United States
Department of
Agriculture

Forest
Service

Final

# Environmental Assessment

## Phase II Demolition of Unsafe or Unneeded Facilities and Infrastructure

**Midewin National Tallgrass Prairie**

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# SUMMARY

The Midewin National Tallgrass Prairie proposes to demolish unsafe or unneeded facilities and infrastructure. The project area is as shown on the map (Figure 1) and is within the, Midewin National Tallgrass Prairie, Illinois. This action is needed to provide safe public access to the prairie where possible.

The Forest Service has evaluated the following alternatives:

- Proposed Action: demolish and remove all unneeded and unsafe former arsenal buildings and structures.
- "No Action": leaving all the buildings and structures in place as is.
- Board-up all the buildings and fence off the areas with unneeded and unsafe former arsenal buildings and structures, but no removal.

Based upon the effects of the alternatives, the responsible official will decide which Alternative will be implemented.

# INTRODUCTION

This environmental assessment (EA) documents the potential environmental effects of demolition and removal of unneeded and unsafe facilities and structures under management by the USDA Forest Service (USFS), Midewin National Tallgrass Prairie. Midewin occupies much of the US Army's former Joliet Arsenal. This EA was prepared in compliance with the National Environmental Policy Act (NEPA) and other relevant federal and state laws and regulations. This EA discloses the direct, indirect, and cumulative environmental impacts and any irreversible or irretrievable commitment of resources that would result from the described actions. Based on this EA, the USFS's Prairie Supervisor will decide whether or not to demolish and remove unneeded and unsafe facilities and structures.

An Interdisciplinary Team of resource specialists used a systematic approach for analyzing the proposed action and alternatives, estimating the environmental effects, and preparing this EA. The planning process complies with NEPA and the Council on Environmental Quality (CEQ) regulations for implementing NEPA (40 CFR 1500-1508). An EA is "a concise public document … that serves to briefly provide sufficient evidence and analysis for determining whether to prepare an environmental impact statement or a finding of no significant impact" (40 CFR 1508.9).

## Background

Midewin National Tallgrass Prairie (Midewin) is in Will County, Illinois, approximately 45 miles southwest of Chicago, 15 miles south of Joliet, and 3 miles north of Wilmington. Midewin was established through the Illinois Land Conservation Act (ILCA) of 1995. Through this legislation, the USFS was to take over management responsibilities of land formerly managed by the Department of Defense (DoD), as an ammunition plant. On March 10, 1997 the first transfer from the DoD to the Forest Service took place.

From the initial transfer of 15,080 acres, additional lands were transferred and acquired to comprise the current total of 18,225 acres. Additionally 1,445 acres will be transferred from the DoD to the management of the Forest Service over the next several years.

One mission of Midewin is to restore prairie ecosystems across the former ammunition plant. Of special value are the few remaining undisturbed remnants of prairie vegetation and sensitive grassland bird habitat. Prairie restoration provides habitat for many sensitive plant and animal species and improves the landscape for recreational activities.

Available information indicates that prior to agriculture and arsenal development under the Army's ownership, most of Midewin's natural landscape was dominated by prairie, wetlands, savanna and woodlands. Sometime during the onset of agricultural uses and before 1940, much of the Midewin area was drained and converted to pasture grasses and crops. Only portions along streams, woodland groves, some scattered wetlands and areas with bedrock near the surface and/or glacial erratics were left in a somewhat natural state. Although these areas were not converted to crop agriculture or pasture, most were historically grazed by livestock.

During the Army's ownership the lands consisted of highly developed areas with Army infrastructure, pasture lands, crop lands, abandoned former crop fields, scattered shrublands, young woodlands and remnants of native vegetation. The army infrastructure consisted of roads, railbeds, buildings, and munitions storage igloos. Over 300 miles of roads and railbeds with associated ditches are located within the boundaries of Midewin. The buildings consist of scattered individual buildings or groups of buildings. Some areas consist of parallel-spaced warehouses, magazines and munitions storage igloos. At the time of transfer, 3,376 acres were in pasture and were being grazed. Three hundred seventy-seven acres was in hay production and 5,638 acres were in small grain production.

With the closure of the plant in 1996, Army maintenance activities ceased. Areas not initially transferred were no longer managed and have severely deteriorated over the past 12 years.

## Purpose and Need for Action

In 2001, Midewin's Prairie Supervisor completed an environmental analysis and begin to implement Phase I of some the demolition of unneeded and unsafe structures, which consisted of buildings that had been transferred from the Army as of that time. Midewin has removed many of the buildings and other infrastructure part of the 1997 (original) land transfer. Additional buildings have been transferred since then that need to be included in the demolition program.

The purpose and need of a Phase II project, is to reduce the current and potential safety hazards and improve prairie habitats by removing abandoned and deteriorating buildings and infrastructure left behind by the Army. Removing the old facilities and infrastructures is integral to implementing the Prairie Plan by:

1. preparing the area for safe public recreation opportunities,

2. preparing the area for habitat restoration, and
3. removing fragmenting features that hamper utilization of sensitive grassland bird habitat.

Midewin's establishing legislation, the Illinois Land Conservation Act of 1995 (ILCA, P.L. 104-106), targets restoration of the tallgrass prairie. In addition to that legislation, the Midewin National Tallgrass Prairie Land and Resource Management Plan (Prairie Plan) (2002) stated in objective 2.7.5., "within 10 years, reduce 20% of excess facilities, structures, and related infrastructure remaining on site from the former Joliet Arsenal to enhance public health and safety," (pg.2-12) These policies capture the mission for Midewin, which is to restore tallgrass prairie and provide for a variety of compatible public recreation opportunities that do not endanger the public. Maintaining unused and abandoned Army infrastructure is not consistent with this legislation or Plan.

The following before and after pictures of buildings demolished under the Phase I Demolition Project will visually explain what Midewin is to achieve with this project

**Photo 1: Bunker Demoliton**

**Photo 2: Field Post Demoliton**

**Photo 3: Warehouse Prior to Demolition**

**Photo 4: Group 62 following demolition**

## Decision Framework

Given the purpose and need, the deciding official reviews the proposed action and the other alternatives in order to make the following decisions:

1. Will the proposed project meet the needs as defined in the purpose and need?
2. Are there any significant impacts to the affected environment as a result of the proposed action?

## Public Involvement

The proposal was listed in the Schedule of Proposed Actions from January 1, 2006 to September 1, 2008. The proposal was provided to the public and other agencies for comments during scoping starting September 13, 2006 through October 16, 2006.

## Issues

The Forest Service received 14 comments during the designated comment period. A list of issues and reasons regarding their categorization as non-significant or significant may be found in Section E of the project record, in the response to comment document. The substantive topic identified through public comment can be characterized, *as the need to protect some of the buildings and infrastructure for historic preservation*.

An additional alternative was initially considered to address the topic that would limit demolition. However, the Prairie Supervisor and resource specialists felt the issue could be dealt with in the existing range of alternatives: For these reasons:

1. Saving individual or groups of buildings would be within the environmental effects of the current range of alternatives.
2. The opportunity to interpret certain buildings can be provided through the scheduling of the demolition program. At the current level of funding it will take 20 plus years to demolish the infrastructure. Including all the buildings in this decision will give us the

flexibility to deal with buildings as they become unstable or if there are partial building failures or extreme vandalism. If we do not include them now, we would have to analyze the environmental effects incrementally, costing extra time and money.

3. There are no appropriate funds available for maintenance or restoration of Army buildings. Outside funds will have to be raised for that purpose and we will continue to work with the Midewin Heritage Association where potential opportunities exist.
4. Development of a long term interpretive plan is not within the scope of this decision and would lengthen the time to effectively demolish public safety hazards.
5. The Illinois Land Conservation Act (ILCA) of 1995 identifies purpose for Midewin's establishment; manage the land and water resources, restore the native habitats, provide environmental education, and provide recreation opportunities consistent with the fore mentioned purposes. For more detailed information see the Background section of the project file for a copy of the ILCA.
6. The 1993 Programmatic Agreement prepared by the Army and concurred with by the Advisory Council on Historic Preservation, the Illinois State Historic Preservation officer, and State Historic Preservation Officer from other states with similar military installations, concluded that these facilities and structures may be removed due to failure to meet historical requirements. For more detailed information see the Background section of the project file for the Programmatic Agreement.

# ALTERNATIVES, INCLUDING THE PROPOSED ACTION

This chapter describes and compares the alternatives considered for the demolition of unsafe or unneeded facilities and infrastructure project. It includes a description of each alternative considered and a map of the proposed action alternative. This section also presents the alternatives in comparative form, sharply defining the differences between each alternative and providing a clear basis for choice among options by the decision maker and the public. Some of the information used to compare the alternatives is based upon the design of the alternative and some of the information is based upon the environmental, social and economic affects of implementing each alternative.

## Alternatives

### Alternative 1

#### *The Proposed Action*

The action proposed by the Forest Service to meet the purpose and need is as follows:

Demolition and disposal for identified structures and buildings, including recently transferred properties and structures that were transferred but not analyzed under the original EA, and all the properties expected to be transferred in the foreseeable future. It is proposed to remove the old decaying structures and restore a more natural landscape that is consistent with the standards and guidelines in the Plan (2002). Rail and road grades leading to building clusters would be removed and blended with the surrounding landscape.

These demolition activities would take place over the next 20 years of more as budget and partnering opportunities allow.

All of the listed infrastructure may not be demolished immediately; demolition on some infrastructure will be postponed until funding becomes available. To increase safety and security of the groups/areas not immediately demolished, roads leading into those groups/areas may be obliterated and camouflaged to prevent any access by the public. When funding becomes available for demolition, temporary roads would be constructed on the previously existing roads to groups/areas of buildings to facilitate demolition of infrastructure.

The following list shows examples of infrastructure planned for removal. This list describes representative structures and should not be interpreted as an inclusive list of structure to be demolished.

- Buildings containing transite (a material consisting of concrete and asbestos)
- Bunkers or Igloos
- Foundations
- Corrugated steel warehouses
- Brick warehouses
- “Other” structures (toilet/shower buildings, guardhouses, miscellaneous storage and administrative buildings, loading docks, etc.)
- Poles (power poles, etc)
- Road grades
- Rail grades
- Fencing and posts
- Railroad Infrastructure
- Culverts
- Parking Lots
- Concrete foundations and bases

To achieve the desired condition, our general approach to demolition and removal activities has been and will continue to be:

- Abate safety concerns by prioritizing full or partial demolitions, including road obliteration.
- Coordinate restoration and recreation opportunities.
- Re-use and recycle materials to the extent practicable.
- Use the Will County Landfill for disposal of debris when appropriate and reasonable.
- Implement projects as budget and time permits.
- Use partnership agreements when appropriate and reasonable.
- Prevent visitor access during operations to reduce safety hazards to public.

We anticipate that most work will be accomplished by awarding contracts for demolition activities or material re-use agreements on a competitive bid basis, or by collaborating with partners.

