

4.9 CULTURAL RESOURCES

This section of the LEIS describes the potential impacts to cultural resources on McGregor Range from each alternative. Section 4.9.1 describes the impact assessment process for archaeological resources, architectural resources, TCPs, and historic landscapes. Section 4.9.2 discusses the types and sources of potential impacts common to all six alternatives. Sections 4.9.3 through 4.9.8 examine specific impacts under each of the alternatives. Impacts to cultural resources on withdrawn lands are similar to those described for Alternative 1, while impacts to cultural resources on lands returned to the public domain under Alternatives 2, 3, 4, and 6 are similar to Alternative 5. Section 4.9.9 describes cumulative impacts that would occur when nonmilitary uses, such as grazing, mineral development, and recreation, are considered in addition to impacts from military uses on the withdrawn area of McGregor Range.

4.9.1 Impact Assessment Process

Impacts to cultural resources are typically assessed by (1) identifying the nature and location of all elements of the proposed action and alternatives; (2) comparing those locations with identified cultural resources, sensitive areas, and surveyed locations; (3) determining the known or potential significance of cultural resources that could be affected; and (4) assessing the extent and intensity of the effects.

The impact assessment process for cultural resources centers on the concept of significance. Various federal laws and regulations, including the NHPA, ensure consideration of cultural resources that are significant. In addition, AR 200-4 integrates compliance with all laws and regulations associated with cultural resources management. A summary of NRHP eligibility for archaeological and architectural cultural resources in the areas affected by the proposed action was presented in Section 3.9.

For this LEIS, impact analysis for cultural resources uses guidelines and standards set forth in the Section 106 process defined under the NHPA, and cultural resource management procedures at Fort Bliss. The Section 106 process requires identifying significant cultural resources potentially affected by a federal undertaking; determining the effect of that undertaking; and implementing measures to avoid, reduce, or otherwise mitigate those effects.

An action results in adverse effects to a cultural resource eligible for nomination to the NRHP when it alters the resource's characteristics, including relevant features of its environment or use, in such a way that it no longer qualifies for inclusion in the NRHP (36 CFR 800.9[b]). Potential adverse effects could include the following:

- Physical destruction, damage, or alteration of all or part of the property;
- Isolation of the property from, or alteration of the character of, the property's setting, when that character contributes to the property's qualification for the NRHP;
- Introduction of visual, audible, or atmospheric elements that are out of character with the property or alter its setting if setting is integral to the property's significance;
- Neglect of a property resulting in its deterioration or destruction; and
- Transfer, lease, or sale of the property if this alters land use or protection for a resource.

4.9.2 General Sources of Impacts

Potential impacts to NRHP-eligible archaeological and architectural resources, TCPs, and historic landscapes on McGregor Range can be categorized according to the source of the impact. Potential sources of impacts considered for this LEIS are:

- Ground disturbance resulting from:
 - Military actions (e.g., construction, operation, and maintenance of facilities) and
 - Nonmilitary actions (e.g., grazing, recreation, and mineral exploration are presented as incremental impacts contributing to cumulative impacts in Section 4.9.9);
- Alteration or demolition of buildings, structures, or facilities;
- Noise, vibration, and visual impacts resulting from military and nonmilitary construction, operations, or maintenance;
- Access-related impacts resulting in increased vandalism and unintentional damage due to improved public access; and
- Changes in land status that result in reduced legal or *de facto* protection for significant cultural resources.

4.9.2.1 Ground Disturbance

Ground-disturbing activities on McGregor Range could potentially impact any class of cultural resources. Because integrity is key for determining a cultural resource's eligibility for nomination to the NRHP, ground disturbance is a particularly important impact. Ground disturbance can cause direct effects to cultural resources such as breakage or other damage to artifacts and features, or can disturb their physical integrity by moving them from their original location. Ground disturbance can reduce the integrity of a cultural resource by affecting its ability to convey significant scientific information. Ground disturbance can also result in indirect effects. For example, erosion caused by vehicle tracks could result in damage to a cultural resource not directly affected by the vehicle.

Activities that could result in ground disturbance include: construction, maintenance and operation of facilities, vehicle maneuvers and associated activities; missile testing, targeting, and training; use of drop zones; small arms, gunnery and artillery activities; ordnance delivery; and firefighting. These potentially ground-disturbing activities are generally limited to clearly defined areas. For example, ordnance delivery only occurs on a target; off-road vehicle maneuvers occur on approved terrain in specific locations such as TA 8 in the southern part of McGregor Range.

Construction, Operations, and Maintenance. Military activities associated with construction, operation, and maintenance of training areas, ranges, and facilities may include excavating, grading, scraping, brush clearing, filling, plowing, trenching, and tunneling. Such activities at the location of a cultural resource have the potential to significantly impact it.

Vehicle Maneuvers and Associated Activities. Tracked vehicles, wheeled vehicles, foot traffic, trenches, trash disposal pits, and bulldozed tank emplacements have the potential to adversely affect cultural resources through ground disturbance. The Fort Bliss cultural resource database indicates that many prehistoric archaeological sites on McGregor Range have observable impacts from wheeled and tracked vehicles.

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Missile Testing, Targeting, and Training. Missile training and testing constitutes a part of the activities undertaken on McGregor Range. Although the impact of missile fragments and target drone debris falling to the ground has the potential to impact of cultural resources, the fragments are generally small and are unlikely to cause damage. Infrequently, larger fragments, intact missiles, or target drones have fallen on archaeological sites (Beckes et al., 1977), but this is rare due to the infrequency of missile fragments and drone debris of this size.

Use of Drop Zones. Several small drop and landing zones are on McGregor Range. No specific observations relating to impacts to cultural resources are available.

Small Arms, Gunnery, and Artillery Use. Cultural resources within the firing arc of small arms, gunnery, and artillery can be disturbed (Beckes et al., 1977; Ludowski and Mauldin, 1995). The extent of the disturbance depends on the concentration over time and on actions associated with the EOD process.

Ordnance Delivery. Repeated ordnance delivery can cause considerable ground disturbance but is typically concentrated near targets. Observations made at other desert ranges in the western U.S. using nonexplosive ordnance (Peter, 1988) indicate that the greatest amount of damage occurs within 300 feet of a target (or in an area of about 6.5 acres). Less damage occurs between 300 and 1,000 feet of a target (i.e., in an area smaller than 75 acres). Although the impact of missile fragments and target drone debris has a small potential to cause ground disturbance and to damage cultural resources, such damage is unlikely. Only sporadic instances of ground disturbance were observed in the study more than 1,000 feet from a target. Larger fragments or intact missiles and target drones can fall on archaeological sites (Beckes et al., 1977), but such occurrences are infrequent. A small area in the northern portion of McGregor Range is used as a Class C bombing target range. The only ordnance used on this range is inert and weighs 25 pounds. Inert ordnance of this size can cause about 4 square feet of damage to the ground. Similarly, ordnance delivery at the USAF tactical target complex would result in ground disturbance. Inert/subscale ordnance will be used in this training (USAF, 1998).

Firefighting. Fires could occur from missile firings, other military activities, and the use of inert ordnance and flares at the USAF tactical target complex to be constructed but there is a low probability of occurrence. Such fires would not be expected to damage archaeological sites or artifacts. Architectural resources such as historic ranch buildings and features on McGregor Range could potentially be damaged by fire either from natural or man's activities. Thirty-eight fires occurred throughout the Fort Bliss Training Complex, including McGregor Range, from 1982 to 1996. Seven fires were categorized by the BLM as man-made; the other 31 were from natural causes (BLM, 1998).

The effect of fire on archaeological resources is generally minor. However, the effect of necessary and unavoidable fire suppression activities can be more damaging. In particular, the bulldozing of fire lines can cause significant impacts to archaeological resources. Other fire fighting activities such as the use of flame-retardant chemicals have the potential to alter or destroy archaeological residues such as charcoal, pollen, and food residues. Slurry drops by fire bombers can harm rock art sites (Marshall, 1998).

4.9.2.2 Noise, Vibrations, and Visual Intrusions

Vibration effects to cultural resources on McGregor Range can originate from a variety of sources, including ground sources such as construction and blasting, as well as military overflights. McGregor Range is currently overflowed by military aircraft, but overflights are infrequent and generally at a high altitude. No supersonic flights are permitted over McGregor Range.

