

## **SECTION 5 ENVIRONMENTAL CONSEQUENCES**

### **5.1 INTRODUCTION AND APPROACH TO ANALYSIS**

This section of the EA presents an analysis of environmental consequences of the Proposed Action and the No Action alternative. Changes to the natural and human environments that may result from the Proposed Action and the No Action alternative were evaluated relative to the affected environment as described in Section 4. For each environmental component, anticipated effects were assessed, considering the short- and long-term project effects. The potential for significant environmental consequences was evaluated utilizing the context and intensity considerations as defined in CEQ regulations for implementing the procedural provisions of NEPA (40 CFR Part 1508.27), and AR 200-2 (U.S. Army 2002).

The EA addresses only those environmental resources and resource parameters that could potentially be affected by the action or are of public concern. The level of detail applied to each particular resource area is commensurate with the level of importance and concern for that resource and the issues it presents. This EA includes analyses of the following resource areas: land use, air quality, noise, water resources, biological resources, cultural resources, socioeconomics, and hazardous and toxic materials. The Proposed Action has no potential to affect infrastructure at or in the vicinity of the installation. Therefore, descriptions of existing conditions and impacts for infrastructure are not included in the EA.

Many of the goals contained in the INRMP involve natural resources inventory and monitoring, data analysis, information management, natural resource protection measures, and/or program and policy development. Such actions have no potential to result in significant environmental impacts. They are designed to provide long-term benefits to natural resources and can normally be handled as Categorical Exclusions, if necessary, in accordance with AR 200-2 (U.S. Army 2002). Furthermore, the Proposed Action has no potential to affect infrastructure at or in the vicinity of the CSSA. Therefore, descriptions of impacts to infrastructure are not included in the EA.

Subsection 5.2 discusses environmental consequences of the overall management approach; environmental consequences of project-specific goals are discussed in Subsections 5.3 through 5.12 by resource area.

### **5.2 ENVIRONMENTAL CONSEQUENCES OF MANAGEMENT APPROACH**

#### **5.2.1 Proposed Action**

As described in Subsection 2.2, the INRMP would implement a natural resources management approach based on:

- Sustained use of military lands;

- Natural resources stewardship;
- Biodiversity protection; and
- Ecosystem management.

This approach is based on DoD and DA guidance and policies. In addition, this approach conforms to current scientific principles for natural resources management advocated by federal and state resource management agencies, as well as non-governmental organizations and the general public. Implementation of project-specific goals not specifically included in the proposed INRMP, but which are developed in accordance with the overall management approach, would also result in long-term benefits. Consequently, implementation of the proposed management approach would not result in long-term adverse environmental impacts.

### **5.2.2 No Action Alternative**

Under the No Action alternative, the INRMP would not be implemented and natural resources would continue to be managed in accordance with existing directives and procedures. Failure to implement the proposed INRMP would mean that existing management activities would continue. Without an integrated approach to planning, potential land use and management conflicts could occur, especially between military mission needs and ecological management. Benefits associated with the INRMP would not occur under the No Action alternative.

## **5.3 LAND USE**

### **5.3.1 Proposed Action**

The integrated approach to natural resource management, as discussed in the INRMP, would reduce the potential for conflicts with other resource management practices. Land use practices are not expected to significantly change, except for a possible cancellation of grazing rights on CSSA pastures. Vegetation management activities are expected to provide a benefit for the overall land management program at CSSA. Adverse effects to biological resources would occur if vegetation management activities are not scheduled properly. Brush management activities include mechanical removal of Ashe juniper, wood pile burning, prescribed burn operations, and maintenance of fence lines, fuelbreaks, and roads. No significant impacts to land use would occur as a result of the Proposed Action.

### **5.3.2 No Action Alternative**

The No Action alternative would not result in direct changes in land use.

## **5.4 AIR QUALITY**

### **5.4.1 Proposed Action**

Implementation of INRMP goals that involve the use of mechanical grassland equipment has the potential to result in minor, short-term increases in air emissions and dust generation.

Emissions from these and other management activities, such as heavy equipment operation and soil disturbance, were considered to be negligible, and were not included in this analysis.