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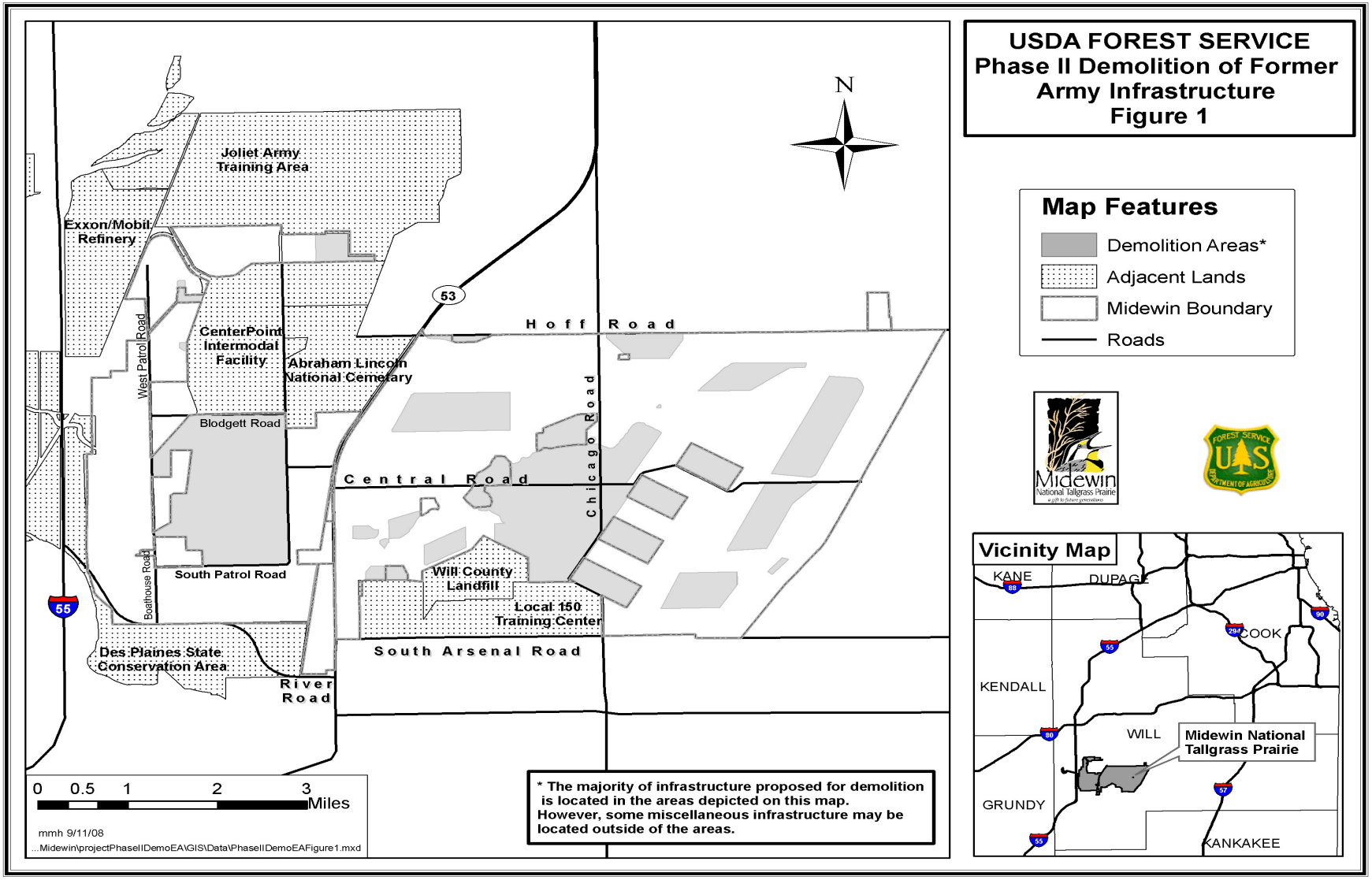


**Figure 1:Map of Demolition Area**

## Alternative 2

### *No Action*

Under the no action alternative current management plans would continue to guide management of the site. Demolition and removal would not take place on any of the buildings and structures, except those buildings included in previous project decisions.

The no action alternative is not consistent with the enabling legislation and the restoration goals for Midewin.

A No Action alternative is required for Environmental Impact Statements and Environmental Assessment as required by 40 CFR 1502.14.

## Alternative 3

### *Board-up and Fence*

Under alternative 3, demolition would not take place on any buildings described in the proposed action; instead the buildings will be boarded up and fenced, providing for public safety as additional areas are open to the public. This action will follow the management guidelines for the no action alternative. Demolition would only take place on the building and structures included in previous project decisions.

# Mitigation Common to All Alternatives

In response to comments on the proposal, mitigation measures were developed to reduce some of the potential impacts various activities may cause. The mitigation measures would be applied to any of the action alternatives.

1. Use existing roads, rail beds, and parking areas, and avoid heavy equipment in sensitive areas during times when the soil is soft. Contractor may enter when ground is dry or frozen or with vehicles that have a low ground pounds-per-square-inch loading (not to exceed 4). Designated travel lanes will be developed by Contract Officer Representative (COR) or Project Manager (PM) to avoid compaction. Travel lanes will be marked on maps and/or marked on the ground with pin flags or flagging (EMS 04-22).
2. Avoid rutting and compaction of soils. Unless otherwise designated, soil ruts deeper than 2 inches or covering more than 10% of the designated work area will be avoided in sensitive areas identified by Midewin resource specialist (EMS 04-22).
3. Contractors working in all areas of Midewin will provide adequate water and must keep materials wet during removal and loading in order to minimize release of dust into the air. Water used to suppress dust release will be visually monitored by Forest Service to insure excessive runoff does not occur (EMS 04-06).
4. First priority for all demolition and construction waste is to be recycled or reused where economically feasible. All recycled and reused material will be fully

documented with regards to amounts, dates of removal, destination, and acceptance of the material by the third party (EMS 04-07).

5. All contract heavy equipment and off-road equipment will be washed down by the contractor, prior to entering Midewin, to ensure that all possible invasive plants species are removed from the equipment. With approval from the COR, cleaning with compressed air may be an adequate equipment cleaning method (EMS 04-13).
6. Before undertaking any action to improve, modify, or demolish a building, Midewin will provide for appropriate asbestos and Lead Base Paint (LBP) testing. Removal of Asbestos Containing Material (ACM) or LBP will use all applicable regulatory-prescribed methods using properly certified and trained personnel, and will eliminate the release of asbestos fibers into the environment. All ACM or LBP waste will be disposed of in properly designated and permitted locations and all disposals will be fully documented with regards to amounts, dates of removal, destination, and acceptance by disposal company (EMS 04-05).
7. The responsible project planner will consult with the Midewin Hydrologist concerning exact locations of on-the-ground work, and potential access routes, to determine the potential for impacting wetland areas. The Midewin hydrologist will evaluate potential impacts to wetland areas, and take or recommend actions to minimize or avoid those impacts (EMS 04-19).
8. The responsible project planner will consult with the Midewin Horticulturalist and the Ecologist concerning exact locations of on-the-ground work, and potential access routes, to determine the potential for impacting T&E and RF Sensitive species. The Midewin Horticulturalist and the Ecologist will determine what evaluation must be made to potentially impacted areas, perform the evaluation, and recommend the scope of mitigation or avoidance necessary (EMS 04-20).
9. Areas disturbed will be minimized and kept to that needed for demolition and removal. Typically this area will not exceed 100 ft. around the perimeter of all buildings, bunkers and bridges and 50 ft. around telephone poles and aboveground water line appurtenance.
10. All channel work will be conducted at low flow. Debris nets will be used to capture wood with creosote. Removal of silt accumulations will take place after work is completed.
11. Stockpiling of debris will be only within the work perimeter or other areas approved by COR. It will be confined to the already disturbed area on and between the structures foundations. Debris will be removed from the site shortly after placement.
12. Some restrictions will be applied to the dates of demolition:
    a. Concrete bunkers will be demolished during the period of August 15 through March, to avoid interference with the nesting activities of the nearby Migrant Loggerhead Shrike, Upland Sandpiper and Bobolink.

b. Bridge demolition will be conducted during the lower flow months of July through October or during other low flow time periods.

13. Site stabilization will take place at all disturbed sites. Erosion and sediment control during demolition will be conducted using EMS. Streambank stabilization will occur at all bridge sites where demolition takes place.
14. Grading, using topsoil or fill available following structure removal, will take place in preparation for restoration. The goal is to create the desired topography, soil profiles, and drainage patterns to support later restoration efforts. Site stabilization using a vegetative cover of a cool season grass mixture specified by the Forest Service will occur on all disturbed sites.
15. Demolition will be limited during the main wildlife nesting and breeding season, March 1 to August 15. If demolition must take place during that period, demolition areas should be checked for nesting and breeding wildlife and measures taken to minimize disturbance. If TES species are found, these areas will be protected until nesting or breeding is over.
16. Streams having infrastructure within or adjacent to will be searched for ellipse mussels. If ellipse mussels are found, they will be moved to appropriate habitat nearby or protected from increased runoff through EMS.
17. If whooping cranes appear in or adjacent to an area undergoing demolition, halt demolition activities until the cranes continue on migration.
18. Trees needing to be removed during infrastructure removal will be evaluated for their likelihood of being nest trees for birds, bats and other wildlife. If determined to be important, removal will be restricted to non-breeding times.

## Monitoring Plan

The USFS will implement the following additional measures:

- The Forest Service will monitor the demolition process frequently to ensure adherence by the contractor to the environmental stipulations.
- The Forest Service will monitor the restoration of the demolition sites, especially where buildings are removed, to ensure resulting habitat is what is intended.
- Periodic monitoring/inspections of structure conditions for public safety.
- Keep track of all structures demolished, in a GIS database.

### 1. Comparison of Alternatives

This section provides a summary of the effects of implementing each alternative. Information in the table is focused on activities and effects where different levels of effects or outputs can be distinguished quantitatively or qualitatively among alternatives.