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Archaeological resources are unlikely to experience adverse effects from aircraft overflight on McGregor Range. No data exist that would indicate that surface artifact scatters and subsurface archaeological deposits are affected by vibrations resulting from subsonic aircraft overflight.

Architectural resources can be susceptible to impacts from vibrations, depending on a number of factors (cf. King, 1987; Konon and Schuring, 1985; Nichols et al., 1971; Richart and Woods, 1970; Siskind et al., 1980). Studies have established that subsonic noise-related vibration damage to structures, even historic buildings, requires high decibel levels generated at close proximity to the structure and in a low frequency range (USFS, 1992; cf. Battis, 1983, 1988; cf. Sutherland, 1990). Aircraft must generate at least 120 dB at a distance of no more than 150 feet to potentially result in structural damage (Battis, 1988) and, even at 130 dB, structural damage is unlikely.

Studies conducted by the USAF at a prehistoric standing adobe structural remnant in Arizona evaluated the impact of low-level subsonic, B-52, and fighter aircraft overflights of the area. This study concluded that such overflights had no adverse effect (Battis, 1988). The probability of vibration damage to buildings from low-level subsonic airplane flights is very low (less than 0.3 percent). This probability applies even to fragile, poorly constructed wood-frame buildings. Vibration studies at the adobe and beam museum building at White Sands National Monument indicate that “the general continuous induced vibrations from highway traffic and jet aircraft in the normal takeoff pattern are probably causing no detrimental structural effects to the building” (King et al, 1988).

Although noise and vibrations from helicopters can be 30 to 40 times higher than ambient levels, as compared to a high of 60 times ambient for low-flying jet aircraft (King et al., 1988), the duration of noise and vibration is considerably longer from helicopter overflight. Close approach helicopter flights have been demonstrated to damage archaeological architectural structures (USAF, 1992). Similarly, low overflights (50 feet) by heavy helicopters have a high probability of damaging architectural resources (Sutherland, 1990).

The effects of noise and visual intrusions on cultural resources may also be related to setting. Noise that affects setting may be caused by construction and maintenance, machines, and aircraft. To be adversely affected, the setting of a cultural resource must be an integral part of the characteristics that qualify that resource for listing in, or eligibility for, the NRHP. Because of modern development, this is often not the case for significant cultural resources. Even in rural areas, noise intrusions from vehicles and machinery can create a noise environment inconsistent with the original setting of the cultural resources. If, however, the audible and visible aspects of the setting are fundamental to the resource’s significance, audible or visual intrusions sufficient to alter the setting can adversely affect the cultural resource. The nature and magnitude of the impacts depend upon the characteristics of the affected cultural resource, the amount by which the sound level exceeds baseline levels, the other types of noise sources in the vicinity of the cultural resource, and the frequency with which people visit the resource.

The setting of TCPs can be impacted by audible intrusions. For example, traditional ceremonies and rituals by Native Americans may depend in part on isolation, solitude, or silence. An aircraft flying overhead, even at high altitudes, could be deemed an auditory or visual intrusion if it occurs during a ceremony or at another inappropriate time.

Visual impacts may be of less importance to resources whose NRHP eligibility rests primarily on their scientific importance, such as archaeological sites. However, for cultural resources where integrity of setting is an important significance criterion, such as TCPs and historic landscapes, changes in setting can affect the resource’s NRHP eligibility. Actions that could potentially impact a resource’s setting include: the addition of new roads, buildings, or features; removal of fences and other features; changes in native

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vegetation; or changes in land use out of character with traditional military and nonmilitary uses of McGregor Range.

4.9.2.3 Access

Improved ground access to cultural resources can result in impacts such as vandalism. Vandalism often affects the types of cultural resources (e.g., historic buildings, large pueblos, rock shelters, or rock art) most likely to be determined eligible for listing on the NRHP because these are typically the most visible. When these resources are located near roads, they become even more vulnerable to vandalism. A study of vandalism on federal lands in southwestern Colorado, for example, found that ease of access was one of the major factors contributing to vandalism. Cultural resources located within a quarter mile of roads suitable for two wheel drive were most heavily impacted (Nickens et al., 1981).

Unauthorized excavation and artifact theft, defacement, and illegal ORV use, are the most destructive adverse impacts linked to ground access. In addition, architectural resources (e.g. historic buildings and structures) can be impacted by use as campsites (increasing fire danger), trash accumulation, and salvage of materials from the structure. The Fort Bliss cultural resource database indicates that more than 40 cultural resources on McGregor Range have observable vandalism. Some of the sites, such as Escondido Pueblo, have been extensively vandalized (Beckes et al., 1977).

4.9.2.4 Land Status

If a historic property (i.e., a NRHP-eligible archaeological, architectural, traditional, or landscape cultural resource) is transferred from one federal agency to another the resource is still managed under NHPA and other applicable federal laws. The receiving agency then becomes responsible for compliance. While a land status change does not, itself, affect impacts, it can lead to changes in the numbers and kinds of impacts to historic properties as land use and management change under the receiving agency. For example, military impacts could be replaced by impacts from mining or recreation.

4.9.3 Alternative 1

Under Alternative 1, the current boundaries of McGregor Range would remain the same. Use of the range could either continue at its current levels, or could include additional uses or increased use levels as range capabilities are more fully utilized (see Section 2.1.1, *Military Activities on Withdrawn Lands*). Current range activities include:

- Short-range and medium- and high-altitude missile firing;
- Annual Roving Sands combined forces exercises;
- Annual live FIREX for Hawk, Patriot, Stinger, and Roland missiles;
- Helicopter gunnery and Hellfire training; NOE tactical training;
- Laser operations;
- Fixed-wing aircraft bombing practice at Class C Range;
- Airborne personnel, equipment drops, and Special Operations Force ground troop maneuvers;
- Small arms training at Meyer Range Complex; and
- Limited tracked vehicle operations in southern-most portion of McGregor Range.

Future activities, as outlined in Section 2, might include:

- Designation of additional FTX sites;
- Addition of heavy brigade for training;

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- Construction of a geothermal facility;
- Construction of an USAF tactical training complex on Otero Mesa;
- Construction of a MOUT training complex;
- Additional facilities at McGregor Range Camp;
- Additional facilities at Meyer Range;
- Road upgrades and improvement;
- Increased missile firings;
- TBM and/or ATACMS firing; and
- Increased use of, and additional facilities at the Cane Cholla and Hellfire training areas.

Future activities would be concentrated in the Tularosa Basin portion of McGregor Range, with some activities extending onto Otero Mesa and north of New Mexico Highway 506.

The USAF tactical target complex to be constructed on McGregor Range could result in disturbance to cultural resources on Otero Mesa.

At the tactical target complex location, construction or ordnance delivery could occur in areas where there are archaeological resources. There are nine archaeological sites within this location that are either eligible for listing on the NRHP or have undetermined eligibility. In all cases, as part of the Section 106 compliance process, measures would be implemented to avoid, reduce, or eliminate potential impacts to those archaeological resources that are determined eligible for listing on the NRHP. Under an MOA being developed by HAFB, Fort Bliss, the New Mexico SHPO, and the Advisory Council on Historic Preservation (ACHP), the USAF would formally evaluate all archaeological sites within the selected area for NRHP eligibility.

4.9.3.1 Archaeological Resources

More than 3,600 archaeological resources (both historic and prehistoric) have been identified on McGregor Range. Of these, 94 have been evaluated as eligible for the NRHP; 189 have been evaluated as not eligible for the NRHP; and 3,396 have not been evaluated for NRHP eligibility. Potential impacts to NRHP-eligible archaeological resources could occur from ground disturbance and access.

Ground Disturbance. Approximately 900 of the prehistoric sites on McGregor Range have been evaluated by recorders for degree and source of disturbance. Sites have been or could be impacted by current or future military activities such as the establishment of additional controlled access FTX locations on McGregor Range. Training activities on additional controlled access FTX sites would be concentrated, and have the potential to impact archaeological resources through ground disturbing activities (mainly relating to target acquisition), communication, and command and control activities. These activities could result in direct impacts to cultural resources, or could lead to impacts through accelerated erosion. Site-specific NEPA documentation is required prior to establishment of FTX locations.

Noise, Vibration, and Visual Impacts. Archaeological resources are unlikely to experience adverse effects from aircraft overflight on McGregor Range. No data exist that would indicate that surface artifact scatters and subsurface archaeological deposits are affected by vibrations resulting from subsonic aircraft overflight. Impacts to resource setting by noise or visual intrusion could result from training activities, military construction, and aircraft and helicopter overflights. However, setting is not a critical component of any known archaeological resource on McGregor Range, making impacts to archaeological resources unlikely.

