force Base. Attachment 1 illustrates the preferred and alternative locations being considered.

The preferred location for the new helicopter operations facility is in the extreme northwest corner of the installation (Attachment 2). This location would not adversely impact any known threatened or endangered species, wetlands, or other sensitive species or habitats. An alternative location for this facility is on the south side of the installation, collocated with the existing F. E. Warren Air Force Base helicopter operations (Attachment 3). This location is in fairly close proximity to Crow Creek, Diamond Creek, and the unnamed drainage, all of which support listed species; however, it is unlikely that construction activities in this area would have any direct impacts on these drainages.

Additionally, as part of this BRAC action, the Wyoming Army National Guard will be relocating its headquarters functions to F. E. Warren Air Force Base. The preferred location for the new headquarters facility is on the northeast boundary of the installation, adjacent to the Guard's existing complex on Bishop Boulevard (Attachment 4). This location would not adversely impact any known threatened or endangered species, wetlands, or other sensitive species or habitats. An isolated wetland exists to the south of this site, but would not be disturbed by construction or operation of the facility. Due to the need to incorporate facilities in the Guard's existing complex, the need to provide public access, and the availability of public utilities, no alternative sites have been considered for this facility.

An Environmental Assessment is being prepared that will address these actions and alternatives. According to the BRAC legislation, alternatives are not to consider locations other than F. E. Warren Air Force Base, but may include alternative sites within the boundaries of F. E. Warren Air Force Base. You will be provided with a copy of the Draft Environmental Assessment when it is complete; however, we would appreciate any initial input you may have on these proposed actions and/or alternatives.

If you have any questions or require additional information, please feel free to contact me at (307) 773-5494 or via email at cathryn.pesenti@warren.af.mil.