**Table 1: Comparison of Alternatives**

| Environmental Effects | Proposed Action (Alternative 1) | No Action (Alternative 2) | Board-up and Fence (Alternative 3) |
|---|---|---|---|
| Vegetation | Long term positive impacts due to more efficient landscape scale restoration. Short term negative impact on weedy vegetation around infrastructure. | No impact on weedy vegetation around infrastructure. Long term negative impacts due to less efficient landscape scale restoration. | No impact on weedy vegetation around infrastructure. Long term negative impacts due to less efficient landscape scale restoration. |
| Invasive Species | Long term positive impacts with more efficient invasive species control and overall restoration and management. | Long term negative effects due to less efficient overall management, specifically invasive control. | Long term negative effects due to less efficient overall management, specifically invasive control. |
| Wildlife | Both negative and positive impacts on both generalist and habitat-specific wildlife depending upon the specific animal. Overall the impacts will be small and should have no long term overall effects. | No short term impact on generalist wildlife species, some long term negative impacts. Negative long term impacts on habitat-specific wildlife species. | No short term impact on generalist wildlife species, some long term negative impacts. Negative long term impacts on habitat-specific wildlife species. |
| TES Plant and Animal Species | Small positive impacts on most TES plant and animals through more efficient restoration and management over time. Small temporary negative impact on aquatic invertebrates with removal of structures in streams. | No short term impacts on TES species. Over the long term negative impacts will result from inefficient restoration and management. | No short term impacts on TES species. Over the long term negative impacts will result from inefficient restoration and management. |
| Soils | Increased organic matter and infiltration, wetter soils would take place over a 10-20 year period. Localized compaction and rutting would be a temporary negative impact. | Reduced organic matter and infiltration. | Reduced organic matter and infiltration. |
| Water Quality | Minor decrease in sediments. | Minor increase in sediments and streambank erosion. | Minor increase in sediments and streambank erosion. |
| Air Quality | Temporary increase in vehicle emissions within the 1-5 years of demolition. There will be | No effect. | No effect. |

| Environmental Effects | Proposed Action (Alternative 1) | No Action (Alternative 2) | Board-up and Fence (Alternative 3) |
|---|---|---|---|
| | no long term effects. | | |
| Management Indicator Species | No effect on white-tailed deer. Small temporary negative impact on aquatic invertebrates with removal of structures in streams. All other management indicators would experience a positive impact over time due to more efficient management and restoration. | No effect on white-tailed deer and aquatic invertebrates. All other management indicators would experience a negative impact over time due to more less efficient management and restoration. | No effect on white-tailed deer and aquatic invertebrates. All other management indicators would experience a negative impact over time due to more less efficient management and restoration. |
| Recreation & Scenery Management | Moves landscape toward Scenic Integrity Objectives.<br><br>Recreation opportunities do not change. Visitor experience is more natural.<br><br>Public safety is improved. | Does not move landscape toward Scenic Integrity Objectives.<br><br>Recreation opportunities do not change. Visitor experience is more historic.<br><br>Ammunition plant infrastructure poses a threat to public safety. | Does not move landscape toward Scenic Integrity Objectives.<br><br>Recreation opportunities do not change. Visitor experience is more historic.<br><br>Ammunition plant infrastructure poses a threat to public safety but is mitigated through the use of fences and boarding-up. |
| Cultural Resources | No effect | No effect | No effect |

*Short Term= 1-5 years and Long Term= 10-20 years

# ENVIRONMENTAL CONSEQUENCES

This section summarizes the physical, biological, social and economic environments of the affected project area and the potential changes to those environments due to implementation of the alternatives. It also presents the scientific and analytical basis for comparison of alternatives presented in the chart above.

## Vegetation

### Affected Environment

Existing vegetation on Midewin consists largely of plant cover that is either directly managed by human activities (such as growing crops or livestock grazing) or has grown up after human activities have ceased (abandoned crop fields, shrublands and successional

woodlands). The predominant vegetation in areas under active management consists mostly of planted crops (soybeans, winter wheat) or non-native pasture grasses (smooth brome, bluegrass, redtop, tall fescue). Areas where vegetation has colonized after human activities ceased, are now dominated by a mixture of non-native and disturbance tolerant native plants. Some typical plants that would be encountered in these areas include eastern cottonwood, green ash, box elder, white mulberry, osage-orange, red hawthorn, autumn-olive, amur honeysuckle, poison-ivy, common teasel, sweet-clover, orchard grass, garlic mustard, virginia stickseed, wild carrot, and common evening-primrose. As restoration on Midewin proceeds, the amount of cropland and successional vegetation will decline and be replaced by restored native vegetation, but at least 6,700 acres of agricultural grasslands will be maintained to support populations of area-sensitive grassland birds.

A smaller portion of Midewin (approximately 1,500 acres) consists of restored and reconstructed native habitats. These are areas of degraded natural vegetation or areas more heavily altered by human activities in the process of being restored to resemble their original condition, either native prairie, prairie wetlands or oak savanna. Although these restorations are in their early stages (none greater than 4 years old) they are now dominated by appropriate native plants. Presently, they do not have the structure or composition found in high-quality natural vegetation. Eventually at least 10,000 acres at Midewin will consist of restored or reconstructed native vegetation.

Approximately 833 acres of Midewin consists of native vegetation remnants. These are remnants of the original natural vegetation that survived amid a highly altered landscape, largely because they were unsuitable for intensive agriculture or other uses. Most of these remnants consist of native forest and woodland, but there are considerable remnants of oak savanna, dolomite prairie, wet prairie, sedge meadow and marsh. A few tiny remnants of upland prairie and seep wetlands are still present on Midewin. All these native vegetation remnants are recognizable through the persistence of dominant native plants (oaks, prairie grasses, tussock sedges) and the presence of relatively conservative native plants, such as woodland sedges, prairie dropseed or spring-flowering forbs. Presently, native vegetation remnants are highly vulnerable to disturbance, because of their small size and susceptibility to invasion by non-native plants. The area covered by native remnants will not increase significantly with restoration, but their boundaries will be harder to discern as intervening areas are restored to native habitats.

**Environmental Consequences**

Alternative 1- Removal

The proposed action would directly affect vegetation around the infrastructure. This vegetation consists largely of successional types, described above. After the type of disturbance proposed, this vegetation would readily return. However, under proposed mitigation measures, non-native pasture grasses would be established on these sites after demolition and grading is completed. These grass species are already widespread on Midewin, and their establishment on these sites would contribute to short term maintenance and long term habitat restoration objectives. Once the infrastructure is removed, then

landscape and hydrological restoration would facilitate the success of habitat restoration. In the few cases where demolition sites are near native vegetation remnants or wetland vegetation, implemented mitigation measures should prevent any adverse effects from equipment trespass or runoff.

Alternative 2- No Action

With the no action alternative the infrastructure would continue to exist, but without any kind of maintenance. The sites would not be restored until incorporated into a future project. Until then, this infrastructure would exist as islands covered by or surrounded with a mixture of shrubs, trees, herbs, vines, and grasses that typically colonize such sites. These areas would break up the surrounding landscape and require frequent management to prevent this vegetation, containing mostly invasive, from encroaching into adjacent native remnants and habitat restorations. The presence of these sites would restrict landscape scale restoration needed to restore natural process, such as hydrological conditions and prescribed fire. Even bunkers could not be easily restored to some replica of native prairie; killing the current vegetation would expose the soil to erosion. Soil slumping and destabilization is already a problem on many bunkers, even in areas where livestock has been excluded. Steep slopes and shallow soils would contribute to the difficulty of establishing prairie or other native vegetation atop bunkers. Some infrastructure makes management of invasive difficult and may allow continued invasive plant species invasion into uninfected areas.

Alternative 3- Board-up and Fencing

This alternative would secure infrastructure until it could be restored, stabilized or rebuilt to standards. The effects are similar to those under Alternative 2, but future actions to return this infrastructure to use might have effects on surrounding vegetation, especially if new infrastructure (roads, trails, utilities) is added. There could be impacts on nearby native vegetation remnants or wetlands because of the installation and use of this infrastructure.

### Cumulative Effects

In the long-term, Alternative 1 is likely to have the most positive outcome for restoration of native vegetation and other habitats on Midewin, because of the continuity of landscape-scale restoration. Alternatives 2 and 3 will be less positive, because many small inclusions associated with infrastructure will continue to exist, interrupting restoration of habitats and processes and allowing invasive plant refugias to exist.

## Invasive Plants

### Affected Environment

Invasive plants are those plant species considered to cause serious ecological damage; in many cases they also cause economic loss or threaten human health and safety. The ecological damage caused by invasive plants includes altering fire regimes, changing habitat structure, displacing native plants, disrupting hydrology, and otherwise eliminating

native habitats and reducing ecosystem services. Most invasive plants of highest concern on Midewin are not native to northern Illinois or even eastern North America. In some cases, they are aggressively changing existing habitats and require constant management. Among the most damaging of these non-native plants are autumn-olive, Amur honeysuckle, Osage-orange, multiflora rose, reed canary-grass, common reed, Canada thistle, and garlic mustard. Some non-native plants that are serious threats elsewhere in northern Illinois are uncommon on or absent from Midewin, but their presence is likely to increase without prevention and management. Among these plants are purple loosestrife, common buckthorn, dame's-rocket, and Korean pear.

Also present on Midewin are many native plants that have become overabundant because of human activities, such as fire suppression, grazing, and agricultural runoff into wetlands. Among these aggressive native plants are green ash, eastern cottonwood, red hawthorn, and cattails. These species have invaded many native prairie, woodland and wetland remnants on Midewin, and are management problems in restored native habitats.

As Midewin is restored, these invasive and aggressive plants are expected to decline, and some non-native species will be eliminated from Midewin. Management and monitoring needed to detect and control these plants will be increasingly limited to Midewin's boundaries. Aggressive native plants will become more restricted to their appropriate habitats; hydrological restoration and prescribed burning will be sufficient to keep these species under control.

**Environmental Consequences**

Alternative1- Removal

The proposed action would directly affect invasive plants around the infrastructure. This vegetation consists largely of successional types, described in affected environment. After the type of disturbance proposed, this vegetation would readily return. However, under proposed mitigation measures, non-native pasture grasses would be established on these sites after demolition and grading is completed. These grass species are already widespread on Midewin, and their establishment on these sites would contribute to short term maintenance and long term habitat restoration objectives. Once the infrastructure was removed, then landscape and hydrological restoration would facilitate the success of habitat restoration. Removal of some infrastructure will allow for more efficient control of invasive species. In the few cases where demolition sites are near native vegetation remnants or wetland vegetation, implemented mitigation measures should prevent any adverse affects from equipment trespass or runoff.

Alternative 2- No Action

Under the no action alternative the infrastructure would continue to exist, but without any kind of maintenance. The sites would not be restored until incorporated into a future project. Until then, this infrastructure would exist as islands covered by or surrounded with a mixture of shrubs, trees, herbs, vines and grasses that typically colonize such sites. These areas would break up the surrounding landscape, and require frequent management

to prevent this vegetation from encroaching into adjacent native remnants and habitat restorations. The presence of these sites would restrict landscape scale restoration needed to restore natural process, such as hydrological conditions and prescribed fire. Even bunkers could not be easily restored to some duplicate of native prairie; killing the current vegetation would expose the soil to erosion. Soil slumping and destabilization is already a problem on many bunkers, even in areas where livestock has been excluded. Steep slopes and shallow soils would contribute to the difficulty of establishing prairie or other native vegetation atop bunkers. In some cases remaining old infrastructure will hinder invasive species management.

Alternative 3- Board-Up and Fencing

Under the board-up/fence alternative infrastructure would be secured until it could be restored, stabilized or rebuilt to standards. The effects are similar to those under Alternative 2, but future actions to return this infrastructure to use might have affects on surrounding vegetation, especially if new infrastructure (roads, trails, utilities) is added. There could be impacts on nearby native vegetation remnants or wetlands because of the installation and use of this infrastructure.

### Cumulative Effects

In the long term, the proposed action is likely to have the most positive outcome for restoration of native vegetation and other habitats on Midewin, because of the continuity of landscape-scale restoration. The no action and board-up/fence alternatives will be less positive, because many small inclusions associated with infrastructure will continue to exist, interrupting restoration of habitats and processes.

## Wildlife

### Affected Environment

Most wildlife (including insects and other invertebrates) found on Midewin and the surrounding areas can be placed into two ecological groups: generalists and habitat specific.