Access. Although general access to the range would not change, there is currently public access to more than 38 percent of McGregor Range. Ongoing access could be a source of impacts to archaeological

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resources, especially near roads. Vandalism has been noted on about 5 percent (approximately 45) of the cultural resource sites on McGregor Range. However, existing limitations to public access to the range reduce the likelihood of increasing impacts from access.

Land Status. No changes in land status are expected to occur under this alternative. Management of the land would continue as it presently exists. Therefore, no impacts to archaeological resources are expected to occur from this source.

4.9.3.2 Architectural Resources

More than 200 architectural resources, both historic and Cold War-era, have been identified on McGregor Range. Under Alternative 1, architectural resources potentially could experience impacts from ground disturbance, noise/vibration, and access.

Ground Disturbance. The possible construction of additional facilities at both Meyer Range and McGregor Range Camp has the potential to impact architectural structures relating to the Cold War. More than 150 Cold War-era structures are present at the McGregor Range Camp. At present none of these has been evaluated for NRHP significance. Meyer Range includes some 28 Cold War-era structures, none of which has been evaluated for NRHP significance. Compliance with Section 106 of NHPA would take place before facilities construction would begin.

Noise, Vibration, and Visual Impacts. Impacts to architectural resources by brief and short-lived noise and vibration or by visual intrusion could potentially result from training activities, military construction, or aircraft overflights on McGregor Range. As discussed in Section 4.9.2.2, vibration from aircraft overflight has the potential to impact architectural resources when it consists of high decibel levels at close proximity to the structure and in a low frequency. However, given the present and projected frequency of overflights on McGregor Range, it is unlikely that significant historic structures would be impacted. Because setting is not a critical component of any known architectural resources on McGregor Range, impacts to the setting of architectural resources from noise or visual intrusions is unlikely.

Access. Many of the architectural resources on McGregor Range are located adjacent to, or near, an existing road, increasing the likelihood of vandalism. The public currently has access to more than one third of McGregor Range, including some rural architectural resources. However, existing limitations to public access to the range reduce the likelihood of increasing impacts from access.

Land Status. No changes in land status are expected to occur under this alternative. Management of the land would continue as it presently exists. Therefore, no impacts to architectural resources are expected to occur from this source.

4.9.3.3 Traditional Cultural Properties

Although no TCPs have been identified on McGregor Range, their existence is not precluded. Some prehistoric archaeological sites could potentially be viewed as TCPs by the Mescalero Apache, Tigua, and possibly the Comanche or Kiowa. TCPs were suggested in a letter from the Mescalero Apache to the USAF (USAF, 1998). Under Alternative 1, TCPs could potentially be impacted by ground disturbance, noise, visual setting, or access.

Ground Disturbance. TCPs, if identified, could potentially be impacted by military activities when they result in ground disturbance (refer to Section 4.9.4.1). Ground disturbance from these sources could result in direct impacts to traditional properties, or lead to impacts through accelerated erosion.

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Noise, Vibration, and Visual Impacts. Impacts to the setting of TCPs, if identified, by noise or visual intrusion could result from training activities, military construction, and aircraft and helicopter overflights on McGregor Range. For example, audible or visual intrusions could have potentially adverse impacts to the setting of a traditional ceremony or ritual that depends on isolation, solitude, or silence. An aircraft flying overhead, even at high altitudes, could be deemed an auditory or visual intrusion if it occurs during a ceremony or at another inappropriate time. The setting of a TCP could also potentially be impacted by limited recreational noise. However, no TCPs have been identified on McGregor Range.

Access. Access to potential traditional cultural resource locations by road could result in impacts from unauthorized off-road activities by military users. Improved local public access, through improvement of an access road to the USAF tactical target complex, will be offset by construction of a barbed wire fence around the impact area. This would be likely to discourage an increase in vandalism to cultural resources. However, existing limitations on public access to the range reduce the likelihood of increasing impacts.

Land Status. No changes in land status are expected to occur under this alternative. Management of the land would continue as it presently exists. Therefore, no impacts to potential TCPs are expected to occur from this source.

4.9.3.4 Historic Landscapes

McGregor Range has the potential for the presence of historic rural or military landscapes. Under Alternative 1, a NRHP-eligible historic landscape potentially could be impacted by ground disturbance, noise/vibration, visual impacts, and access. Continuing or compatible land uses and activities may not be considered impacts to a historic landscape if the general character and feeling of the historic period is retained during the maintenance and repair of landscape features.

Ground Disturbance. Existing and future use of McGregor Range could impact architectural, archaeological, or topographic components of NRHP-eligible historic landscapes through demolition, construction, road building, or other military activities. Potential impacts to archaeological and architectural components of a landscape would be similar to those described in Sections 4.9.4.1 and 4.9.4.2. Activities that significantly change the terrain could also impact the setting of a historic landscape.

Noise, Vibration, and Visual Impacts. An identified rural historic or military landscape could have as part of its setting the existing noise, vibration, and view shed conditions of McGregor Range. If these conditions are present at the time the landscape is evaluated, they might not be considered an impact to the landscape. However, potential future increases in levels of activity producing increased noise/vibrations or changes in the visual setting, such as new construction out of character with the historic environment, could impact a NRHP-eligible historic landscape.

Access. On McGregor Range, historic landscape components, such as architectural resources located near an existing road, potentially could be impacted by vandalism. The public currently has access to more than one third of McGregor Range, including some rural architectural resources that could be components of a historic landscape. Existing ground access opportunities at McGregor Range could potentially impact a historic landscape if they lead to vandalism of components of a landscape. However, existing limitations to public access to the range reduce the likelihood of increasing impacts from access.

Land Status. No changes in land status are expected to occur under this alternative. Management of the land would continue as it presently exists. Therefore, no impacts are expected to occur from this source.

4.9.4 Alternative 2

Under Alternative 2, training areas in the Sacramento Mountains foothills would be returned to the public domain. Army in-holdings in TAs 12, 13, 14, and 16 would be retained for specialized training. Grazing would continue on both withdrawn and land returned to the public domain. There would be unrestricted access to 40,000 acres on returned lands for recreation. On the returned lands, exploration for locatable minerals could take place on 29,000 acres (see Alternative 5 and Section 4.9.9, *Cumulative Impacts*). The returned lands would continue to be managed in accordance with the White Sands RMP (BLM, 1986a) as amended by the McGregor Range RMPA. In the areas remaining on McGregor Range, ongoing actions, both military and nonmilitary, would continue.

4.9.4.1 Archaeological Resources

The training lands that would return to the public domain under Alternative 2 include at least 168 known prehistoric and historic archaeological sites. Additional sites, not yet part of the existing database, may exist. Under Alternative 2, archaeological resources on returned lands and on McGregor Range potentially could experience impacts from ground disturbance, access, and changes in land status.

Ground Disturbance. Ground disturbance impacts under Alternative 2 could include military activities described under Alternative 1. However, any ground disturbance attributable to military training activities would no longer be a factor on the lands returned to the public domain. The primary existing military use of the training areas in the returned lands is for SDZ, in which ground impacts have been infrequent.

Potential impacts to archaeological resources on the remaining McGregor Range lands would remain similar to those under Alternative 1. Future actions that could make use of the capabilities of McGregor Range also include possible facilities development. Compliance with Section 106 of NHPA would take place before facilities construction would begin.

Noise, Vibration, and Visual Impacts. Archaeological resources are unlikely to experience adverse effects from aircraft overflight on either the returned lands (Alternative 2 does not include changes to existing military airspace) or on McGregor Range. No data exist that would indicate that surface artifact scatters and subsurface archaeological deposits are affected by vibrations resulting from subsonic aircraft overflight. Impacts to the setting of archaeological resources by noise or visual intrusion could result from training activities, construction, and aircraft overflights. However, setting is not a critical component of any known archaeological resource on either the proposed returned lands or on McGregor Range, making impacts to the setting of archaeological resources unlikely.

Access. Return of lands to the public domain would end all military monitoring and security activities there. Monitoring and enforcement would become the responsibility of the BLM. At present, Fort Bliss limits access to McGregor Range by requiring that all users obtain authorization. Military patrols of McGregor Range currently check users for proper authorization and location within the prescribed use area. Termination of these security measures is likely to result in increased, unmonitored use of the returned lands, including increased access to prehistoric and historic archaeological sites during recreational use or mineral exploration. Increased access could result in increased impacts, both accidental and intentional, to some archaeological resources.