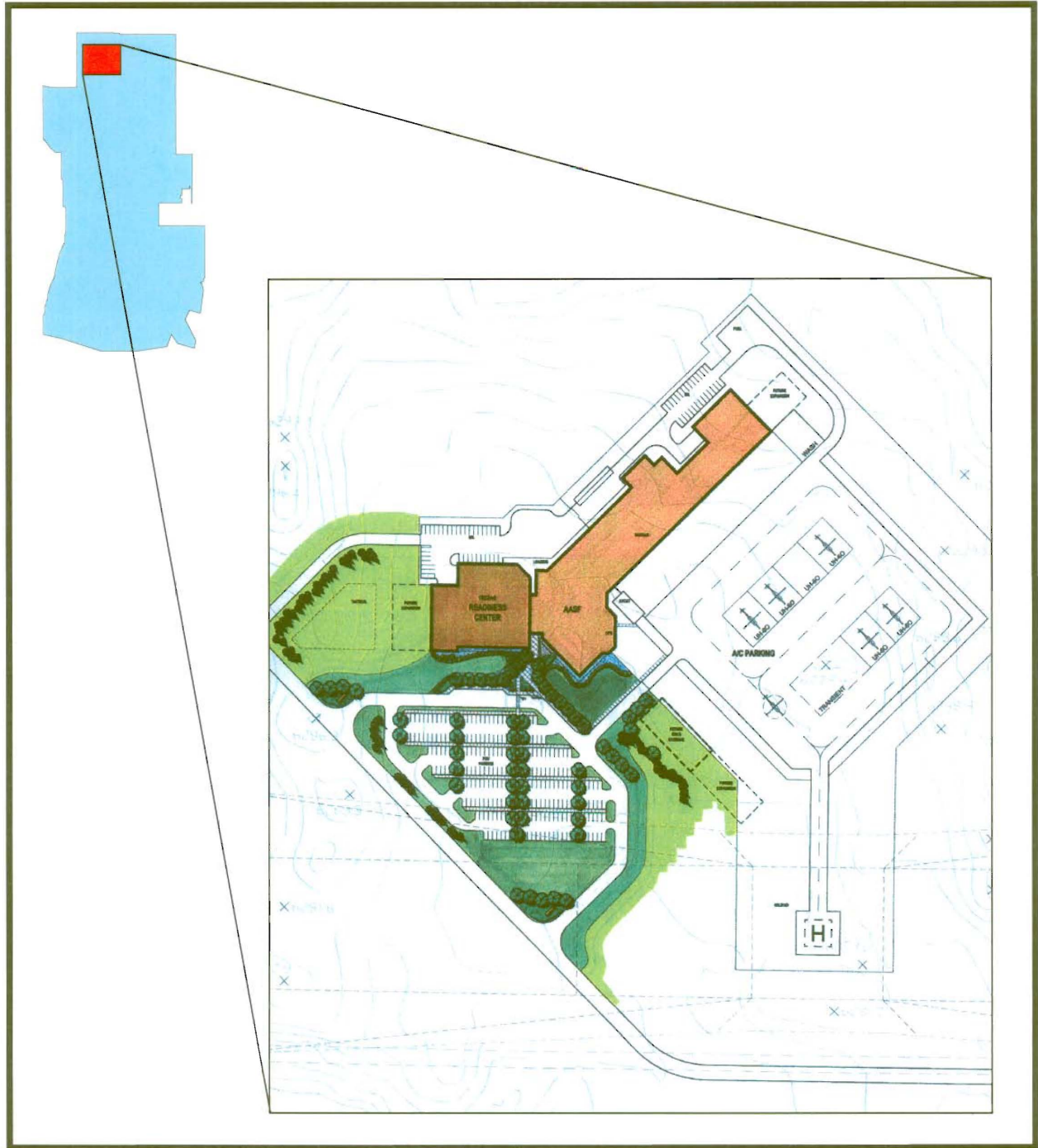
Sincerely

A handwritten signature in black ink that reads "C. Pesenti". The signature is written in a cursive, slightly slanted style.

CATHRYN PESENTI, GS-11, DAF
Natural Resources/NEPA Manager

cc:

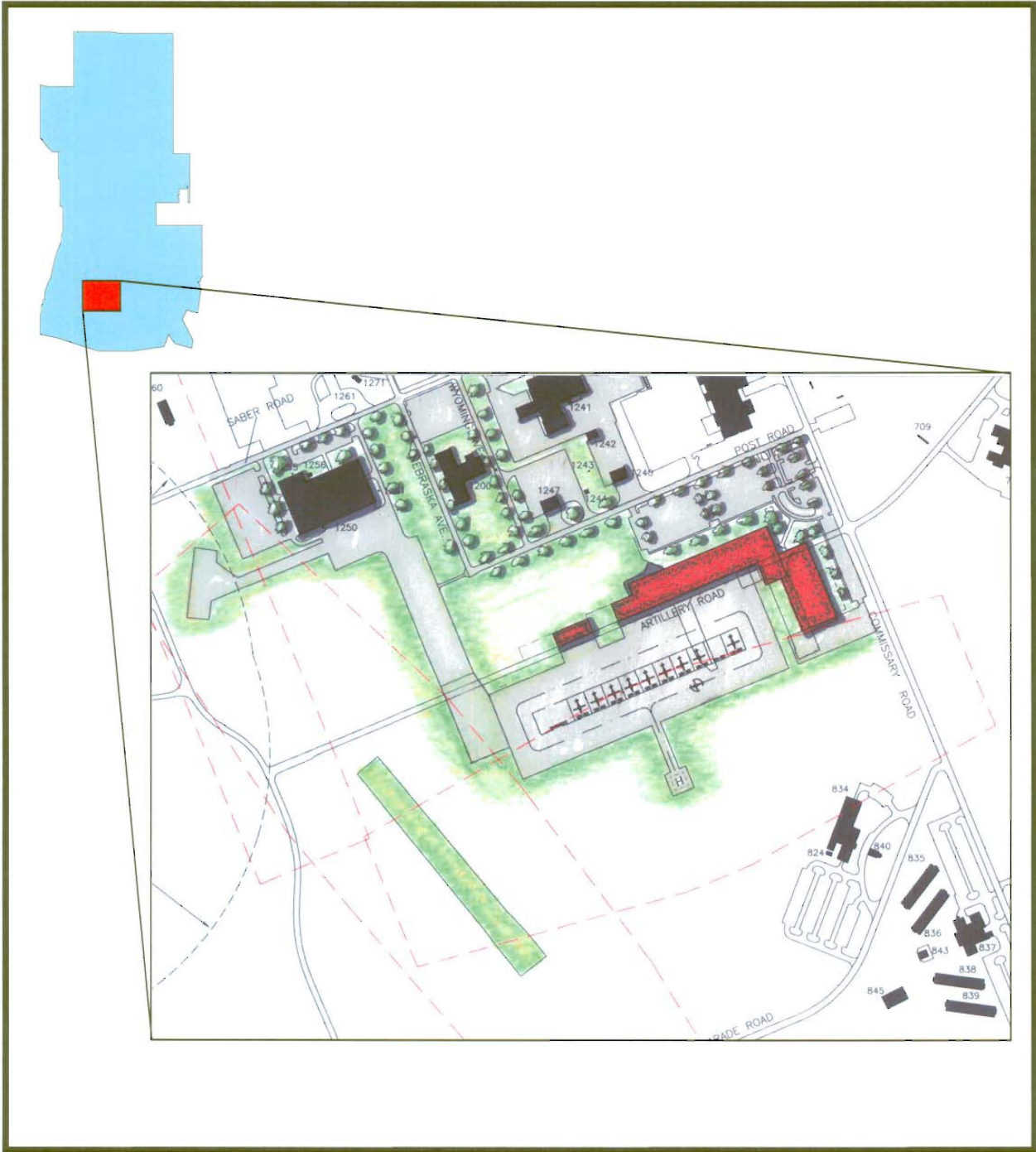
WGFD, Statewide Habitat Protection Coordinator, Cheyenne, WY (V. Stelter)
WGFD, Non-Game Coordinator, Lander, WY (B. Oakleaf)
Wyoming Army National Guard, Cheyenne, WY (S. House)