The generalist species are mostly widespread common wildlife that are somewhat tolerant of habitat disturbance and can utilize a wide diversity of habitat types. Many of these species are tolerant of human presence and urban development. These generalist wildlife species are widespread within and outside Midewin. Among these types of wildlife are coyote, raccoon, opossum, white-tailed deer, striped skunk, fox squirrel, short-tailed shrew, red-tailed hawk, mallard, great-horned owl, northern cardinal, American robin, red-winged blackbird, indigo bunting, song sparrow, common garter snake, bullfrog and tiger swallowtail butterfly. These generalist species tend to be common because the habitats they occupy are common and/or they can occupy a variety of habitats. Some of these species are considered edge species, species that occur primarily in the edge between open areas and closed woody areas. Under some circumstances these species have become so ubiquitous that they are considered pests.

The habitat-specific wildlife species often require a specific type of habitat, and often are only present if the habitat meets certain criteria, such as area, structure or plant species composition. These habitat specific species tend to be uncommon because their requisite habitat types tend to be rare. For example, some are only associated with certain plants that are rare because the plant only survives in rare high quality native plant communities. These species tend to be less common both within and outside Midewin. Some examples of these species include dickcissel, grasshopper sparrow, Bell's vireo, sora rail, deer mouse, smooth green snake, northern leopard frog, prairie-dock stem-borer moth and many types of aquatic invertebrates. Many of these species are thought to be declining in numbers due to habitat loss.

RFSS and white tailed deer - The white-tail deer is a generalist species that will be considered separately in the Management Indicators section, because of its importance as a game animal and public interest.

**Environmental Consequences**

Alternative 1- Removal

The proposed action will have both negative and positive affects on both generalist and habitat-specific wildlife at Midewin. Some generalist species will benefit from the removal of old infrastructure by producing more habitat. Generalist wildlife using the old infrastructure or preferring weedy shrubby early successional habitat may be negatively impacted by infrastructure removal. The commonness of these species and small overall impact area would result in only small negative impacts. Some habitat-specific species may benefit from the opening up of the habitat through removal of old infrastructure while others that prefer shrubby early successional habitats may experience small negative impacts. Overall the small footprint, implementing the Prairie Plan standards and guidelines, EMS procedures and mitigation measures will offset most potential negative impacts.

Alternative 2 – No Action and Alternative 3 – Board-up and Fencing

Alternative 2 and Alternative 3 would have little impact on the generalist species over the short term since the habitat would not change. Over time, as the habitat turns to taller woody vegetation and invasive species increase, there will be some generalist species positively impacted and some negatively impacted, depending on the seral state of vegetation they prefer. These alternatives would probably only have negative impacts on habitat-specific species. The existing infrastructure has negative impacts now and would also eventually have negative impacts on those habitat-specific species utilizing these early successional habitats as they mature due to lack of management.

Because of the limited footprint of the old infrastructure, any impact (positive or negative) will probably not be great. The phased nature of the removal would also spread any impacts over a long period of time.

**Cumulative Effects**

Under alternative 1 (proposed action) and other alternatives there would be wildlife species that would be positively impacted and those that would be negatively impacted.

Wildlife species (habitat specialists) that are rare or localized within the cumulative effects area would be positively impacted in the long term. There may be isolated short term negative impacts, but this is offset by the overall long term positive impact. Many of these species are dependant upon their long term survival at Midewin. If habitat is lost at Midewin and population sizes decrease, these species will decline throughout the cumulative effects area and the region. The proposed actions will contribute to the continued survival of these species within the area; with restoration in areas of old infrastructure. The linkage of these areas will lead to landscape scale restoration.

The generalist wildlife species tend to be very common in the cumulative effects area and local region. There will be positive impacts and negative impacts on generalist species with both the proposed action and the no action alternative, depending upon the specific animal. Some species may gain from the replacement of non-native plant species by native species. Some edge species may lose some habitat with removal of invasive plant species. Within the cumulative effects area there would be only minimal short term population changes with the proposed management activities, since these species are so common.

## Threaten and Endangered Species

### Affected Environment

Midewin National Tallgrass Prairie currently supports populations or provides habitat for forty nine (49) species of threatened, endangered, sensitive, and rare species of plants and animals. As the proposed action encompasses the entirety of Midewin, there is the potential to affect all forty nine species.

These species are listed below under groups with similar habitat requirements (e.g. dolomite prairie plants, grassland birds, stream invertebrates, prairie insects), but some species have distinct needs and are discussed separately (e.g. Indiana bat).

Dolomite Prairie Plants

These five plant species are restricted to dolomite prairie habitats in northeastern Illinois.

**Table 2: TES Dolomite Prairie Plants**

| Species | Status | Abundance on Midewin |
|---|---|---|
| Leafy Prairie-clover<br>*Dalea foliosa* | Federal Endangered<br>State Endangered | One population that fluctuates between 90-300 plants, depending on conditions. |
| Limestone Quillwort<br>*Isoëtes butleri* | State Endangered<br>Regional Forester Sensitive | One population, 150-250 plants. |
| Pitcher's Stitchwort<br>*MInuartia patula* | State Threatened<br>Regional Forester Sensitive | One large population that fluctuates between 100s -1000s of plants. |

| Species | Status | Abundance on Midewin |
|---|---|---|
| False Mallow<br>*Malvastrum hispidum* | State Endangered<br>Regional Forester Sensitive | Two populations that both fluctuate between 100s -1000s of plants. |
| Glade Hedge-Hyssop<br>*Gratiola* sp. | Rare | One populatio, less than 200 plants. |

## Outwash Plain Plants

These two plant species occur in a diversity of habitats including dolomite prairie, fens, calcareous prairies, and savannas.

**Table 3: TES Outwash Plain Plants**

| Species | Status | Abundance on Midewin |
|---|---|---|
| Crawe's Sedge<br>*Carex crawei* | Regional Forester Sensitive | At least two populations, each consisting of several large colonies. |
| Sullivant's Coneflower<br>*Rudbeckia fulgida sullivantii* | Regional Forester Sensitive | At least 20 populations, ranging from 10-1000s of flowering stems annually. |

## Typic Prairie Plants

These seven plant species are species found in open prairie communities with deep, fine-textured soils.

**Table 4: TES Typic Prairie Plants**

| Species | Status | Abundance on Midewin |
|---|---|---|
| Eastern Prairie Fringed Orchid<br>*Platanthera leucophaea* | Federal Threatened<br>State Endangered | Occurs on adjacent state land within 500' of NF boundary; habitat extends onto Midewin. |
| Mead's Milkweed<br>*Asclepias meadii* | Federal Threatened<br>State Endangered | Planted in seed production beds. |
| Small White Lady's-slipper orchid<br>*Cypripedium candidum* | State Threatened<br>Regional Forester Sensitive | One population; occurs on adjacent state land but extends onto Midewin. |
| Hill's Thistle<br>*Cirsium hillii* | Regional Forester Sensitive | Occurs on adjacent state land within 500' of NF boundary; habitat extends onto Midewin. |

| Species | Status | Abundance on Midewin |
|---|---|---|
| Earleaf False-foxglove<br>*Agalinis auriculata* | State Threatened<br>Regional Forester Sensitive | Two populations on Midewin; numbers fluctuate from less than 100 -1000s. |
| Hairy Valerian<br>*Valeriana edulis ciliata* | Regional Forester Sensitive | Occurs on adjacent state land within 30' of NF boundary; habitat extends onto Midewin, probably present on NF land. |
| Cluster Fescue (Grass)<br>*Festuca paradoxa* | Regional Forester Sensitive | One population on Midewin, discovered in 2005; less than 25 plants. |

## Riparian Plants

There is only one species in this group. This is a plant that occurs in open habitats in floodplains or on outwash plains, both along major rivers and tributary creeks.

**Table 5: TES Riparian Plants**

| Species | Status | Abundance on Midewin |
|---|---|---|
| Glade Mallow<br>*Napaea dioica* | Regional Forester Sensitive | One small historic population, plants have not been relocated even after several extensive searches. It may still persist. |

## Woodland/Forest Plants

These two plant species occur in forests, woodlands, and prairie groves on moist but well-drained soils.

**Table 6: TES Woodland/Forest Plants**

| Species | Status | Abundance on Midewin |
|---|---|---|
| Goldenseal<br>*Hydrastis canadensis* | Regional Forester Sensitive | One population that consists of 10 colonies. |
| American Ginseng<br>*Panax quinquefolius* | Regional Forester Sensitive | One population of less than 20 individual plants. |

## Grassland Birds

These six species of grassland birds that require grassland habitats.

**Table 7: TES Grassland Birds**

| Species | Status | Abundance on Midewin |
|---|---|---|
| Henslow's Sparrow<br>*Ammodramus henslowii* | State Threatened<br>Regional Forester Sensitive | Breeds in small numbers in appropriate habitat. |
| Short-eared Owl<br>*Asio flammeus* | State Endangered<br>Regional Forester Sensitive | Winter numbers fluctuate; fairly numerous in some years. May nest in future. |
| Upland Sandpiper<br>*Bartramia longicauda* | State Endangered<br>Regional Forester Sensitive | Breeds in small numbers in appropriate habitat. |
| Northern Harrier<br>*Circus cyaneus* | State Endangered<br>Regional Forester Sensitive | Migrant and winter numbers fluctuate. Single birds may summer; may nest in future, has done so in past. |
| Bobolink<br>*Dolichonyx oryzivorus* | Regional Forester Sensitive | Breeds in good numbers (100s) in appropriate habitat throughout Midewin. |
| Loggerhead Shrike<br>*Lanius ludovicianus migrans* | State Threatened<br>Regional Forester Sensitive | Breeds in small numbers (10-15 pairs) in appropriate habitat throughout Midewin. |

## Grassland Mammal

There is only one species in this category.

**Table 8: TES Grassland Mammal**

| Species | Status | Abundance on Midewin |
|---|---|---|
| Franklin's Ground-squirrel<br>*Spermophilus franklinii* | State Threatened<br>Regional Forester Sensitive | One, possibly two populations of unknown size and extent on Midewin that are primarily on adjacent county FPD and state land. |

## Wetland Vertebrates

There are six species in this category, four birds, one reptile, and one amphibian. All species below require wetlands dominated by perennial, emergent vegetation such as bulrushes, sedges, or cattails.

**Table 9: TES Wetland Vertebrates**

| Species | Status | Abundance on Midewin |
|---|---|---|
| American Bittern<br>*Botaurus lentiginosus* | State Endangered<br>Regional Forester Sensitive | Breeds in one wetland area on Midewin; occurs elsewhere on migration. |
| Least Bittern<br>*Ixobrychus exilis* | State Endangered<br>Regional Forester Sensitive | Breeds in at least two wetland areas on Midewin. |
| Common Moorhen<br>*Gallinula chloropus* | State Threatened | Intermittently breeds in two wetland areas on Midewin. |
| King Rail<br>*Rallus elegans* | State Threatened<br>Regional Forester Sensitive | Breeds in two or three wetland areas on Midewin. |
| Blanding's Turtle<br>*Emys blandingii* | State Threatened<br>Regional Forester Sensitive | Small population on Midewin west of IL Route 53. Has not been seen over the past 5 years. |
| Plains Leopard Frog<br>*Rana blairi* | Regional Forester Sensitive | In wetlands along Prairie Creek and possibly other wetlands, west of IL Route 53. |

## Stream Invertebrates

There are two species: one is a freshwater mussel that spends its entire life in the stream, the other is an aquatic insect that has a fairly long, aquatic nymph stage with a brief, free-flying adult stage.