Increased air emissions would result from prescribed burning, which is proposed as a habitat management practice. Prescribed burning for CSSA would be conducted in low growing oak mottes, in grassland areas, and by burning brush piles as needed. In addition, prescribed burning would not be conducted during the "ozone season" (May through September) and would only be conducted on days with good or better air quality. Special consideration would be given to a neighboring elementary school with regard to scheduling prescribed burns in the North Pasture. The best time to conduct activities in prescribed burn units in the North Pasture would be during the winter vacation period when students are not in school. Particulate matter, CO, and VOCs, primarily methane, are the major pollutants from controlled burning, while NO<sub>x</sub> is emitted at relatively low rates, and sulfur oxide emissions are negligible (USEPA 1973). Potential air quality impacts associated with prescribed burning have been addressed by estimating emissions. Table 5.1 summarizes estimated emissions from prescribed burning under the Proposed Action. The assumptions and methods listed below were used to estimate potential emissions from the Proposed Action.

- Emissions factors based on the average fuel loading value for Texas savannas. The average fuel loading for Texas savannas is 5.2 tons/acre (Allen and Dennis 2000).
- The maximum annual area proposed to be burned at CSSA and which was used to estimate emissions was conservatively estimated at 200 acres.
- Emissions were estimated in accordance with USEPA's procedures for estimating atmospheric emissions from forest fires (USEPA 1973) using the following equation:

$$E_i = P_i LA$$

Where:

$P_i$  = yield for pollutant "i" (mass of pollutant/unit mass of forest fuel consumed), (lbs./ton)  
= 62 lb/ton as particulate matter (PM<sub>10</sub> and PM<sub>2.5</sub>)  
= 1299 lb/ton as carbon monoxide (CO)  
= 62 lb/ton as methane (CH<sub>4</sub>)  
= 4 lb/ton as nitrogen oxides (NO<sub>x</sub>)

(Allen and Dennis 2000)

$L$  = fuel loading consumed, Texas savannas (mass of forest fuel/unit land area burned)  
= 5.2 tons/acre

$A$  = land area burned (acre)

$E_i$  = total emissions of pollutant "i" (mass pollutant), (lbs.)

**Table 5.1 Proposed Action Emissions**

Criteria Air Pollutant	CO (tpy)	VOC (tpy)	NOx (tpy)	PM <sub>10</sub> (tpy)	PM <sub>2.5</sub> (tpy)
AQCR 217 CY99 Totals <sup>a</sup>	8,307	2,058	40,615	6,786	4,364
Maximum Annual Emissions from Prescribed Burning	675.5	32.2	2.1	32.2	32.2
Proposed Action Emissions as Percent of AQCR Emissions	8.13%	1.56 %	0.01%	0.47%	0.74%

a Summarized from USEPA AirData Emissions (AirData 2006).

Note: VOC is not a criteria air pollutant. However, VOC is reported because, as an ozone precursor, it is a controlled pollutant.

Review of data in Table 5.1 indicates that the greatest conservative annual emissions estimate from the Proposed Action prescribed burning activities would be CO (675.5 tpy), which equates to approximately 8 percent of the CO emissions within the AQCR. Emissions in the AQCR fall below the 10 percent of the AQCR 217 emissions inventory. Since Bexar, Comal, and Guadalupe Counties are designated as “basic nonattainment for 8-hour ozone, regional significance and *de minimis* levels for O<sub>3</sub> must be applied. Since the net change in emissions would not exceed the *de minimis* threshold levels for criteria pollutants; a full conformity determination is not required if a federal action meets *de minimis* requirements and is *not* considered a regionally significant action. There would be no significant impact to regional air quality from the Proposed Action.

A prescribed burning plan would be developed prior to conducting burns would include specific smoke management measures to minimize smoke impacts to local communities. In addition, an open burn permit would be obtained and potentially effected residents would be notified prior to conducting the burns. Therefore, off-post smoke impacts are not expected to be significant.

#### 5.4.2 No Action Alternative

Existing air quality within the AQCR would not change under the No Action alternative.

### 5.5 NOISE

#### 5.5.1 Proposed Action

Implementations of the proposed INRMP goals that involve the use of heavy equipment have the potential to result in minor, short-term increases in noise. Goals that could involve using heavy equipment include the following vegetation management projects: management of Ashe juniper, maintenance of fuel breaks, topping of young oak mottes, and modified mowing regimes. These activities would occur infrequently for relatively short periods of time, and the noise would be similar to noise generated by routine activities at CSSA. Therefore, significant increases in noise levels would not occur under the Proposed Action.

### **5.5.2 No Action Alternative**

Existing noise levels at and around the installations would not change under the No Action alternative.