WYARNG Aviation Support Facility (AASF)

Project # TBD

Francis E. Warren AFB, WY



**Existing 37 HS/ Future Army Aviation
Support Facility**

Francis E. Warren AFB, WY



WYARNG Joint Forces Headquarters (JFHQ)

Project # TBD

Francis E. Warren AFB, WY



United States Department of the Interior

FISH AND WILDLIFE SERVICE

Ecological Services
5353 Yellowstone Road, Suite 308
Cheyenne, Wyoming 82009

In Reply Refer To:
ES-61411/W.10/WY10420

MAY 02 2006

Ms. Cathryn Pesenti
90 CES/CEVP
300 Vesle Drive, Suite 600
F.E. Warren Air Force Base, WY 82005

Dear Ms. Pesenti:

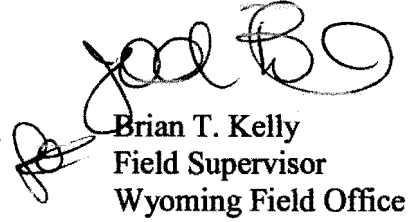
Thank-you for your letter of April 3, 2006, regarding the proposed relocation of the Wyoming Army National Guard helicopter operations and headquarters functions to F.E. Warren Air Force Base (FEWAFB). According to your letter, the preferred location for the new helicopter operations facility is in the northwest corner of FEWAFB, with an alternative location collocated with the existing FEWAFB helicopter operations on the south side of FEWAFB. The preferred location for the new headquarters facility is on the northeast boundary of FEWAFB, adjacent to the Guard's existing complex on Bishop Boulevard. There is no alternative location being considered for the headquarters facility. You have requested comments from the U.S. Fish and Wildlife Service (Service) for use in development of the environmental assessment for the proposed project.

Based on the information provided, the Service concurs with your determination that the proposed action is unlikely to adversely affect any threatened or endangered species. You may consider this project, as proposed, to be in compliance with the Endangered Species Act of 1973 (Act), as amended (16 U.S.C. 1531 *et seq.*). This project should be re-analyzed if new information reveals effects of the action that may affect listed or proposed species or designated or proposed critical habitat in a manner or to an extent not considered in this consultation; if the action is subsequently modified in a manner that causes an effect to a listed or proposed species or designated or proposed critical habitat that was not considered in this consultation; and/or, if a new species is listed or critical habitat is designated that may be affected by this project.