**Table 10: TES Stream Invertebrates**

| Species | Status | Abundance on Midewin |
|---|---|---|
| Crawling Mayfly<br>*Danella lita* | Regional Forester Sensitive | In one stream, Prairie Creek. |
| Ellipse (mussel)<br>*Venustaconcha ellipsiformis* | Regional Forester Sensitive | In one stream, Jackson Creek. |

## Savanna/Woodland Birds

There are two species of savanna/woodland birds.

**Table 11: TES Savanna/Woodland Birds**

| Species | Status | Abundance on Midewin |
|---|---|---|
| Cerulean Warbler<br>*Dendroica caerulea* | Regional Forester Sensitive | Observed in one wooded area during migration and may nest in areas adjacent to Midewin; there is breeding habitat on Midewin. |
| Red-headed Woodpecker<br>*Melanerpes erythrocephalus* | Regional Forester Sensitive | Nests in woodlands and prairie groves on Midewin. |

## Prairie Insects

There are twelve species of prairie insects.

**Table 12: TES Prairie Insects**

| Species | Status | Abundance on Midewin |
|---|---|---|
| Eryngium Stem-borer Moth<br>*Papaipema eryngii* | State Endangered<br>Regional Forester Sensitive | One population; occurs mostly on adjacent state land but extends onto Midewin. |
| Liatris Stem-borer Moth<br>*Papaipema beeriana* | Regional Forester Sensitive | One population; occurs mostly on adjacent state land but extends onto Midewin. |
| #10 Stem-borer Moth<br>*Papaipema* sp. 10 | Rare | Two small populations; one occurs mostly on adjacent state land but extends onto Midewin. |
| Noctuid Moth<br>*Dichagyris reliqua* | Regional Forester Sensitive | One population; occurs mostly on adjacent state land but extends onto Midewin. |
| Noctuid Moth<br>*Oncocnemis saundersiana* | Regional Forester Sensitive | One population; occurs mostly on adjacent state land but extends onto Midewin. |
| Noctuid Moth<br>*Plusia venusta* | Regional Forester Sensitive | One population on Midewin; maybe only extant population in USA (also survives in Canada). |
| Jaguar Moth<br>*Schinia jaguarina* | Regional Forester Sensitive | One population; occurs mostly on adjacent state land but extends onto Midewin. |

| Species | Status | Abundance on Midewin |
|---|---|---|
| Sedge Stem-borer Moth<br>*Spartiniphaga includens* | Regional Forester Sensitive | One population; occurs mostly on adjacent state land but extends onto Midewin. |
| Hermit Sphinx Moth<br>*Sphinx eremita* | Regional Forester Sensitive | One population; occurs mostly on adjacent state land but extends onto Midewin. |
| Clemens' Sphinx Moth<br>*Sphinx lucitosa* | Regional Forester Sensitive | One population; occurs mostly on adjacent state land but extends onto Midewin. |
| Redtail Prairie Leafhopper<br>*Aflexia rubrnura* | State Threatened<br>Regional Forester Sensitive | One population on Midewin. |
| Leafhopper<br>*Macrosteles potoria* | Regional Forester Sensitive | One population; occurs mostly on adjacent state land but extends onto Midewin. |

Whooping Crane

This species is listed as Federal Endangered. Midewin is within a migration corridor for a restored population that nests in Wisconsin and winters in Florida.

Indiana Bat

This species is listed as Federal Endangered and State Endangered. Indiana bats are not known to occur on Midewin, but Midewin occurs within their range and there is suitable summer habitat present.

**Environmental Consequences**

*Alternative 1 - Removal*

The proposed action would have small positive affects on the dolomite prairie plants, outwash plain plants, typic prairie plants, riparian plants, woodland/forest plants, grassland birds, grassland mammal, wetland vertebrates, savanna/woodland birds and prairie insects. These benefits would arise from the restoration of habitats following demolition. The restoration of these areas would not necessarily take place immediately, but over time. The benefits would also only be felt over time. The removal of old infrastructure would also make management easier in these areas which help control some of the invasion of invasive plant species. Better control of invasives would have a positive impact habitat for these species.

The proposed action should not cause any adverse affects on federally listed Indiana bats or whooping cranes. There may be some slight benefit, as infrastructure removal may allow additional habitat restoration in the future.

The two stream invertebrates could be temporarily affected by the proposed action if infrastructure needs to be removed from streambeds or takes place close to the stream. Increased runoff from nearby infrastructure removal may negatively affect water quality for brief periods of time. Actual work in streambeds to remove infrastructure could pose a threat to stream invertebrates during demolition. Recommended mitigation measure, Environmental Management Systems (EMS) procedures, and the standards and guidelines from the Prairie Plan should prevent any long term adverse effects on stream invertebrates.

Any potential short term negative impacts would be offset by mitigation measures, EMS procedures and the Prairie Plan standard and guidelines.

*Alternative 2 – No Action and Alternative 3 – Board-up and Fencing*

Alternative 2 (no-action alternative) and alternative 3 (board-up/fence alternative) should have no short term impacts on any of the TES species. Over the long term if the old infrastructure makes management difficult and helps the spread of native and non-native invasive species, these alternatives could have a negative impact on TES species through loss of habitat.

### Cumulative Effects

In most cases Midewin will make a significant contribution to the continued viability of these species within the Prairie Parklands. No matter which alternative, Midewin will make positive impacts to these TES species. Impacts from the alternatives will have only a small impact overall in the Prairie Parklands.

The proposed action alternative may provide some additional benefits, but will probably be relatively small. Demolition and subsequent restoration will provide additional habitat over the long-term. The proposed action will probably have little impact on the stream invertebrates since the quality of these streams is dependant upon actions off of Midewin. The proposed action should have no impacts on whooping cranes, Indiana bats, leafy prairie clover, Mead's milkweed and eastern prairie fringed orchid.

Alternative 2 (no action alternative) and alternative 3 (board-up/fence alternative) will have little impact on these species in the Prairie Parklands. These actions should have no impacts on whooping cranes, Indiana bats, leafy prairie clover, Mead's milkweed and eastern prairie fringed orchid.

## Management Indicators

### Affected Environment

Native Habitat Management Indicators

There are eight native habitat management indicators on Midewin. They correspond to native habitats prior to 1830. Soils, general land office surveys, location of existing remnants on Midewin, and nearby native habitat remnants were used as sources to

determine the distribution and species composition of these management indicators on Midewin. The Indicators and representative plants in each indicator are summarized in Table 13.

**Table 13: Representative Plant species of Native Habitat Management Indicators**

| **Native Habitat Management Indicators** | **Representative Plant Species** (not always restricted to one habitat) |
|---|---|
| Dolomite Prairie | Tufted Hair Grass, Flatstem Spikerush, Low Calamint, Hairy Beardtongue, Nodding Wild Onion, Prairie Dropseed |
| Upland Prairie | Big Bluestem, Little Bluestem, Prairie Dropseed, Obedient Plant, Purple Prairie-Clover, Rattlesnake-master, Leadplant, Compass-Plant, Prairie Coreopsis, Prairie Phlox, Hoary Puccoon, Rough Blazing-Star, Round-Headed Bush-Clover, Prairie Oval-Sedge |
| Wet Prairie | Prairie Cordgrass, Michigan Lily, Common Mountain-Mint, Prairie Sundrops, Bull Sedge, Prairie Ironweed, Big Bluestem, Golden Alexander, Bottle Gentian, Marsh Bedstraw, Riddell's Goldenrod |
| Sedge Meadow | Tussock Sedge, Broom Oval-Sedge, Bluejoint Grass, Swamp Milkweed, Autumn Sneezeweed, Blue Monkey-Flower, Wild Blue Iris, Dudley's Rush, Marsh Running Sedge, Marsh Fox Sedge |
| Marsh | Great Bulrush, Common Arrowhead, Common Bur-reed, River Bulrush, Mad-Dog Skullcaps, Lake Sedge, Duckweed, Mild Water-Pepper, White Water-Crowfoot, Broad-Leaved Cattail |
| Seep | Great Blue Lobelia, Spotted Joe-Pye-Weed, Orange Jewelweed, Fowl Manna Grass, White Turtlehead, Porcupine Sedge |
| Savanna | Burr Oak, Hazelnut, Shagbark Hickory, Wild Hyacinth, Sweet Joe-Pye Weed, Bottlebrush Grass, Spring Beauty, Little Bluestem, Penn Sedge, Prairie Crabapple, Mullein False-Foxglove |
| Woodland/Forest | White Oak, Red Oak, Bitternut Hickory, Hop-Hornbeam, Elm-Leaved Goldenrod, Woodland Blue Phlox, Wild Geranium, Gray's Sedge. Blackhaw Viburnum, Mayapple, James' Sedge, American Elm, Late Figwort, Yellow Crownbeard, Virginia Bluebells |

Grassland Habitat Indicators

Grassland habitat indicators are used for monitoring grassland habitat, both acreage and management treatments. Many species of grassland wildlife are highly sensitive to habitat structure (grass height, litter density), management (prescribed burning, haying, mowing) or area effects (fragmentation). Grassland habitat can be broken down into short-stature (< 12”), medium-stature (>12 and < 24”) and tall-stature (> 24”) grasslands. Representative wildlife of these three indicators is summarized in Table 14.

**Table 14: Representative Wildlife Species of Grassland Habitat Indicators**

| **Grassland Habitat Indicator** | **Representative Wildlife Species** (Not always restricted to one habitat) |
|---|---|
| Short-Stature Grassland | Upland Sandpiper, Grasshopper Sparrow, and Thirteen-Lined Ground Squirrel |
| Medium-Stature Grassland | Bobolink, Eastern Meadowlark, Smooth Green Snake, and Deer Mouse |
| Tall-Stature Grassland | Henslow’s Sparrow, Sedge Wren, and Meadow Vole |

Benthic Macro-invertebrates

Aquatic insects (especially insect larvae), crustaceans, snails, worms, leeches, and other invertebrates are present in and on the substrate of permanent streams (“benthic” means “bottom”). Species diversity and abundance is directly dependent upon several factors, most importantly, on water quality.

Leafy Prairie-clover

This plant (*Dalea foliosa*) is a Federal endangered species and its habitat is dolomite prairie. Like many other prairie species, a series of factors affect populations, including annual precipitation, herbivory, fire management, and invasive plant control. One population of leafy prairie-clover is found at Midewin.

Henslow’s Sparrow

This grassland bird is listed as both Regional Forester Senstive Species (RFSS) and as endangered by the Illinois Endangered Species Protection Board. Henslow’s sparrow is an area-sensitive grassland species that requires unfragmented habitat. This bird is also sensitive to management, preferring a cover of tall grasses (>25 inches) with a layer of ground litter.

White-tailed Deer

This large wildlife species is included as a management indicator because it is a demand species sought by hunters. Deer sightings are also often appreciated by hikers and other visitors. White-tailed deer occur throughout Midewin and use a wide variety of habitats, including native prairie, forests, old fields, thickets, fencerows, and agricultural grasslands.