Land Status. Under this alternative the Sacramento Mountains foothills would be returned to the public domain. The lands consist of grazing units 4, 5, 8, and approximately one half of unit 3. Sole management responsibility for archaeological resources on the returned lands would be assumed by the BLM. The BLM has implemented *Cultural Resources Management Plans* and complies with the cultural resource protection laws, including NHPA and associated regulations. Returned lands would be managed

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in accordance with the White Sands RMP, as amended. However, the use levels and activities allowed on the returned lands could change, leading to potentially different impacts to the resources.

4.9.4.2 Architectural Resources

Under Alternative 2, NRHP-eligible architectural resources potentially could be impacted by ground disturbance, noise, vibration, and access and land status issues.

Ground Disturbance. Military activities on the withdrawn land would remain similar to Alternative 1 while military activities would cease on the returned lands.

Noise, Vibration, and Visual Impacts. The likelihood of impacts from noise, vibration, or visual impacts from military aircraft overflights would remain the same on the returned lands as described for Alternative 1 because Alternative 2 does not include changes in airspace use.

Access. Both the returned lands and portions of McGregor Range would continue to be open to the public. However, fewer road closures and less stringent monitoring of returned lands could result in increased public use for recreation and mineral exploration, and potentially increased impacts to rural architectural resources.

Land Status. Impacts to architectural resources would be the same as described as impacts to archaeological resources under this alternative.

4.9.4.3 Traditional Cultural Properties

Although no TCPs have been identified on McGregor Range, including the proposed returned lands, their existence is not precluded, as discussed under Alternative 1. Some prehistoric archaeological sites could potentially be viewed as TCPs by the Mescalero Apache, Tigua, and possibly the Comanche or Kiowa. If TCPs were identified, they could potentially be impacted in by ground disturbance, noise/vibration, visual impacts, and access.

Ground Disturbance. If TCPs are identified on the withdrawn lands, they could be impacted by military activities when these activities result in ground disturbance. Ground disturbance could result in direct impacts to TCPs, or could lead to impacts through accelerated erosion.

Noise, Vibration, and Visual Impacts. Because Alternative 2 does not include airspace changes, impacts to the setting of potential TCPs by military noise, or visual intrusion from aircraft overflights would be similar to those of Alternative 1.

Access. Increased ground access to TCPs, if identified on the returned lands, could make it easier for Native Americans to practice certain traditions.

Land Status. Impacts to TCPs would be the same as described for impacts to archaeological resources under this alternative.

4.9.4.4 Historic Landscapes

McGregor Range has the potential for the presence of historic rural or military landscapes. Under Alternative 2, a NRHP-eligible historic landscape on the returned lands or on McGregor Range could potentially be impacted by ground disturbance, noise/vibration, visual impacts, and changes in access or land status.

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Ground Disturbance. Impacts to a historic landscape would be the same as described under Alternative 1 but would be limited to the lands withdrawn under Alternative 2.

Noise, Vibration, and Visual Impacts. The likelihood of impacts to architectural components of a historic landscape from noise or vibration would be the same on the returned lands as those described for Alternative 1 because Alternative 2 does not include changes in airspace use.

Access. Both the returned lands and portions of McGregor Range would continue to be open to the public. However, fewer road closures and less stringent monitoring of returned lands could result in increased public use for recreation and mineral exploration, and potentially increased impacts to rural architectural resources in a historic landscape.

Land Status. Impacts to a historic landscape would be the same as described for impacts to archaeological resources under this alternative.

4.9.5 Alternative 3

Under Alternative 3, training areas in the Sacramento Mountains foothills and Otero Mesa would be returned to the public domain. On the withdrawn lands, military activities would be further constrained from Alternative 2. Army in-holdings in TAs 12 through 23 would be retained for specialized training. Training use could change in TAs 8 to 12 and 24 to 32 as military uses and exercises are redistributed over the remaining McGregor Range lands.

Grazing would continue on all 271,000 acres currently grazed and there would be unrestricted access to 180,000 acres of returned lands for recreation. Locatable mineral exploration could be permitted on 169,000 acres of returned land. Road closures would be reduced, providing increased access to the Sacramento Mountains foothills, Otero Mesa, and Culp Canyon WSA. No change is proposed for existing restricted airspace. The returned lands would be managed in accordance with the White Sands RMP (BLM, 1986a). Impacts to cultural resources on returned lands would be similar to those described under Alternative 5.

4.9.5.1 Archaeological Resources

The training lands that would return to the public domain under Alternative 3 include at least 255 prehistoric and historic archaeological sites. Additional sites, not yet part of the existing database, may have been recorded under ongoing projects. Alternative 3 could include potential impacts to NRHP-eligible archaeological resources from ground disturbance, access, and changes in land status.

Ground Disturbance. On withdrawn lands, ground disturbance impacts under Alternative 3 could result from military activities as described for Alternative 1. The primary existing military use of the training areas in the Sacramento Mountains foothills and Otero Mesa is for SDZ, in which ground impacts have been infrequent.

Noise, Vibration, and Visual Impacts. Archaeological resources are unlikely to experience adverse effects from aircraft overflight on either the returned lands or on McGregor Range. No data exist that would indicate that surface artifact scatters and subsurface archaeological deposits are affected by vibrations resulting from subsonic aircraft overflight. Impacts to the setting of archaeological resources by noise or visual intrusion on the returned lands could result from aircraft overflights, mineral exploration, or recreation. However, setting is not a critical component of any known archaeological resource on either the proposed returned lands or on McGregor Range, making impacts to the setting of archaeological resources unlikely.

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Access. Return of lands in the Sacramento Mountains foothills and on Otero Mesa to the public domain would result in the termination of all military monitoring and security activities on the returned lands. Potential ground access impacts resulting from recreational and mineral use could increase under Alternative 3, compared to Alternative 2, as the public gains access to larger land parcels. This could provide increased access to prehistoric and historic archaeological sites on the range, potentially resulting in inadvertent damage or vandalism to some cultural resources.

Land Status. Impacts to archaeological resources under Alternative 3 from a land status change would be the same as described under Alternative 2.

4.9.5.2 Architectural Resources

Under Alternative 3, NRHP-eligible architectural resources potentially could be impacted by ground disturbance, noise, vibration, access, and land status issues.

Ground Disturbance. Ground disturbance from military activities on withdrawn lands would be similar to that described under Alternative 1. While military activities would cease on the returned lands, impacts to architectural resources potentially could occur as the result of potential mineral exploration and recreational use compared to Alternative 2. The effects of grazing on resources in the returned lands are likely to remain the same as described for Alternative 5 and under cumulative effects on withdrawn lands.

Noise, Vibration, and Visual Impacts. The likelihood of impacts from noise, vibration, or visual impacts from aircraft overflights would remain the same on the returned lands as described for Alternative 1, because Alternative 3 does not include changes in airspace use. The potential for mineral exploration under Alternative 3 could result in increased noise or vibration impacts to architectural resources on the returned lands compared to Alternative 2.

Access. Both the returned lands and portions of McGregor Range would continue to be open to the public. However, fewer road closures and less stringent monitoring of returned lands could result in increased public use, potentially impacting rural architectural resources. Increased public access could result in increased public use and vandalism in the areas returned to the public domain.

Land Status. Impacts to architectural resources from a land status change would be the same as described under Alternative 2.

4.9.5.3 Traditional Cultural Properties

Although no TCPs have been identified on McGregor Range, including the proposed returned lands, their existence is not precluded, as discussed under Alternative 1. Some prehistoric archaeological sites could potentially be viewed as TCPs by the Mescalero Apache, Tigua, and possibly the Comanche or Kiowa. If TCPs were identified, they could potentially be impacted by ground disturbance, noise, vibration and visual impacts, access, and land status.

Ground Disturbance. Potential military impacts to TCPs, if any are located on withdrawn lands, would remain the same as described under Alternative 1. If TCPs were identified on the returned lands under Alternative 3, they could be impacted by grazing, mineral exploration, or recreation when these activities result in ground disturbance. Ground disturbance could result in direct impacts to TCPs, or could lead to impacts through accelerated erosion.