The Service appreciates your ongoing coordination for protecting threatened, endangered, and sensitive species and their habitats on Department of Defense lands in Wyoming. FEWAFB provides important habitat for several species of threatened and endangered species, and the Service commends you for your proactive efforts to conserve these populations. If you have

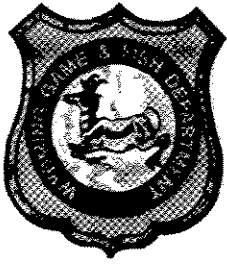
questions regarding our comments or your responsibility under the Act, please contact Mary Jennings of my staff at the letterhead address or phone (307) 772-2374, extension 32.

Sincerely,



Brian T. Kelly
Field Supervisor
Wyoming Field Office

cc: WGFD, Statewide Habitat Protection Coordinator, Cheyenne, WY (V. Stelter)
WGFD, Non-Game Coordinator, Lander, WY (B. Oakleaf)



WYOMING GAME AND FISH DEPARTMENT

5400 Bishop Blvd. Cheyenne, WY 82006

Phone: (307) 777-4600 Fax: (307) 777-4610

Web site: <http://gf.state.wy.us>

GOVERNOR
DAVE FREUDENTHAL

DIRECTOR
TERRY CLEVELAND

COMMISSIONERS
RON LOVERCHECK - President
BILL WILLIAMS, DVM - Vice President
LINDA FLEMING
CLARK ALLAN
JERRY GALLES
CLIFFORD KIRK
KERRY POWERS

April 6, 2006

WER 11422
F.E. Warren Air Force Base
Environmental Assessment
Relocation of Helicopter Operations
Laramie County

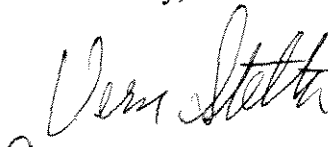
Cathryn Pesenti
90 CES/CEVP
300 Vesle Drive, Suit 600
F.E. Warren AFB, WY 82005

Dear Ms. Pesenti:

The staff of the Wyoming Game and Fish Department has reviewed the Environmental Assessment for the Wyoming Army National Guard to relocate their helicopter operations to F.E. Warren Air Force Base. We have no terrestrial wildlife or aquatic concerns pertaining to this Environmental Assessment.

Thank you for the opportunity to comment.

Sincerely,


BILL WICHERS
DEPUTY DIRECTOR

BW:VS:gfb

cc: USFWS

G D R O b

90 CES/CEV
300 Vesle Drive
F. E. Warren AFB WY 82005

Sara Needles
State Historic Preservation Office
Barrett Building, Third Floor North
2301 Central Ave.
Cheyenne WY 82002

Dear Ms. Needles,

F. E. Warren AFB, in cooperation with the Wyoming Army National Guard, proposes to construct a new helicopter support facility on base. The facility will be located in the northwest corner of the base and consist of helicopter landing strip, and support and maintenance buildings. A new road will be constructed from the present Guard facilities at the intersection of I-25 and Central Avenue to the new facility. The facility will require electric, water and sewer lines which will be located as shown on the attached map.

No NRHP eligible archeological sites will be affected by the project, although the road and waterlines run near several sites. We have established a 100' buffer between the road/utilities and the sites. The two sites northwest of the main facility (48LA71YY and 48LA839) will be fenced.

Site Eligibility:

48LA71YY	Eligibility unknown, will be avoided/fenced.
48LA71ZZ	Only location is known, no site form or report info available, eligibility unknown will be avoided.
48LA71XX	Destroyed in 1987
48LA661	Destroyed in 1987
TT-S-55	Destroyed in 1987
48LA614	Destroyed in 1987
48LA647	Requesting concurrence with determination of non-eligibility.
48LA839	Eligible, will be avoided/fenced.

Five historic ammunition storage buildings (600-604) are located west of the present Guard headquarters, and the new facility will use the present paved road that runs nearby. However, this will have no effect on the buildings.

The new facility cannot be seen from the Historic District and is far enough away that noise is not an issue.

We have determined that this project will have no adverse effect on archeological sites or the Fort D. A. Russell NHL and are requesting your comments pursuant to 36CFR800 and our Programmatic Memorandum of Agreement. If you have any questions, please contact Rick Bryant at 307-773-3667 or via E-mail at richard.bryant@warren.af.mil.