## Environmental Consequences

*Alternative 1- Proposed Action*

Alternative 1 would allow the restoration of a more natural landscape which is consistent with the standard and guidelines of the Prairie Plan.

Under alternative 1, the proposed action, native habitat indicators, grassland habitat indicators, leafy prairie-clover and Henslow's sparrow should not be negatively impacted when the mitigation measures, Environmental Management System procedures and Prairie Plan standards and guidelines are followed. These measures should protect these groups when these habitats and populations are near the demolition footprints. There should be a small positive effect on these groups. These benefits would arise from the restoration of habitats following demolition. The restoration of these areas would not necessarily take place immediately, but over time. The removal of old infrastructure would also make management easier in these areas which help control some of the invasion of invasive plant species. Better control of invasives would have a positive impact of habitat for these habitats and species.

Benthic invertebrates could be temporarily affected by the proposed action if infrastructure needs to be removed from streambeds or takes place close to the stream. Increased runoff from nearby infrastructure removal may negatively affect water quality for brief periods of time. Recommended mitigations, Environmental Management System procedures and standard and guidelines from the Prairie Plan should prevent any long term adverse impacts on benthic macroinvertebrates.

There should be no overall change in the Midewin population of white-tailed deer. This is an adaptable, widespread, and abundant wildlife species. There may be some additional habitat as old infrastructure is removed, which may have a slight positive impact.

*Alternative 2- No Action and Alternative 3- Board-up*

The no action and board-up/fence off alternatives would slow or interfere with the restoration of a natural landscape and would be inconsistent with the standards and guidelines of the Prairie Plan. These actions should have no short term impacts on native habitat indicators, grassland habitat indicators, Henslow's sparrow and leafy prairie-clover, since there is no change from the current conditions. Over the long-term if the old infrastructure makes management difficult and helps the spread of native and non-native invasive species, these alternatives could have a negative impact on habitats and species.

There should be no significant change in the benthic macroinvertebrates or white-tailed deer with these actions, since there is no change from the current conditions.

## Cumulative Effects

Midewin will make a significant contribution to the continued viability of these habitats and species within the Prairie Parklands. No matter which alternative, Midewin makes positive

impacts to these habitats and species. Impacts from the alternatives will have only a small impact overall in the Prairie Parklands.

The proposed action alternative may provide some additional benefits, but will probably be relatively small. Demolition and subsequent restoration will provide additional habitat over the long-term and allow more effective management. The proposed action will probably have little impact on the benthic macroinvertebrates, since the quality of the streams is dependant mostly upon actions outside of Midewin.

Alternative 2 (no action alternative) and alternative 3 (board-up/fence alternative) could have small negative impacts in the Prairie Parklands, if management is compromised and invasive species are allowed to spread, or if fragmentation is allowed to increase around old infrastructure. These actions should have no impacts on benthic macroinvertebrates and white-tailed deer.

# Soils

### Affected Environment

Midewin mainly consists of fine-grained soils that hold water well and have gentle slopes. Small portions of the land have steeper slopes and/or more sandy soils with less water-holding capacity. Some land areas on Midewin have been subjected to excavation, manipulation and chemical treatments by the Army and farmers for several decades prior to Forest Service management.

### Environmental Consequences

*Alternative 1 – Removal*

Under alternative 1, proposed structures will be removed making the land suitable for re-vegetation. Structure removal may result in soil rutting and compaction around these areas from heavy equipment. Soil rutting and compaction can be reduced by keeping heavy equipment on established roads and foundations as much as possible during removal, and by limiting heavy equipment to periods when soils are dry or frozen. There is also possible introduction of hazardous material (e.g. transite) into the soil during removal. This can be mitigated by ensuring proper demolition and removal activities, including cleaning up of loose material from the soil surface. Soil erosion by water may also occur, but soil loss is not expected to be significant due to gentle slopes where structures are located. Water infiltration into the soil would increase once structures and foundations are removed, because more surface area would be available for water to seep into the ground and would likely result in wetter soils.

*Alternative 2 – No Action*

Under alternative 2, current structures approved for removal under Phase I NEPA decisions would still be removed. Other structures would not be removed, boarded up, or fenced in. There would be no potential for soil rutting from heavy equipment or other vehicles used to board-up buildings or construct fences. The infrastructure would remain in its present state and would not become available for prairie restoration. Subsequently, organic matter

additions to the soil from vegetation would not occur. Water infiltration into the soil would not occur where structures currently exist.

*Alternative 3 – Board-up and Fencing*

Under alternative 3, proposed structures will not be removed, but would be boarded up and fenced for safety reasons. Minor soil disturbance would occur when digging holes for fence posts. Soil rutting is not expected to be a factor because equipment could stay on developed ground. The infrastructure would remain in its present state, so the soil would not become available for prairie restoration. Subsequently, organic matter additions to the soil from vegetation would not occur. Water infiltration into the soil would not occur where structures currently exist.

### Cumulative Effects

Both alternatives 2 and 3 would not have short term effects on the soil resource. Soils would be negatively impacted by these alternatives over the long-term because the soil would not receive the benefits of organic matter inputs from vegetation and increased water infiltration. Alternative 1 would result in short term rutting and compaction of the soil while structure removal is occurring. Over the long-term, restoration of these areas will allow vegetation roots, burrowing animals and frost action to loosen areas that may have been compacted by removal activities. In addition, planting of vegetation will contribute organic matter to the soil which aids in decreasing soil erosion and increasing soil fertility. Natural processes will be able to act on the soil under these removed structures and eventually will develop soil structure and properties that more closely resemble naturally-occurring soils. Water infiltration will increase which will likely result in wetter soils than currently exist in these areas.

## Water

### Affected Environment

Surface water on Midewin drains through four main streams that generally flow in a west-southwesterly direction: Jackson, Prairie, Grant, and Jordan Creeks. Water quantity through these streams varies considerably throughout the season and they may exhibit dry bed conditions during the year. Grant Creek is the only stream listed for Illinois 303(d) impairment of aquatic life due to unknown cause(s) (Illinois EPA, 2006). Jackson and Prairie Creeks fully support aquatic life, while Jordan Creek has not been assessed. All four of the main streams flowing through Midewin may be potentially affected by the proposed project.

### Environmental Consequences

*Alternative 1– Removal*

Structure removal on land has the potential for increasing sediment to surface waters during removal operations. Sediment transport can be mitigated by using Environmental Management Systems during removals such as silt fences along waterways or wetlands in the immediate vicinity. Removing structures would result in increased water infiltration, help

recharge and flow of groundwater in the area. The ground would become wetter in general and wetlands of various types may form due to increased water flow and availability.

Sediment is also a potential concern when removing structures (bridges and culverts) that occur within streams or waterways. These structures would require a 303(d) permit from the Army Corps of Engineers, and Environmental Management System practices would be used during the removal, following previous bridge removal procedures on Midewin. Removing structures from within surface waters will result in short term increases in sediment, but would provide a long-term benefit of reducing debris accumulation and subsequent bank erosion.

*Alternative 2 – No Action and Alternative 3 – Board-up and Fencing*

No additional structures would be removed under alternative 2 or 3. Bridges across streams would not be removed and would remain susceptible to debris accumulation, which may contribute to streambank erosion. Roads would not be obliterated, so roads susceptible to erosion would continue to possibly contribute sediment to surface waters. There would be no potential for sediment contributions to surface waters due to structure removal operations.

### Cumulative Effects

Development is expected to increase in the future within the watersheds around Midewin. This will increase impervious surfaces and change the timing of water flow in the watershed. Changes to the timing will depend heavily on how stormwater management is planned and implemented for the developments outside of Midewin boundary.

Removal of structures will generally have a small cumulative effect overall within the watersheds. Over time, water flow should become more stable after structures are removed and as the hydrology of Midewin is restored. Since Midewin is downstream of future development, water flow from upstream will have a greater effect than changes occurring on Midewin land. Sediment contributions from Midewin land to surface waters will be reduced in the future as structure removal and restoration of vegetation occurs. Overall, structure removal will have a small positive effect on the overall hydrology of the watersheds.

## Air

### Affected Environment

The Illinois Environmental Protection Agency uses a national standard for reporting air pollution levels to the general public called the Air Quality Index (AQI) (Illinois EPA 2005). The AQI is a composite formula from six pollutant criteria and results over 100 indicate potential air quality problems. There were 3 instances of AQI from 101 to 150 in Will County in 2005 (1.4% of total), which considered unhealthy for sensitive groups such as the elderly, those with respiratory problems, and active children and adults.

The annual report from the Illinois EPA also provides estimates for stationary point emissions for 102 counties in Illinois. From this data, Will County is in the top 5 most

emissions for all 5 emission categories: carbon monoxide, nitrogen oxides, particulate matter, sulfur dioxide, and volatile organic material. This data indicates that emissions from point sources in Will County contribute a significant portion of total air pollution within the county.

### Environmental Consequences

*Alternative 1 – Removal*

Alternative 1 would result in increased vehicle emissions from heavy equipment used in structure removal. These emissions would occur on a sporadic, short term basis during structure removal and would not be a permanent increase in air pollution within the airshed. There is a potential for dust to increase during removal, but is not expected to be significant.

*Alternative 2 – No Action*

There would be no additional effects on air quality if alternative 2 is chosen.

*Alternative 3 – Board-up and Fencing*

Alternative 3 would have a very minor effect on air quality from vehicle emissions when vehicles are used to transport materials for fencing and boarding activities.

### Cumulative Effects

None of the alternatives would contribute to a significant increase in air pollution compared to the contributions of other sources within Will County.

## Heritage

### Affected Environment

Prior to the establishment of Midewin, a programmatic agreement (PA) was established to dispose of Joliet Army Ammunition Plant (JAAP) properties, while taking into account the historic nature of the property. The terms of this 1993 PA, a *Programmatic Agreement among the United States Army Materiel Command, the Advisory Council on Historic Preservation, and Multiple State Historic Preservation Offices Concerning a Program to Cease Maintenance, Excess, and Dispose of Certain Properties*, applied to the Armament, Munitions, and Chemical Command (AMCCOM) action to cease maintenance on some or all installation buildings, declare them excess, and dispose of them while retaining the underlying lands. With the reduced threat of global conflict in the early 1990's, AMCCOM no longer had the resources to operate and maintain all of its installations and sought to maintain minimum facilities required for mobilization and declare excess the facilities that were no longer required. Furthermore, AMCCOM recognized that some of the facilities were included in or eligible for inclusion in the National Register of Historic Places. This agreement included the JAAP and was signed by the Advisory Council and the Illinois Historic Preservation Agency in 1993.

The PA provides for specific documentation of historic buildings, structures, and equipment to mitigate the adverse effect of the US Army's undertaking to dispose of JAAP installation buildings. The PA only specifies adverse effects on buildings and structures at affected installations. It also specified there would be adverse effects on ground surfaces on the immediate areas of the buildings during the disposal process, but the actions in the undertaking would not affect historic properties that are archaeological resources. Archaeological surveys would have to be conducted to prevent the disturbance of surface deposits in the immediate vicinity of buildings.