Noise, Vibration, and Visual Impacts. Because Alternative 3 does not include airspace changes, impacts to the setting of potential TCPs by noise or visual intrusion could result from military aircraft overflights.

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Noise or visual impacts on returned lands could also result from increased recreational use under this alternative. However, no TCPs have been identified on either withdrawn or lands to be returned to the public domain under Alternative 3.

Access. Increased access to TCPs, if identified on the returned lands, could make it easier for Native Americans to practice certain traditions. At the same time, increased access could lead to increased impacts to TCPs by recreational users and vandals.

Land Status. Impacts to TCPs would be the same as described under Alternative 2.

4.9.5.4 Historic Landscapes

McGregor Range has the potential for the presence of historic rural or military landscapes. Under Alternative 3, a NRHP-eligible historic landscape on the returned lands or on McGregor Range could potentially be impacted by ground disturbance, noise, vibration or visual impacts, and changes in access or land status.

Ground Disturbance. Potential military impacts to a historic landscape would be similar to those described under Alternative 1. A historic landscape on the returned lands potentially could be impacted by mineral exploration or increased recreation use as described under Alternative 2.

Noise, Vibration, and Visual Impacts. The likelihood of impacts to architectural components of a historic landscape from noise or vibration would be the same on the returned lands as those described for Alternative 1 because Alternative 3 does not include changes in airspace use.

Access. Return of lands to the public domain would end military monitoring and security activities on the returned lands. Monitoring and enforcement would become the sole responsibility of the BLM. At present, Fort Bliss limits access to McGregor Range by requiring that all users obtain authorization. Termination of these security measures is likely to result in increased, unmonitored use of the returned lands, including increased access to components of a historic landscape. Increased access could result in increased impacts, both accidental and intentional, to some landscape components.

4.9.6 Alternative 4

For Alternative 4, training areas in the Sacramento Mountains foothills, Otero Mesa, and Tularosa Basin north of New Mexico Highway 506 would be returned to the public domain. On the remaining McGregor Range lands, only some of the current military missions could continue under this alternative. Army in-holdings in TAs 10 through 23 and 29 would be retained. Grazing would continue on the 271,000 acres currently grazed, and there would be unrestricted access to 244,000 acres of returned lands for recreation. Locatable mineral exploration could occur on 233,000 acres of returned lands. There would be fewer road closures and the returned lands would be managed under the White Sands RMP (BLM, 1986a).

4.9.6.1 Archaeological Resources

The training lands proposed for return under Alternative 4 include at least 469 prehistoric and historic archaeological sites. Additional sites, not yet part of the existing database, may have been recorded under ongoing projects. Under Alternative 4 military activities could potentially affect NRHP-eligible archaeological resources through ground disturbance, access, and changes in land status.

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Ground Disturbance. Potential impacts on the withdrawn lands would be similar to Alternative 1. Any ground disturbance attributable to military training activities on withdrawn land as described under Alternative 1 would no longer be a factor on the lands returned to the public domain.

Noise, Vibration, and Visual Impacts. As described under Alternative 2, archaeological resources are unlikely to experience adverse effects from aircraft overflight on either the withdrawn or returned lands. Potential impacts on the withdrawn lands would be similar to Alternative 1.

Access. The return of large parcels of land to the public domain under Alternative 4 will result in the termination of all military monitoring and security activities on the returned lands. Potential impacts resulting from vandalism could increase under Alternative 4 as the public gains access to land currently available only through permits. This could provide increased opportunity and access to prehistoric and historic archaeological sites on the range, potentially resulting in inadvertent damage or vandalism to some cultural resources. Potential recreational access to the returned lands by the public could increase impacts as the size of the lands open to recreation increases compared to Alternatives 2 and 3.

Land Status. Impacts to archaeological resources would be the same as described under Alternative 2.

4.9.6.2 Architectural Resources

Under Alternative 4, NRHP-eligible architectural resources potentially could be impacted by ground disturbance, noise, vibration, access, and land status issues.

Ground Disturbance. On the withdrawn lands, potential military impacts would be similar to Alternative 1. While military activities would cease on the returned lands, impacts to architectural resources potentially could occur as the result of mineral exploration and recreational use. The effects of grazing on resources in the returned lands are likely to remain the same as described for Alternative 5.

Noise, Vibration, and Visual Impacts. The likelihood of impacts from noise, vibration, or visual impacts from military aircraft overflights would remain the same on the returned lands as described for Alternative 1, because Alternative 4 does not include changes in airspace use. The potential for mineral exploration under Alternative 4 could result in noise or vibration impacts to architectural resources on the larger parcel of returned lands compared to Alternative 3.

Access. On the withdrawn lands, public access would be limited to TAs 8 and 9, reducing potential access impacts to the resources. The return of large parcels of land to the public domain under Alternative 4 will result in the termination of all military monitoring and security activities on the returned lands. Potential impacts resulting from vandalism could increase under Alternative 4 as the public gains access to land currently available only through permits. This could provide increased access to prehistoric and historic archaeological sites on the range, potentially resulting in inadvertent damage or vandalism to some cultural resources.

Land Status. Impacts to architectural resources would be the same as described for impacts to archaeological resources.

4.9.6.3 Traditional Cultural Properties

Although no TCPs have been specifically identified on McGregor Range, including the proposed returned lands, their existence is not precluded, as discussed under Alternative 1. Some prehistoric archaeological sites could potentially be viewed as TCPs by the Mescalero Apache, Tigua, and possibly the Comanche or

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Kiowa. If TCPs were identified, they could potentially be impacted by ground disturbance, noise/vibration, visual impacts, access, and land status changes.

Ground Disturbance. Potential military impacts on the withdrawn lands would be similar to Alternative 1. If TCPs were identified on the returned lands under Alternative 4 they could be impacted by grazing, mineral exploration, or recreation when these activities result in ground disturbance. Ground disturbance could result in direct impacts to TCPs, or could lead to impacts through accelerated erosion.

Noise, Vibration, and Visual Impacts. Because Alternative 4 does not include airspace changes, impacts to the setting of potential TCPs by noise or visual intrusion could result from aircraft overflights. However, no TCPs have been identified on the returned lands. On the withdrawn lands, the potential for noise or visual recreational impacts could decrease as fewer military lands are open to public access. The potential for military noise impacts to TCPs, if identified under Alternative 4, would be similar to Alternative 1.

Access. Potential military access impacts on the withdrawn lands would be similar to Alternative 1. Increased access to TCPs, if identified on the returned lands, could make it easier for Native Americans to practice certain traditions. At the same time, increased access could lead to increased impacts to TCPs by recreational users and vandals.

Land Status. Impacts to TCPs would be the same for Alternative 2.

4.9.6.4 Historic Landscapes

McGregor Range has the potential for the presence of rural historic or military landscapes. Under Alternative 4, a NRHP-eligible historic landscape on the returned lands or on McGregor Range could potentially be impacted by ground disturbance, noise/vibration, visual impacts, and changes in access or land status.

Ground Disturbance. Potential military impacts on the remaining McGregor Range lands would be similar to Alternative 1. A historic landscape on the returned lands potentially could be impacted by mineral exploration or increased recreational use. Potential recreational impacts to the archaeological and architectural components of a historic landscape (e.g. buildings, fences, refuse locations) could increase on the returned lands as military monitoring ceases. The expansion of mineral exploration opportunities in the returned lands under Alternative 4 could also increase the potential for impacts to landscape components if the terrain is altered, or if archaeological or architectural components are affected.

Noise, Vibration, and Visual Impacts. A historic landscape on the returned lands could be impacted if the setting changes (e.g. by a significant increase in noise or vibration or a change in the terrain). However, there are no changes in airspace under Alternative 4; therefore potential impacts to architectural components of a historic landscape on the returned lands from overflights would remain the same as described for Alternative 1.

Access. Return of lands to the public domain would end military monitoring and security activities on the returned lands. Monitoring and enforcement would become the responsibility of the receiving federal agency. Increased access could result in increased impacts, both accidental and intentional, to some landscape components.

Land Status. Impacts to a historic landscape would be the same as described for Alternative 2.

4.9.7 Alternative 5 – No Action

Under Alternative 5, 608,385 acres of withdrawn military land on McGregor Range would be returned to the public domain. The land in TA 8, part of TA 32, and TA 33 would be transferred to DoD in exchange for Army fee-owned land elsewhere on McGregor Range, and would provide infrastructure for McGregor Range Camp, McGregor ASP, and the Meyer Range Complex. Restricted airspace above the former McGregor Range could continue to be used for some aircraft training. Existing grazing areas would continue to be open to multiple use. BLM could also open areas for minerals exploration (geothermal, oil and gas), and some cultural resources could be opened up for interpretive recreational opportunities.