Sincerely

Russell Littlejohn, GS-13
Chief, Environmental Flight

2. Attachment:
1. Site Forms
2. Location Maps

cc:
90 CES/CC
90 CES/CEC



*State of Wyoming Military Department
Wyoming Army National Guard*

**5500 Bishop Boulevard
Cheyenne, Wyoming 82009-3320**

May 24, 2006

Construction & Facilities Management Office
Environmental Management Division

Mrs. Sara Needles
Interim State Historic Preservation Officer
Wyoming State Historic Preservation Office
2301 Central Avenue, Barrett Building 3rd Floor
Cheyenne, WY 82002

RE: F.E. Warren AFB (SHPO File #0406NA011)

Dear Mrs. Needles:

F.E. Warren Air Force Base has consulted with the Wyoming State Historic Preservation Office about a project you reviewed under SHPO #0406NAW011. Some information regarding the description of the proposed action was inadvertently left out of the original letter requesting consultation. Enclosed is a document entitled "Description of the Proposed Action and Alternatives for the Army Aviation Support Facility and Administrative Support Facility and the Joint Forces Headquarters, Readiness Center, and Field Maintenance Shop at Francis E. Warren Air Force Base, Cheyenne, Wyoming" (DOPAA). This document will form part of the Environmental Assessment for the project which is currently in preparation. The Air Force and the Army are working jointly on the EA, although the Air Force is the lead Federal Agency. The project is a result of recommendations provided by the Defense Base Realignment and Closure (BRAC) Commission. The Wyoming Army National Guard will be relocated to these new facilities on F.E. Warren AFB.

The Wyoming Military Department concurs that no historic properties will be affected by the proposed project as described in F.E. Warren's correspondence to the SHPO and in the DOPAA. If you have any questions or need additional information please contact Karen Kempton, Cultural Resources Manager, at 772-5044.

Sincerely,

A handwritten signature in black ink, appearing to read "Samuel E. House".

Samuel E. House
Major, Wyoming Army National Guard
Environmental Programs Manager

Enclosures



DEPARTMENT OF THE AIR FORCE

90TH SPACE WING (AFSPC)

17 Apr 06

90 CES/CEV
300 Vesle Drive
F. E. Warren AFB WY 82005

JoAnne White – Arapaho Tribal Historian
P. O. Box 396
Ft. Washakie WY 82514

Dear Ms. White

F. E. Warren AFB, in cooperation with the Wyoming Army National Guard, proposes to construct a new helicopter support facility on base. The facility will be located in the northwest corner of the base and consist of helicopter landing strip, and support and maintenance buildings. A new road will be constructed from the present Guard facilities at the intersection of I-25 and Central Avenue to the new facility. The facility will require electric, water and sewer lines which will be located as shown on the attached map.

No archeological sites will be affected by the project, although the road and waterlines run near several sites. We have established a minimum 100' buffer between the road/utilities and the sites.

We have determined that this project will have no adverse effect on archeological sites or the Fort D. A. Russell NHL and are requesting your comments pursuant to 36CFR800 and our Programmatic Memorandum of Agreement. If you have any questions, please contact Rick Bryant at 307-773-3667 or via E-mail at richard.bryant@warren.af.mil.

Sincerely

RUSSELL LITTLEJOHN, GS-13
Chief, Environmental Flight

2. Attachments:
1. Site Forms
2. Location Maps

cc:
90 CES/CC
90 CES/CEC



DEPARTMENT OF THE AIR FORCE

90TH SPACE WING (AFSPC)

17 Apr 06

90 CES/CEV
300 Vesle Drive
F. E. Warren AFB WY 82005

Richard Brannan – Chairman, Arapaho Tribe
Attn: Robert Goggles
P. O. Box 396
Ft. Washakie WY 82514

Dear Mr. Brannan

F. E. Warren AFB, in cooperation with the Wyoming Army National Guard, proposes to construct a new helicopter support facility on base. The facility will be located in the northwest corner of the base and consist of helicopter landing strip, and support and maintenance buildings. A new road will be constructed from the present Guard facilities at the intersection of I-25 and Central Avenue to the new facility. The facility will require electric, water and sewer lines which will be located as shown on the attached map.