The following documentation was submitted to the Illinois Historic Preservation Agency in fulfillment of the PA:

Walsh, Rita and Patricia Wingo
1995 *Joliet Army Ammunition Plant, Wilmington, Illinois*. Prepared by Gray and Pape, Inc. Cincinnati, Ohio for Geo-Marine, Inc., Plano, Texas, under contract to the US Army Corps of Engineers, Fort Worth District, Fort Worth Texas.

Kimbrell, K. D. and M. Snellgrove
1995 *Joliet Army Ammunition Plant Supplemental Photographic Documentation of Archetypal Buildings, Structures, and Equipment for U.S. Army Materiel Command National Historic Context for World War II Ordnance Facilities*. Prepared by Geo-Marine, Inc., Plano Texas under contract to the US Army Corps of Engineers, Fort Worth District, Fort Worth Texas.

Kane, Kimberly L.
1995 *Historic Context for the World War II ordnance Department's Government-Owned Contractor-Operated (GOCO) Industrial Facilities, 1939-1945*. Prepared by Geo-Marine, Inc., Plano Texas under contract to the US Army Corps of Engineers, Fort Worth District, Fort Worth Texas.

These documents later became part of the US Army Materiel Command Historic Context Series.

Kane, Kimberly L.
1995 *Historic Context for the World War II ordnance Department's Government-Owned Contractor-Operated (GOCO) Industrial Facilities, 1939-1945*. US Army Materiel Command Historic Context Series. Report of Investigations No. 1. Plano, Texas: Geo-Marine, Inc.

Walsh, R. and P. Wingo
1995 *World War II Ordnance Department's Government-Owned Contractor-Operated (GOCO) Industrial Facilities. Joliet Army Ammunition Plant Historic Investigation*. US Army Materiel Command Historic Context Series. Report of Investigations No. 4A. Plano, Texas: Geo-Marine, Inc.
1996 *The World War II Ordnance Department's Government-Owned Contractor-Operated (GOCO) Industrial Facilities. Joliet Army Ammunition Plant transcripts of oral history*

*interviews*. U.S. Army Materiel Command historic context series. Report of Investigations No. 4C. Plano, Texas: Geo-Marine, Inc.

Kimbrell, K. D. and M. Snellgrove
1995 *Joliet Army Ammunition Plant Supplemental Photographic Documentation of Archetypal Buildings, Structures, and Equipment for U.S. Army Materiel Command National Historic Context for World War II Ordnance Facilities*. U.S. Army Materiel Command Historic Context Series. Report of investigations No. 4B. Plano, Texas: Geo-Marine, Inc.

In addition, a cultural resources management plan was created under contract by the US Army Corps of Engineers, Fort Worth District to fulfill obligations as defined in Army Regulation (AR) 420-40 for the creation of historic preservation plans. AR 420-40 was superseded by AR 200-4 which outlines the Army's management of historic properties and sacred sites.

Peter, Duane E., Philip R. Waite, and Kellie Krapf
1996 *Joliet Army Ammunition Plant Cultural Resources Management Plan*. Prepared by Geo-Marine, Inc., Plano Texas for the Joliet Army Ammunition Plant under contract to the US Army Corps of Engineers, Fort Worth District, Fort Worth Texas. Plano-Texas: Geo-Marine, Inc.

The Illinois Historic Preservation Agency signed the PA and concurred that the US Army Corps of Engineers fulfilled AMCCOM's commitments to document the JAAP (IHPA Log #09011096). The Forest Service is not in possession of Report of investigations No. 4B, which contains the photo documentation of the JAAP.

The Illinois Land Conservation Act (Public Law 104-106) created the Midewin National Tallgrass Prairie, designated to transfer a total of 19,670 acres of land in Illinois from the U.S. Army to the U.S. Department of Agriculture Forest Service, and mandates that Midewin be managed to meet four primary objectives:

1. To conserve, restore, and enhance the native populations and habitats of fish, wildlife, and plants.
2. To provide opportunities for scientific, environmental, and land use education and research.
3. To allow the continuation of existing agricultural uses of lands within Midewin National Tallgrass Prairie for the next 20 years, or for compatible resource management uses thereafter.
4. To provide recreational opportunities that is compatible with the above purposes.

The first land transfer from the Army to the Forest Service took place on March 10, 1997, and included 15,080 acres of land that was believed to be free from contamination. Subsequent land acquisitions place the current size of Midewin at 18,225 acres. The Forest Service prepared an environmental assessment for the *Demolition and Removal of Unneeded and Unsafe Facilities and Structures* in 2001, but did not include all of the

transferred structures or provide specifications for facilities that would be included in future land transfers.

**Environmental Consequences**

*Alternative 1- Removal*

The action proposed by the Forest Service to meet the purpose and need is as follows:

Demolition and disposal for identified structures and buildings, including newly transferred properties and structures that were transferred but not analyzed under the 2001 EA, and properties expected to be transferred in the foreseeable future. It is proposed to remove the decaying structures and restore a natural landscape that is consistent with the standards and guidelines in the Prairie Plan (2002). These demolition activities would take place over time as budget and partnering opportunities allow.

The adverse effects documented in the 1993 PA, which was executed in order for the US Army Material Command to dispose of JAAP structures, have been mitigated through the stipulations addressed in the PA. However, to be in full compliance with the National Historic Preservation Act of 1966, archeological surveys must be conducted in the vicinity of the buildings to prevent damage to subsurface cultural deposits. These surveys would be conducted where applicable, and investigations would be avoided in areas with the known existence of soil contamination or unexploded ordnances.

*Alternative 2- No Action*

Under the no action alternative, current plans would continue to guide management of the site. Demolition and removal would not take place on any of the buildings and structures. The no action alternative is not consistent with the enabling legislation.

No stabilization would occur under this alternative, and the buildings would be left to the elements and would further decay. Although the structures would not be demolished by the Forest Service, this alternative would not be considered true preservation.

*Alternative 3- Board-up*

Under Alternative 3, demolition would not take place on any buildings described in the proposed action, and the buildings would be boarded up and fenced. This action would follow the management guidelines that are in the No Action alternative. The buildings would continue to be unmanaged. No stabilization would occur under this alternative, and the buildings would be left to the elements and would further decay. Although the structures would not be demolished by the Forest Service, this alternative would not be considered true preservation.

# Scenery

## Affected Environment

Midewin is an irregular quilt work made up of layers of cultural influences laid on the land over the past 200 years. The terrain is gently rolling, with numerous creeks, ditches and channels drain this undulating landscape. Many stretches of the streams were straightened or channeled, resulting in steeper stream banks and no meanders. In some areas, riprap lines the stream bank to control erosion. Portions of the riparian area along Jackson and Prairie Creek are wooded. In western segments of Prairie Creek and Jackson Creek, dolomite limestone is visible when the water level is low. Kemery and Doyle Lakes are small impoundments; havens for waterfowl with cattails and arrowheads emerging from the surface of the water.

Little of the historic landscape remains today. Occasional prairie remnants exist where the land was not disturbed. The entire Prairie is cut into a grid pattern of roads at one-mile intervals, typical of the early Midwestern agricultural landscape. Most of this early road system remained the primary transportation system for the JAAP. Other roads were abandoned and allowed to grow over. The farmstead landscape is still evident today, with rows of Osage orange trees planted as living fences in the mid 1800's. Along the roads are the remnants of numerous farmsteads, primarily building foundations and vegetation including windbreaks, fruit, shade and walnut trees, and various perennials, along with invasive shrubs. Evidence of the JAAP remains as part of the landscape features at Midewin. A large bunker field on the west side of Midewin contains over 130 bunkers on 800 acres. Five bunker fields are located on the east side; the largest contains 87 bunkers and covers approximately 450 acres; the smallest covers about 120 acres and contains 23 bunkers. The bunkers vary slightly in shape and size depending on their intended purpose. In general, the bunkers are earthen covered, arched concrete structures approximately 60 feet long and 30 feet wide. Viewed from the sides or rear they appear as grassy knolls that quickly fade into the background as the viewer moves away.
Four rectangular groups of warehouses (60' x 500') cover approximately 190 acres each; with the largest array containing 34 buildings. Buildings within each group of warehouses are consistent in design and size, but each group was built with different materials.

The former arsenal facilities are joined by a network of 115 miles of roads (varying from two-track to paved) and 118 miles of railroad beds.

The spaces between the former arsenal structures are made up of a quilt work of agricultural land uses. The quilt work of land uses is irregular in size and shape.

<u>Scenery of Adjacent Lands</u>

The lands adjacent to Midewin have a substantial influence on the character of Midewin. Four large areas, still in Army ownership, cover approximately 150 acres on the east side of Midewin. These lands are expected to be transferred to the Forest Service in the near

future. These facilities have a major impact on the character of the east side of Midewin. They're constructed of masonry, corrugated steel and wood frame, following long straight lines. Various support structures are located on the periphery including guard huts, personnel changing buildings and personnel evacuation bunkers.

Illinois Route 53, a four-lane divided highway, runs north and south through Midewin. Within the corridor are a high-speed train track, private and Army properties, farmhouses, agricultural products supplier, and grain bins and silos. Hoff Road, a two lane county road, borders the northern boundary of the east side of Midewin. Smaller paved and gravel roads are adjacent to and dead end at Midewin around much of the site.

CenterPoint Intermodal Center lies near the northwest corner of Midewin. CenterPoint is a national hub for rail and truck traffic. The facility includes box transfer and storage and supports several major warehouses between the rail yard and State Route 53. It is visible in the middleground and background from much of the western side of Midewin.

Midewin is buffered from the Abraham Lincoln National Cemetery by Hoff woods, a native woodland area.

Island City Industrial Park and the Will County Sanitary Landfill are located along the south end of the east side of Midewin. Operators Union Local 150 have developed a training center as part of the industrial park. It includes indoor facilities with classrooms and other facilities and extensive outdoor training areas where students acquire practical experience with cranes, loaders, scrapers and other heavy equipment. The remainder of Island City Industrial Park is still in early planning stages.
The landfill includes a mounded system that will reach 150 feet above adjacent lands. It is expected, as the mound develops that the upper portion of the site will always be un-vegetated and heavy equipment (scrapers, end loaders, etc.) will be visible during working hours. The landfill will be visible from many parts of the prairie.

Other industries are located northwest of Midewin, including Exxon-Mobil refinery, a prominent feature. The refinery is a complex of tanks, pipes and other steel structures that extend several stories high.

Des Plaines Conservation Area lies along the south and west boundary of Midewin, with wooded and grassy recreation areas and occasional parking lots and support structures.

The remaining property bordering Midewin is privately owned agricultural land.
This land is primarily tilled or pasture with scattered farmhouses and out buildings (barns, machine sheds, etc.), divided by local roads. The land north of Hoff Road will likely be developed soon. The land south of Midewin may also be developed in the near future.