4.9.7.1 Archaeological Resources

The training lands proposed for return under Alternative 5 include at least 1,188 prehistoric and historic archaeological sites. Many additional sites, not yet part of the existing database, have been recorded under ongoing projects. Alternative 5 could include potential impacts to NRHP-eligible archaeological resources from ground disturbance, noise/vibration, visual impacts, access, and changes in land status.

Ground Disturbance. The decrease in ground disturbance related to the end of military activities in areas previously closed to the public could be offset by an increase in nonmilitary activities throughout the area. Ground disturbance impacts to the returned lands under Alternative 5 could include grazing, recreation, and mineral exploration.

- **Grazing:** Introduction of grazing to the Tularosa Basin could impact cultural resources by increasing erosion, creating trails to and from watering points, and trampling near watering points (BLM, 1980). However, these impacts can be minimized by constructing watering points in areas that do not contain cultural resources.
- **Recreation:** Potential recreational impacts to archaeological resources are likely to increase on the returned lands as military monitoring ceases. In addition, the opening of some cultural resources to interpretive recreational opportunities could result in impacts to the resources.
- **Mineral Exploration:** Increased mineral exploration opportunities on the returned lands is likely to increase the potential for impacts to archaeological resources from such activities as drilling, and pad and road construction.

Potential impacts to the few remaining military holdings under Alternative 5 are expected to be similar to those under Alternative 1 except that grazing and recreation impacts in these lands would decrease due to restricted access.

Noise, Vibration, and Visual Impacts. Because no data exist that would indicate that surface artifact scatters and subsurface archaeological deposits are affected by vibrations resulting from subsonic aircraft overflight, including overflights by military helicopters and low-level overflights, would have no effect on archaeological resources. Under Alternative 5, potential impacts to the setting of archaeological resources by noise, vibration, or visual intrusion on the returned lands could result from aircraft overflights, from mineral exploration, or from recreation. However, setting is not a critical component of any known archaeological resource on the returned lands, making impacts to the setting of archaeological resources unlikely.

Potential impacts to the few remaining military holdings under Alternative 5 are expected to be similar to those under Alternative 1.

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Access. Return of all lands to the public domain would end military monitoring and security activities on the returned lands. Monitoring and enforcement would become the responsibility of the BLM. Termination of these security measures is likely to result in increased use of the returned lands, including increased access to archaeological resources. Increased access could result in increased impacts, both accidental and intentional, to archaeological resources.

Potential access impacts to the few remaining military holdings under Alternative 5 would be likely to decrease in these areas as public access is restricted.

Land Status. Under this alternative, the military land withdrawal would not be renewed. Army fee-owned lands would be exchanged for lands in TAs 8 and 32, and lands comprising most of the range would be returned to the public domain, specifically, grazing units 1 through 15, and the northern portion of TA 29. The ACEC areas underlie restricted airspace, are within SDZs, and are fenced. General access by the public is not presently allowed. If the lands are returned to the public domain, management responsibility for archaeological resources in these areas would be assumed by the BLM. The BLM has implemented *Cultural Resources Management Plans* and complies with the cultural resource protection laws, including NHPA and associated regulations. While the land status change does not, itself, affect impacts, it can lead to changes in the numbers and kinds of impacts to historic properties as land use and management change under the receiving agency. The land status change appears unlikely to enable significant impacts to the management of archaeological resources if BLM funding levels are adequate to cover the increased area of public domain lands.

4.9.7.2 Architectural Resources

Architectural resources identified on the proposed returned lands under Alternative 5 include some that are part of the Cold War military landscape of the region. Since McGregor Range Camp and Meyer Range would be retained by the Army, the Cold War-era structures at these locations would not be affected by a return to the public domain under Alternative 5. NRHP-eligible architectural resources potentially could be impacted by ground disturbance, noise, vibration, access, and land status issues.

Ground Disturbance. While military activities would cease on the returned lands, impacts to architectural resources potentially could increase as the result of increased mineral exploration and recreational use, including the opening of some cultural resources to interpretive use.

Potential impacts to the few remaining military holdings under Alternative 5 are expected to be similar to those under Alternative 1.

Noise, Vibration, and Visual Impacts. Potential military noise impacts to architectural resources on the returned lands under Alternative 5 could occur because restricted airspace could continue to be used for some aircraft training. Increased mineral exploration on the returned lands could also result in increased potential for noise or vibration impacts compared to Alternative 4.

Potential impacts to the few remaining military holdings would be similar to those described for Alternative 1.

Access. The cessation of military activities under Alternative 5 would result in increased public use of the returned lands, potentially impacting ranching and military architectural resources. Increased public access is likely to result in increased impacts from recreational activities and mineral exploration and development.

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Potential impacts to the few remaining military holdings under Alternative 5 are expected to be similar to those under Alternative 1 except that grazing and recreation impacts would decrease in these areas due to restricted access.

Land Status. Impacts to architectural resources would be the same as described for impacts to archaeological resources with one exception. The return of McGregor Range to the public domain has the potential to result in impacts to historic architectural structures, particularly from the Cold War, as well as architectural components of potential military landscapes. The likely impacts could result from reuse of the structures, vandalism, or degradation of condition and setting as land use in the area changes.

4.9.7.3 Traditional Cultural Properties

Although no TCPs have been identified on the lands that would be returned under Alternative 5, their existence is not precluded, as discussed under Alternative 1. Some prehistoric archaeological sites could potentially be viewed as TCPs by the Mescalero Apache, Tigua, and possibly the Comanche or Kiowa. If TCPs were identified, they could potentially be impacted by ground disturbance, noise, vibration and visual impacts, access, and land status.

Ground Disturbance. If TCPs were identified on the returned lands under Alternative 5 they could be impacted by grazing, mineral exploration and development, or recreation when these activities result in ground disturbance. Ground disturbance could result in direct impacts to TCPs, or could lead to impacts through accelerated erosion.

Potential impacts to TCPs, if any are identified, on the few remaining military holdings under Alternative 5 would be similar to those under Alternative 1 except that grazing and recreation impacts would decrease in these areas due to restricted access.

Noise, Vibration, and Visual Impacts. Impacts to the setting of potential TCPs by noise or visual intrusion could result from high-level aircraft overflights. Audible or visual intrusions could potentially impact the setting of a traditional ceremony or ritual that depends on isolation, solitude, or silence. An aircraft flying overhead, even at high altitudes, could be deemed an auditory or visual intrusion if it occurs during a ceremony or at another inappropriate time. Increased noise or visual impacts to potential TCPs could also result from increased recreational use or mineral exploration and development under Alternative 5. However, no TCPs have been identified on the returned lands.

Potential impacts to the few remaining military holdings under Alternative 5 are expected to be similar to those under Alternative 1 except that potential recreation impacts would decrease in these areas due to restricted access.

Access. Increased access to TCPs, if identified on the returned lands, could facilitate some Native American traditional practices. However, increased access for recreation and mineral exploration could result in increased impacts to TCPs by other users.

Potential impacts to TCPs, if identified on the few remaining military holdings under Alternative 5, are expected to be similar to those under Alternative 1 except that grazing and recreation impacts would decrease in these areas due to restricted access.

Land Status. Impacts to architectural resources would be the same as described as impacts to archaeological resources.

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4.9.7.4 Historic Landscapes

McGregor Range has the potential for the presence of rural historic or military landscapes. Under Alternative 5, a NRHP-eligible historic landscape on the returned lands could potentially be impacted by ground disturbance, noise, vibration or visual impacts, and changes in access or land status.

Ground Disturbance. A historic landscape on the returned lands potentially could be impacted by increased mineral exploration and development or increased recreational use. Potential recreational impacts to the archaeological and architectural components of a historic landscape (e.g., buildings, fences, refuse locations) could increase on the returned lands as military monitoring ceases. The introduction of mineral exploration opportunities in the returned lands could also increase the potential for impacts to landscape components if the terrain is altered, or if archaeological or architectural components are affected.

Potential impacts to a historic landscape on the few remaining military holdings under Alternative 5 are expected to be similar to those under Alternative 1 except that potential recreation and grazing impacts would decrease in these areas due to restricted access.