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Sincerely

RUSSELL LITTLEJOHN, GS-13
Chief, Environmental Flight

2. Attachments:
1. Site Forms
2. Location Maps

cc:
90 CES/CC
90 CES/CEC



DEPARTMENT OF THE AIR FORCE

90TH SPACE WING (AFSPC)

17 Apr 06

90 CES/CEV
300 Vesle Drive
F. E. Warren AFB WY 82005

Robert Goggles – Cultural Representative
P. O. Box 396
Ft. Washakie WY 82514

Dear Mr. Goggles

F. E. Warren AFB, in cooperation with the Wyoming Army National Guard, proposes to construct a new helicopter support facility on base. The facility will be located in the northwest corner of the base and consist of helicopter landing strip, and support and maintenance buildings. A new road will be constructed from the present Guard facilities at the intersection of I-25 and Central Avenue to the new facility. The facility will require electric, water and sewer lines which will be located as shown on the attached map.

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Sincerely

A handwritten signature in black ink, appearing to read "Russell Littlejohn", with a long horizontal stroke extending to the right.

RUSSELL LITTLEJOHN, GS-13
Chief, Environmental Flight

2. Attachments:
1. Site Forms
2. Location Maps

cc:
90 CES/CC
90 CES/CEC



DEPARTMENT OF THE AIR FORCE

90TH SPACE WING (AFSPC)

17 Apr 06

90 CES/CEV
300 Vesle Drive
F. E. Warren AFB WY 82005

Floyd Osborne
P. O. Box 538
Ft. Washakie WY 82514

Dear Mr. Osborne

F. E. Warren AFB, in cooperation with the Wyoming Army National Guard, proposes to construct a new helicopter support facility on base. The facility will be located in the northwest corner of the base and consist of helicopter landing strip, and support and maintenance buildings. A new road will be constructed from the present Guard facilities at the intersection of I-25 and Central Avenue to the new facility. The facility will require electric, water and sewer lines which will be located as shown on the attached map.

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Sincerely

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RUSSELL LITTLEJOHN, GS-13
Chief, Environmental Flight

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90 CES/CEC



DEPARTMENT OF THE AIR FORCE

90TH SPACE WING (AFSPC)

17 Apr 06

90 CES/CEV
300 Vesle Drive
F. E. Warren AFB WY 82005

Ivan Posey – Chairman, Shoshone Tribe
Attn: Floyd Osborne
P. O. Box 538
Ft. Washakie WY 82514

Dear Mr. Osborne

F. E. Warren AFB, in cooperation with the Wyoming Army National Guard, proposes to construct a new helicopter support facility on base. The facility will be located in the northwest corner of the base and consist of helicopter landing strip, and support and maintenance buildings. A new road will be constructed from the present Guard facilities at the intersection of I-25 and Central Avenue to the new facility. The facility will require electric, water and sewer lines which will be located as shown on the attached map.

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Sincerely

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RUSSELL LITTLEJOHN, GS-13
Chief, Environmental Flight

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90 CES/CC
90 CES/CEC

ARTS. PARKS. HISTORY.

Wyoming Department of State Parks and Cultural Resources

WYOMING STATE HISTORIC PRESERVATION OFFICE
BARRETT BUILDING, 2301 CENTRAL AVE, CHEYENNE, WY 82002
(307) 777-7697

May 25, 2006

Major Samuel E. House
Major, Environmental Programs Manager
State of Wyoming Military Department
5500 Bishop Boulevard
Cheyenne, WY 82009-3320

RE: F. E. Warren/BRAC (SHPO File # 0406NAW011)

Dear Major House:

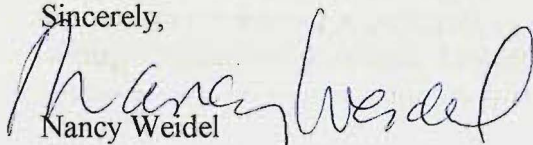
Thank you for consulting with the Wyoming State Historic Preservation Office (SHPO) regarding the above referenced project. We have reviewed the project report and find the documentation meets the Secretary of the Interior's Standards for Archaeology and Historic Preservation (48 FR 44716-42). We concur with your finding that no historic properties, as defined in 36 CFR § 800.16(l)(1), will be affected by the project as planned.