## **5.6 GEOLOGICAL RESOURCES**

### **5.6.1 Proposed Action**

The potential for soil erosion to occur would temporarily increase during implementation of the proposed INRMP goals involving the use of heavy equipment or other ground-disturbing activities. Goals that could involve using heavy equipment include the following vegetation management projects: management of Ashe juniper, maintenance of fuel breaks, topping of young oak mottes, and modified mowing regimes. Best Management Practices (BMP) would be implemented during these projects to ensure that potential short-term impacts are minimized and not significant. The long-term benefits of these projects would also offset any short-term impacts. Therefore, there would be no significant impacts to geologic resources under the Proposed Action.

### **5.6.2 No Action Alternative**

The No Action alternative would have no impact to geologic resources other than that which currently exists.

## **5.7 WATER RESOURCES**

### **5.7.1 Proposed Action**

The proposed INRMP recommends measures that have the potential to significantly improve water quality at CSSA. These include riparian planting, erosion and sediment control, wetlands protections, and most notably, vegetation management activities.

Riparian management includes protection measures consistent with wetlands management practices at CSSA, and would include outplanting of woody species typical of Edwards Plateau riparian corridors. These woody species would include cottonwood, sugarberry, sycamore, cedar elm, river walnut, pecan, and hickory, and they would be planted at varying distances from the creek centerline.

Potential erosion and sediment control issues at CSSA would primarily be related to future construction activities. The BMPs, included in Appendix F of the proposed INRMP, discuss uses of temporary vegetation, blankets and matting, mulch and sod, interceptor swales, various berms, and silt fences during construction activities. Site-specific burn plans would address post-burn erosion concerns. The potential for soil erosion to occur would temporarily increase during implementation of INRMP goals that involve the use of heavy equipment or other ground-disturbing activities. Specific BMPs would be implemented during these projects to ensure that potential short-term impacts are minimized and not significant. Project-specific

BMPs would include buffering around karst features at CSSA. Long-term benefits of the Proposed Action would offset any potential short-term impacts.

Based on the 1995 and 1996 wetlands survey results, four jurisdictional wetlands totaling 1.1 acres, and seven non-jurisdictional wetlands totaling 3.2 acres, occur on CSSA. Wetlands delineations are considered valid by the U.S. Army Corps of Engineers (USACE) for a period of 5 years after the survey. Therefore, new construction projects in drainage areas would require additional wetlands surveys.

As outlined in the proposed INRMP, future construction projects at CSSA would follow USACE permitting procedures for possible future impacts to wetlands. When applying for a permit from USACE for the discharge of dredged or fill material into wetlands and waters of the United States (U.S.), CSSA must consider (1) designing projects that avoid impacts to wetlands, (2) minimizing potential direct and indirect impacts to wetlands, and (3) compensation in the form of wetlands mitigation for unavoidable impacts to wetlands.

Interception of rainfall by Ashe junipers is of ecological concern to water availability within watersheds. Ashe junipers may remove 77 percent of the annual precipitation that reaches the mineral soil, compared to 10.8 percent for shortgrass prairies, 19.1 percent for tallgrass prairies, and 46.1 percent for live oak stands (Thurrow and Hester 1997). Management methods for Ashe juniper at CSSA would include mechanical treatments with hand tools (chainsaws), hydraulic shearing machines (cedar eaters), a prescribed fire program, as well as periodic mowing where prescribed burning is prohibited or not practical.

The Proposed Action has no potential to affect groundwater at CSSA. No significant impacts to water resources at CSSA as a result of the Proposed Action would occur.

### **5.7.2 No Action Alternative**

Current land management activities and strategies associated with water resources would continue if the proposed INRMP was not implemented, and any potentially beneficial impacts to water resources from INRMP implementation would not occur.

## **5.8 BIOLOGICAL RESOURCES**

### **5.8.1 Proposed Action**

The proposed INRMP provides guidance to address long-term viability of vegetation communities, game and non game wildlife, including threatened and endangered species. The proposed INRMP contains provisions for vegetation enhancement to protect habitat and increase biodiversity at CSSA. These projects include vegetation management, prescribed burns, and increasing food plots for supplemental feeding of game species. Major components of the INRMP include stewardship and protection of Golden-cheeked warbler and Black-capped vireo habitat. By developing methods to improve range conditions and increase biodiversity, implementation of the proposed INRMP is expected to have ecological benefits; therefore, no significant impacts would occur.

CSSA is currently in consultation with USFWS Austin Ecological Services Field Office and the USFWS Region 2 office for the development of a 10-year programmatic Biological Opinion (PBO). The PBO will establish annual thresholds of “take” in concert with INRMP projects that are designed to benefit listed species.