Noise, Vibration, and Visual Impacts. A historic landscape on the returned lands could be impacted if the setting changes compared to the setting on McGregor Range at the time it was identified (e.g., by a significant increase in noise or vibration or a change in the terrain). Noise, vibration, or visual impacts could result from increased mineral exploration.

Potential impacts to a historic landscape on the few remaining military holdings under Alternative 5 are expected to be similar to those under Alternative 1.

Access. The termination of military activities on the returned lands would result in increased access for recreation and mineral exploration and potential increased impacts, both accidental and intentional, to some landscape components.

Potential impacts to a historic landscape on the few remaining military holdings under Alternative 5 are expected to be similar to those under Alternative 1 except that potential recreation and grazing impacts would decrease in these areas due to restricted access.

Land Status. Impacts to architectural resources would be the same as described as impacts to archaeological resources.

4.9.8 Alternative 6

Alternative 6 would designate Culp Canyon WSA as a wilderness area and create an NCA. This alternative could be combined with Alternatives 3, 4, or 5. Effects for each resource type would be the same as discussed under each alternative, with some additions or exceptions. However, this alternative requires congressional action for implementation. Because the precise nature and extent of the congressional action cannot be determined at this time, detailed cultural resource analysis of this alternative is deferred until the proposal is specified for this type of nonmilitary withdrawal by the DOI.

4.9.9 Cumulative Impacts

As with the direct and indirect impacts from military actions, incremental impacts from nonmilitary actions contribute to cumulative impacts to NRHP-eligible archaeological and architectural resources,

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TCPs, and historic landscapes on McGregor Range. The incremental and cumulative impacts also can be categorized according to the source of the impact.

4.9.9.1 Ground Disturbance

Nonmilitary activities that could result in ground disturbance include: construction, maintenance and operation of facilities, firefighting, grazing, recreation, and mineral exploration. These potentially ground-disturbing activities are generally limited to clearly defined areas. For example, grazing is limited to permitted areas; and mineral exploration usually occurs only in certain geologically appropriate locations.

Construction, Operations, and Maintenance. Nonmilitary activities associated with construction, operations, and maintenance of grazing support infrastructure or mineral and energy resource development may include excavating, grading, scraping, brush clearing, filling, plowing, trenching, and tunneling. Such activities at the location of a cultural resource have the potential to significantly impact it.

Firefighting. Fires could occur from nonmilitary activities such as mineral and energy development and recreation as well as from natural causes. Architectural resources such as historic ranch buildings and features on McGregor Range could potentially be damaged by fire from any source. The effect of fire from nonmilitary activities on archaeological resources is generally minor. However, as discussed in Section 4.9.2.1, the effect of necessary and unavoidable fire suppression activities can be more damaging.

Recreation. Unauthorized off-road recreation in portions of McGregor can lead to inadvertent disturbance to cultural resources, particularly archaeological sites.

Grazing. Nonmilitary activities, in particular stock grazing, can also cause a significant amount of ground disturbance, particularly in erosion prone areas (Nielsen, 1991; Shea and Klenck, 1993). The proposed area of the NCA is currently grazed by livestock. Studies in areas similar to McGregor Range have shown that reduction of the vegetation by grazing causes significant erosion (Trimble and Mendel, 1995). Cattle also break the surface crust with their hooves, create trails to and from watering points, and remove vegetation in wallows. These activities can impact cultural resources unless actions are taken to avoid disturbance, such as placement of water improvements away from known cultural resources (BLM, 1980).

Mineral Exploration. Mineral exploration activities such as drilling, pad construction, and road construction can impact cultural resources, particularly archaeological sites.

4.9.9.2 Noise, Vibrations, and Visual Intrusions

Vibration effects to cultural resources on McGregor Range can originate from a variety of sources, including ground sources such as nonmilitary construction and blasting associated with minerals and energy resources development or grazing infrastructure improvements.

The effects of noise and visual intrusions on cultural resources may also be related to setting. Noise that affects setting may be caused by nonmilitary construction and maintenance, vehicles, and machines. To be adversely affected, the setting of a cultural resource must be an integral part of the characteristics that qualify that resource for listing in, or eligibility for, the NRHP. Because of modern development, this is often not the case for significant cultural resources. Even in rural areas, noise intrusions from vehicles and machinery can create a noise environment inconsistent with the original setting of the cultural resources. The effects on cultural resources would be similar to those described for military activities.

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Cultural resources where integrity of setting is an important significance criterion, such as TCPs and historic landscapes, changes in setting from nonmilitary as well as military activities can affect the resource's NRHP eligibility. Actions that could potentially impact a resource's setting include: the addition of new roads, buildings, or features; removal of fences and other features; changes in native vegetation; or changes in land use out of character with traditional uses (e.g., locatable mineral development).

4.9.9.3 Access

Improved ground access to cultural resources for nonmilitary purposes also can result in impacts such as vandalism. Vandalism often affects the types of cultural resources (e.g., historic buildings, large pueblos, rock shelters, or rock art) most likely to be determined eligible for listing on the NRHP because these are typically the most visible. Unauthorized excavation and artifact theft, defacement, and illegal ORV use, are the most destructive adverse impacts linked to ground access. In addition, architectural resources (e.g., historic buildings and structures) can be impacted by use as campsites (increasing fire danger), by recreational target shooting, graffiti, trash accumulation, and salvage of materials from the structure.

4.9.9.4 Land Status

As with cultural resources on public land withdrawn for military purposes, if a historic property (i.e., a NRHP-eligible archaeological, architectural, traditional, or landscape cultural resource) is transferred from one federal agency to another the resource is still managed under NHPA and other applicable federal laws. The receiving agency then becomes responsible for compliance. While a land status change does not, itself, affect impacts, it can lead to changes in the numbers and kinds of impacts to historic properties as land use and management change under the receiving agency. For example, military impacts could be replaced by impacts from mining or recreation.

4.9.9.5 Cumulative Impacts of the Land Withdrawal Alternatives

Under Alternative 1, the current boundaries of McGregor Range would remain the same. Use of the range for nonmilitary activities could continue at current levels (see Section 2.1.2, *Nonmilitary Use of Withdrawn Lands*) with Army concurrence. Since the land status does not change under Alternative 1, no cumulative impacts from this source would occur to archaeological or architectural resources nor to TCPs or historic landscapes.

As stated previously, more than 3,600 archaeological resources (both historic and prehistoric) have been identified on McGregor Range. Of these, 94 have been evaluated as eligible for the NRHP; 189 have been evaluated as not eligible for the NRHP; and 3,396 have not been evaluated for NRHP eligibility. Potential cumulative impacts to NRHP-eligible archaeological resources could occur from nonmilitary ground disturbance and access.

Approximately 900 of the prehistoric sites on McGregor Range have been evaluated by recorders for degree and source of disturbance. Some sites have been cumulatively impacted by military activities and nonmilitary activities such as grazing and recreation.

- **Grazing:** Archaeological resources are present within existing grazing units and may be subject to incremental impacts from cattle. More than 70 water tanks, troughs, and wells are indicated on USGS topographic maps for McGregor Range. Fort Bliss records indicate that some 125 cultural resources are present at these watering points or within a quarter mile, where they could experience the greatest incremental impact from grazing animals. Almost all of the watering points were visited and inspected for historic cultural resources by the U.S. Army (1997r). Eighty historic sites and 45

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prehistoric sites lie at, or near, the watering points. Twenty-one of the resources identified are eligible for the NRHP; 36 are potentially eligible; and 68 are not eligible.

- Recreation: Recreational use can result in ground disturbance through unauthorized off-road activities. Some vandalism relating to recreational use has been noted at about 5 percent of cultural resource sites on McGregor Range. Existing limitations to public access to the range reduce the likelihood of increasing cumulative impacts to archaeological resources from recreation.

Archaeological resources are unlikely to experience adverse incremental noise, vibration, or visual impacts from nonmilitary activities on McGregor Range under Alternative 1. However, impacts to resource setting by noise or visual intrusion could result from leasable or saleable mineral development and construction. Since setting is not a critical component of any known archaeological resource on McGregor Range cumulative impacts to archaeological resources unlikely.