We recommend the project proceed in accordance with state and federal laws subject to the following stipulation:

If any cultural materials are discovered during construction, work in the area shall halt immediately, the federal agency must be contacted, and the materials evaluated by an archaeologist or historian meeting the Secretary of the Interior's Professional Qualification Standards (48 FR 22716, Sept. 1983).

This letter should be retained in your files as documentation of a SHPO concurrence on your finding of no historic properties affected. Please refer to SHPO project #0406NAW011 on any future correspondence regarding this project. If you have any questions, please contact Nancy Weidel at 307-777-3418.

Sincerely,


Nancy Weidel
Historian



Dave Freudenthal, Governor
Phil Noble, Director



United States Department of the Interior

FISH AND WILDLIFE SERVICE

Ecological Services
5353 Yellowstone Road, Suite 308A
Cheyenne, Wyoming 82009

In Reply Refer To:
ES-61411/W.10WY06FA0017

JUL 14 2006

Major Samuel House
Major, Environmental Program Manager
State of Wyoming Military Department
5500 Bishop Boulevard
Cheyenne, WY 82009-3320

Dear Major House:

Thank you for your e-mail of June 11, 2006, received in our office on June 12, regarding the Draft Environmental Assessment for Army Aviation Support Facilities at F.E. Warren Air Force Base. The U.S. Fish and Wildlife Service appreciates the information you have provided. However, at this time we are unable to review your proposed project and provide comments due to our current workload and staffing capabilities. Although we apologize for our inability to assist you at this time, we are hopeful that, in the future, staffing will increase so that we are able to respond to all requests for review of projects. Until such time, we encourage you to continue sending our office information on your proposed projects for our files.

We appreciate your efforts to ensure the conservation of Wyoming's fish and wildlife resources. If you have questions regarding this letter or your responsibilities under the Endangered Species Act of 1973, as amended (Act), 16 U.S.C. 1531 *et seq.*, and/or the Migratory Bird Treaty Act, 16 U.S.C. 703 in particular, please contact our office at the letterhead address or phone (307)772-2374.

Sincerely,

for Brian T. Kelly
Field Supervisor
Wyoming Field Office

cc: WGFD, Non-game Coordinator, Lander, WY (B. Oakleaf)
WGFD, Statewide Habitat Protection Coordinator, Cheyenne, WY (V. Stelter)

Environmental Assessment for the Army Aviation Support Facility and Administrative Support Facility and the Joint Forces Headquarters, Readiness Center, and Field Maintenance Shop at Francis E. Warren Air Force Base, Cheyenne, Wyoming

APPENDIX D

TRAFFIC

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APPENDIX D. TRAFFIC

This appendix provides recent traffic counts for locations near gates at Francis E. Warren Air Force Base (F. E. Warren AFB) and describes the street network on base.

Recent traffic counts have been taken for the streets and intersections near the above-mentioned gates. The counts were conducted by the Cheyenne Metropolitan Planning Organization (MPO) and are listed below in Table D-1.

Table D-1. Traffic Counts near Gates Surrounding F. E. Warren AFB.

Location	Traffic counts in 24-hour period (year)	Closest gate
Randall Avenue west of McComb Avenue	4,815 (2000)	Gate 1
Missile Drive north of I-25	3,800 (2002)	Gate 2
Missile Drive south of I-25	9,261 (2004)	Gate 2
Randall Avenue east of Roundtop Road	4 (2004)	Gate 4
Central Avenue west of Bishop Avenue	4,218 (2006)	Gate 5
Central Avenue west of I-25	6,982 (2003)	Gate 5

Source: Cheyenne MPO 2005b

The street network on F. E. Warren AFB consists of arterials, collectors, and local streets. Main arterials are Artillery Road, Central Avenue, Randall Avenue, Missile Drive, and the northern part of Old Glory Road. Six collectors distribute traffic from the arterials to the local streets: Old Glory Road, Frontier Road, Commissary Road, Rogers Drive, 10th Cavalry, and 15th Cavalry Avenues. The installation has four traffic lights, three on Randall Avenue at Fort Steele Way, Rogers Drive, and Old Glory Road intersections, and one at Old Glory Road and the Missile Drive intersection. Rail crossing signals are found at the Old Glory Road railroad tracks intersection.