### **5.8.2 No Action Alternative**

Current land management activities and strategies associated with biological resources would continue if the proposed INRMP is not implemented. Current compliance levels would be maintained, namely with the ESA; however, any beneficial impact to biological resources would not occur if an integrated approach was not adopted.

## **5.9 CULTURAL RESOURCES**

### **5.9.1 Proposed Action**

Implementation of the Proposed Action has no potential to impact historic architectural resources at the installations. The Proposed Action does not include any activities that would result in ground disturbances at CSSA, with the exception of the potential use of heavy equipment during vegetation management projects.

Potential cultural resources constraints would be evaluated during development of any vegetation management plans to ensure that impacts are avoided. In addition, the National Historic Preservation Act Section 106 consultation process would be initiated during the planning phase for all ground-disturbing activities occurring in areas that have not been previously disturbed. In the case of an inadvertent discovery, the Texas Historical Commission would be contacted. No significant impacts would occur.

### **5.9.2 No Action Alternative**

Cultural resources would not be affected under the No Action alternative.

## **5.10 SOCIOECONOMICS**

### **5.10.1 Proposed Action**

No significant long-term economic changes would occur because the military mission and number of personnel working at the installations would not change. The majority of the proposed INRMP activities would occur within the installation boundaries. Therefore, the potential to affect minority or low-income citizens or children would be minimal. Implementation of prescribed burning at CSSA under Land and Watershed Management projects would generate smoke that has potential to travel off-post to surrounding residential communities. The prescribed burning plan that would be developed prior to conducting burns would include specific smoke management measures to minimize smoke impacts to local communities. In addition, an open burn permit would be obtained and potentially effected residents would be notified prior to conducting the burns. Therefore, off-post smoke impacts are not expected to be significant.

The socioeconomic data presented in Table 4.4 indicate that minority or low-income citizens would not be disproportionately impacted by the Proposed Action. Boerne and Fair Oaks Ranch City have a lower proportion of minorities compared to Bexar County. In addition, per capita income is higher in Boerne and Fair Oaks Ranch City when compared to Bexar County. No significant impacts would occur.

### **5.10.2 No Action Alternative**

Existing socioeconomic conditions would not change under the No Action alternative.

## **5.11 HAZARDOUS AND TOXIC MATERIALS**

### **5.11.1 Proposed Action**

The Proposed Action would include chemical treatment for fire ant control, using pesticides such as hyramethylon (Amdro), fenoxycarb (Award), acephate (Orthene), and chlorophyriphos (Dursban). Areas that are hunted and the game consumed would be considered agricultural areas (Drees 2002), and only pesticides certified for agricultural areas would be used. Chemical treatment for fire ants in a wildlife habitat would only be considered for areas that have an excess of 20 fire ant mounds per acre. Pesticides used for fire ant control would be used according to guidelines presented in the CSSA Pest Management Plan, and would be used outside established karst buffer zones.. Therefore, no significant impacts would occur.

### **5.11.2 No Action Alternative**

Existing conditions for hazardous and toxic materials would not change under the No Action alternative.

## **5.12 MITIGATION MEASURES**

Mitigation generally includes avoiding an effect altogether by stopping or modifying an action, minimizing an effect by limiting the degree or magnitude of an action and the activities associated with its implementation, and rectifying an effect by repairing, rehabilitating, or restoring the affected environment. Mitigation may also involve reducing or eliminating an effect over time by preservation and maintenance operations during the life of an action or compensating for an effect by replacing or providing substitute resources or environments.

General and project-specific actions that would effectively avoid or significantly reduce potential impacts to various resources have been identified in the proposed INRMP and this EA. As discussed in Subsection 5.9, Section 106 consultation would be initiated prior to implementing selected activities that would result in ground disturbances (e.g., vegetation management projects). The EA has not identified significant impacts, and it is CSSA's policy to avoid significant impacts to resources, thereby eliminating the need for additional mitigation measures.

### **5.13 CUMULATIVE IMPACTS**

A cumulative impact is that which could result from incremental effects of the Proposed Action when added to other past, present, and planned actions. The Proposed Action would not contribute to adverse environmental impacts at or in the vicinity of CSSA. Rather, implementation of the Proposed Action would provide cumulative benefits to local and regional natural resources. Integration of the proposed INRMP with mission planning, land use planning, and other CSSA environmental programs, would help to ensure that cumulative impacts would not occur and that benefits are maximized.