Public access would continue to TAs 8 through 23, part of 29, and Culp Canyon WSA, or more than 38 percent of McGregor Range under Alternative 1. General access to the range grazing, hunting, and dispersed recreational use such as hiking and observing nature would not change. Ongoing access could be a source of cumulative impacts to archaeological or architectural resources as well as to TCPs or historic landscapes, especially near roads. Vandalism has been noted on about 5 percent (approximately 45) of the cultural resource sites on McGregor Range.

More than 200 architectural resources, both historic and Cold War-era, have been identified on McGregor Range. Under Alternative 1, architectural resources potentially could experience cumulative impacts from nonmilitary ground disturbance, noise/vibration, and access.

Possible construction associated with leasable and salable mineral development on McGregor Range under Alternative 1 has the potential to incrementally affect cultural resources. Architectural resources located within grazing areas could also potentially be impacted by cattle rubbing against structures and trampling architectural features; or by recreational use resulting in vandalism to structures.

Impacts to architectural resources by brief and short-lived noise and vibration or by visual intrusion could potentially result from nonmilitary construction on McGregor Range. Because setting is not a critical component of any known architectural resources on McGregor Range, cumulative impacts to the setting of architectural resources from noise or visual intrusions is unlikely.

Although no TCPs have been identified on McGregor Range, their existence is not precluded. Some prehistoric archaeological sites could potentially be viewed as TCPs by the Mescalero Apache, Tigua, and possibly the Comanche or Kiowa. Under Alternative 1, TCPs could potentially be subjected to cumulative impacts from nonmilitary activities resulting in ground disturbance, noise, visual setting, or access limitations.

McGregor Range has the potential for the presence of historic rural or military landscapes. Under Alternative 1, a NRHP-eligible historic landscape potentially could be incrementally impacted by ground disturbance, noise/vibration, and visual impacts from nonmilitary actions as well as public access. Continuing or compatible land uses and activities may not be considered impacts to a historic landscape if the general character and feeling of the historic period is retained during the maintenance and repair of landscape features.

Nonmilitary use of McGregor Range could impact architectural, archaeological, or topographic components of NRHP-eligible historic landscapes through demolition of infrastructure such as sections of pipeline, construction, road building, recreation, or other nonmilitary activities. Potential impacts to

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archaeological and architectural components of a landscape would be similar to those described in Sections 4.9.4.1 and 4.9.4.2. Activities that significantly change the terrain could also add to cumulative impacts to the setting of a historic landscape.

An identified rural historic or military landscape could have as part of its setting the existing noise, vibration, and view shed conditions of McGregor Range. If these conditions are present at the time the landscape is evaluated, they might not be considered an impact to the landscape. However, under Alternative 1 nonmilitary activity producing increased noise/vibrations or changes in the visual setting, such as new construction out of character with the historic environment, could have cumulative impacts on a NRHP-eligible historic landscape.

Under Alternatives 2, 3, 4, 5, and 6 varying amounts of land would be returned to the public domain. The returned lands would be managed in accordance with the White Sands RMP (BLM, 1986a). The BLM, without the current requirement for Army concurrence, would set the level of use on all lands returned. Grazing would continue on the presently grazed 271,000 acres regardless of alternative. Increased exploration for and development of locatable, leasable and saleable minerals could take place on the lands returned to the public domain. Unrestricted access to lands returned to the public domain would facilitate recreational use.

The training lands that would return to the public domain under Alternative 2 include at least 168 prehistoric and historic archaeological sites, under Alternative 3 include at least 255 prehistoric and historic archaeological sites, under Alternative 4 include at least 469 prehistoric and historic archaeological sites, and under Alternative 5 include at least 1,188 prehistoric and historic archaeological sites. Additional sites, not yet part of the existing database, may have been recorded under ongoing projects. Under each of these alternatives, archaeological resources on returned lands and on McGregor Range potentially could experience impacts from ground disturbance, access, and changes in land status.

Ground disturbance cumulative impacts to archaeological resources under Alternatives 2, 3, 4, and 6 could include grazing, recreation, and mineral exploration.

- **Grazing:** Potential impacts associated with cattle grazing on both returned lands and on the remaining McGregor Range lands would remain the same as under Alternative 1 if current grazing practices continue.
- **Recreation:** Potential recreational impacts to archaeological resources could increase on the returned lands as military monitoring ceases.
- **Mineral Exploration:** The introduction of mineral exploration opportunities on the returned lands under Alternatives 2, 3, and 4 is likely to introduce the potential for new impacts to archaeological resources from such activities as drilling and pad construction. Alternative 6 would not open the area designated as an NCA for locatable mineral exploration and development.

Cumulative impacts to the setting of archaeological resources by noise or visual intrusion could result from nonmilitary construction, mineral exploration, or recreation. However, setting is not a critical component of any known archaeological resource on either the proposed returned lands or on McGregor Range, making cumulative impacts to the setting of archaeological resources unlikely.

Return of lands to the public domain under Alternatives 2, 3, 4, 5, and 6 would end all military monitoring and security activities there. Monitoring and enforcement would become the responsibility of the BLM. At present, Fort Bliss limits access to McGregor Range by requiring that all users obtain authorization. Military patrols of McGregor Range currently check users for proper authorization and

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location within the prescribed use area. Termination of these security measures is likely to result in increased, unmonitored use of the returned lands, including increased access to prehistoric and historic archaeological sites during recreational or mineral exploration use. Increased access could result in increased cumulative impacts, both accidental and intentional, to some archaeological or architectural resources as well as to TCPs or historic landscapes.

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Under each alternative, other than Alternative 1, currently withdrawn land would be returned to the public domain. Management responsibility for archaeological resources on the returned lands would be solely by the BLM. The land status change appears unlikely to result in significant cumulative impacts to the archaeological or architectural resources and TCPs or historic landscapes.

Under Alternatives 2, 3, 4, and 6 NRHP-eligible architectural resources potentially could be exposed to cumulative impacts by nonmilitary ground disturbance, noise, vibration as well as access and land status issues. While military activities would cease on the returned lands, impacts to architectural resources potentially could occur as the result of mineral exploration and increased recreational use. The effects of grazing on architectural resources in the returned lands are likely to remain the same as described for Alternative 1 as grazing practices continue.

The likelihood of cumulative impacts to architectural resources from noise, vibration, or visual impacts from nonmilitary activities would remain the same on the returned lands as described for Alternative 1. The introduction of locatable mineral exploration under Alternatives 2, 3, 4, and 5 could result in cumulative impacts from increased noise or vibration to architectural resources on the returned lands.

Both the returned lands and portions of McGregor Range would continue to be open to the public under each alternative. However, under alternatives other than Alternative 1, fewer road closures and less stringent monitoring of returned lands could result in increased public use for recreation and mineral exploration, and potentially increased cumulative impacts to rural architectural resources.

Although no TCPs have been identified on McGregor Range, including the proposed returned lands, their existence is not precluded. Some prehistoric archaeological sites could potentially be viewed as TCPs. If TCPs were identified by the Mescalero Apache, Tigua, and possibly the Comanche or Kiowa, they could potentially receive cumulative impacts under each alternative from nonmilitary activities that cause ground disturbance, noise/vibration, visual impacts, and changes in access to the public lands. Cumulative impacts to TCPs from nonmilitary activities could result under each alternative.

McGregor Range has the potential for the presence of historic rural or military landscapes. Under Alternatives 2, 3, 4, and 6 a NRHP-eligible historic landscape on the returned lands or on McGregor Range could potentially have cumulative impacts from nonmilitary activity resulting in ground disturbance, noise/vibration, visual impacts, and changes in access or land status. Significant cumulative impacts to the management of historic landscapes is unlikely if BLM funding levels are adequate to cover the increased area.

4.9.10 Mitigation

The congressional decision to establish the boundaries for McGregor Range and withdrawal, in and of itself, causes no impacts to cultural resources that require mitigation.

4.9.11 Irreversible and Irretrievable Commitment of Resources

Certain training activities proposed under the alternatives have the potential for irreversible or irretrievable impacts to cultural resources such as Native American TCPs. Training activities such as

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tracked and wheeled vehicle maneuvering, emplacement excavation, and bivouacs, constitute the greatest source of direct and indirect impacts to prehistoric and historic cultural resources. Cultural resources are nonrenewable; once they are destroyed or altered, they cannot be replaced. Activities, such as ground disturbance from training activities, can irreparably damage artifacts and intact features, destroy data, and disturb site integrity. While implementation of data recovery or other measures under existing or proposed management plans can reduce adverse effects, the loss of any significant cultural resource can be considered irreversible and irretrievable.

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