**Desired Condition**
The Prairie Plan identifies the desired condition as follows (Prairie Plan Section 2.5.1):

*Visitors find opportunities for outdoor recreation in a unique setting. Visitors experience a sense of relative vastness and solitude in a more naturally appearing setting not found elsewhere in this vicinity. Experiences include opportunities to view the prairie landscape and wildlife from Illinois Route 53 or from a network of internal trails, and opportunities to become totally immersed in the prairie environment. Midewin provides trail opportunities unencumbered by vehicle traffic, with opportunities for both short, easy trips as well as more challenging trips by foot, bicycle or horseback. The landscapes offer a variety of naturally appearing settings from rural and roaded settings with opportunities for social interaction and comfort, to somewhat more primitive settings with greater opportunities for solitude and challenges.*

The desired condition of Midewin is a more natural appearing landscape than what exists today. However, restoring the historic landscape is not possible because many of the extensive modifications to the land are virtually irreversible or infeasible. Therefore, restoration efforts will focus on moving the landscape character to a more natural appearing condition.

The Scenic Integrity Objectives (SIO) are the result of the compilation of analysis and survey to classify the desired scenic quality of the land. The objectives are used to guide management practices to ensure the scenic and ecological integrity of the land is maintained or improved. The relative visibility of the landscape, the level of concern with the landscape and the scenic attractiveness of the land are combined to form the Proposed Scenic Integrity.

**Environmental Consequences**

*Alternative 1 – Removal*

Implementation of the proposed action will aid in moving Midewin lands toward meeting the proposed Scenic Integrity Objectives. Much of Midewin is classified as “High” in the proposed Scenic Integrity Objectives (see Prairie Plan Figure 5).

Removal of existing roads and railbeds will make significant strides in moving the landscape toward a more natural landscape and meeting scenic integrity objectives. Roads and railbeds present a significant visual intrusion; the straight lines, non-natural surfacing, and variation from the natural topography to cut and fill sections created for the transportation ways and the ditches associated with them. Roads are often visible in the foreground and background for recreationists and are major dividers upon the landscape. They limit the feeling of “solitude and vastness” that the public expressed desire for during the initial planning process.

Removal of the decaying army bunkers and buildings and re-contouring the adjacent land will also create a more natural appearing landscape. The subtle topographic relief at Midewin allows buildings to be visible from long distances. Some of the buildings are dilapidated which distracts from the natural landscape more than if they were in a well maintained state. Bunkers are not obtrusive by themselves, especially if viewed from the

back or side which is earth and sod covered. However, the quantity and spacing of the bunkers limit the opportunities for large scale visual landscape restoration.

The cumulative impacts of the proposed alternative are positive. This portion of Will County is under heavy stresses from development. CenterPoint Intermodal Center is constantly expanding with large warehouses now being constructed on Midewin's northwest corner. Several chemical plants already exist to the north and west of Midewin. The Prairie View Landfill, Local 150 training facility, and a new industrial park are being developed on Midewin's southeast side. Residential development continues to enhance Midewin. Removal of the arsenal infrastructure to preserve open space within this portion of Will County will have a positive effect on the visual resources of the area.

*Alternative 2 – No Action*

In the no action alternative, the army infrastructure would remain. Removal of infrastructure would not move the Midewin landscape toward the Scenic Integrity Objectives.

Roads and railbeds would continue to divide the landscape into sections. Many roads, especially paved roads would remain intact over the long term. Gravel roads, two track gravel roads, and railbeds would get overgrown over time and would start to take on a more vegetative character. The structured topography of the road and railbed system would continue to divide Midewin and limit opportunities for a sense solitude and vastness.

Buildings and infrastructure would continue to visually decay. Most former army structures are grouped in areas across the prairie. This typical pattern consolidates the visual impact but intensifies it where it occurs. Some groups of buildings are visible from almost all parts of the prairie. The visual effect of army structures would be evident far into the future.

Unlike buildings, bunkers are relatively stable in their current visual state. Therefore, they would remain constant over the long-term. Like other structures, bunkers are grouped in large areas ranging from 150 to 450 acres; creating a large scale visual impact. The impact of bunkers is less than most buildings, because bunkers are earth and sod covered on three sides and are typically spaced about one-tenth of a mile apart.

*Alternative 3 – Board-up*

Under alternative 3, buildings would be boarded up or fenced off. Bunkers would remain as they are today, the same as alternative 2. Roads and railbeds would also be treated the same as alternative 2, allowing for slow re-vegetation of gravel roads and railbeds.

Boarding-up or fencing off buildings would not move the landscape toward meeting the proposed Scenic Integrity Objectives. Boarding-up windows and doors would not be significantly different than the no action alternative. Fences would not enhance the scenic integrity any more than allowing the buildings to stay. It may divert from the natural scenery by adding long straight lines of galvanized fence on the landscape.

Possible scenery mitigation measures for this alternative include:

- Painting boards that cover building windows and doors to blend in with the surrounding building.
- Planting vines or shrubs along the fences to break up the long visual lines of the fences.

# Recreation

### Affected Environment

Currently, approximately 7,100 of the 18,225 acres the Forest Service manages are open to the public. Half of the area open to the public is east of Illinois Route 53, south of Hoff Road, north of Road 1 North and west of the Wauponsee Trail. This area can be accessed by the public from the Iron Bridge parking lot, Hoff Road parking lot, or Wauponsee Trail. Approximately 17 miles of multiple use trail (hiking, biking and equestrian) and 2 miles of hiking-only trails are available within this area. All of the trails open to date are considered interim. Most utilize old road beds that were part of the ammunition plant infrastructure. These trails will be phased out as the permanent trail system at Midewin is constructed.

Approximately 2,900 acres are open to the public on the west side of Illinois Route 53, with three miles of interim hiking trails accessible from a parking lot on Explosives Road. Three additional parking lots access the west side of Midewin along River Road. No trails lead from these access points, but pedestrians are allowed to go off-trail any place within the area open to the public. Typical recreation activities at Midewin include hiking, biking, horseback riding, bird-watching, and deer and turkey hunting.

The remaining 12,000 acres of Midewin lands are currently closed to visitors due to army clean-up of arsenal remnants and public safety concerns associated with those activities.

### Desired Condition

The desired condition is to have all of Midewin open to the public. The Prairie Plan further states (Prairie Plan Section 2.5.1):

> *Recreational opportunities provided, focus on educational experiences and resource interpretation. Recreational opportunities will be diverse, centering on key attractions such as Prairie Creek, historic sites or homesteads, and wildlife viewing areas, while promoting the appreciation of the scenic quality and importance of biodiversity and plant conservation to society.*
>
> *Recreational opportunities will be managed to enhance the quality of the resources, which will not be adversely impacted by visitor presence.*
>
> *Visitors find opportunities for outdoor recreation in a unique setting. Visitors experience a sense of relative vastness and solitude in a more naturally appearing setting not found elsewhere in this vicinity. Experiences include opportunities to view the prairie landscape and wildlife from Illinois Route 53 or from a network of internal trails, and opportunities to become totally immersed in the prairie environment.*

*Midewin provides trail opportunities unencumbered by vehicle traffic, with opportunities for both short, easy trips as well as more challenging trips by foot, bicycle or horseback. The landscapes offer a variety of naturally appearing settings from rural and roaded natural settings with opportunities for social interaction and comfort, to somewhat more primitive settings with greater opportunities for solitude and challenges. Recreation facilities are constructed, located and improved as needed to provide safe, efficient, and environmentally responsible experiences and opportunities*

The Prairie Plan identifies a trail network throughout Midewin with a total of 48 miles of trails. The proposed trails are as follows:

- 5 miles of biking and hiking trails
- 20 miles of hiking only trails
- 5 miles of equestrian trails
- 18 Miles of Multiple use trails (hiking, biking, and equestrian)

The Prairie Plan also includes a group campground, a visitor center/environmental learning center, seven parking areas and a picnic area.

**Environmental Consequences**

*Affects Common to All Alternatives*

The potential for future development of camping and picnicking remain the same throughout all of the alternatives. Implementation of any of the alternatives would neither enhance nor limit the possibilities for development of any of these facilities.

*Alternative 1- Removal*

The affect of implementation of the proposed action varies on current and future aspects of recreation at Midewin

- Public Safety – Public safety would increase with implementation of the proposed action. Removal of the existing buildings would decrease the potential for public interaction with un-maintained, decaying, buildings that are now public health and safety hazards, regardless of safety measures implemented.
- Visitor experience – The effects of this action would vary depending on the desired experience of the visitor. Public participation in tour events held at Midewin indicates a strong interest in ammunition plant history. Volunteer programs at Midewin also indicate a strong interest in prairie restoration and wildlife programs at Midewin. The effect would be positive for those visitors looking for a natural experience because the landscape would be more natural appearing. The opportunity for solitude and vastness will increase, with more expansive views available without the influence of man-made structures on the landscape. The effect would be negative for the visitor that is looking for a history-based experience, because the remnants of the arsenal history would be gone. See Appendix 1.

- Wildlife and bird watching – The effects of this action would be positive on wildlife and bird watching activities, due to increased or enhanced habitat available for birds and wildlife.
- Hunting – Opportunities for hunting should increase through implementation of this action, because more natural habitat will be available.
- Trail based recreation - Potential miles of facilities and trails available will remain the same within all of the alternatives. The experiences available (historic vs. natural) when using the trails would change when implementing this alternative. See "Visitor experience" above for a more detailed explanation. Opportunities for conversion of roads and rail beds to trails would be lost with the removal of road and rail grades. The same number of miles of trails could still be built, except but not utilize the existing roads and rail bed. The overall trail experience would be more natural because trails would follow the existing topography and other natural features.
- Interpretation – Opportunities for interpretation would change through implementation of the proposed action. More opportunities would be available for interpretation of the natural environment with implementation of this alternative. Fewer opportunities for interpretation of historical aspects of Midewin would be available with implementation of this alternative.

The cumulative effects of the proposed alternative are mixed. If implemented visitors to Midewin would have the opportunity to experience 18,225 acres of natural appearing landscape. This scale of open space is not available anywhere else in northeastern Illinois. Hiking, biking, equestrian and multiple use trails would follow the natural topography of the land providing a variable trail experience that is not available in Northeastern Illinois.

The opportunity to see and experience much of the historic landscape of the former ammunition plant, including buildings, bunkers, roads and rail beds would be lost. There are few opportunities similar to this available in the United States.

*Affects Common to Alternatives 2 and 3*

Potential miles of facilities and trails available will remain the same within all of the alternatives. The experience available when using the trails would be different in alternatives 2 and 3. See "Visitor experience" (historic vs. natural) for a more detailed explanation. Roads and rail beds that remain would be available for conversion to recreation trails. The experience available on converted road and rail beds (alternatives 2 and 3) would be different. Roads and rail beds tend to follow straight lines with consistent grades over long distances. This type of experience is generally not as desirable for trail users (especially hikers), as trails that follow the topography and other natural features.

*Alternative 2 – No Action*

No proposed action would have various effects on current and future aspects of recreation at Midewin.

- Public Safety – Public safety would remain as it is today with the "No Action alternative.
- Visitor experience – The effects of this action would vary depending on the desired experience of the visitor. Public participation in tour events held at Midewin indicates a strong interest in ammunition plant history. Volunteer programs at Midewin also indicate a strong interest in prairie restoration and wildlife programs at Midewin. The effect would be negative for the visitor that is looking for a natural experience because the landscape would be segmented by the existence of roads and rail beds with major inclusions of former army infrastructure such as buildings, bunkers, and utility poles. The opportunity for solitude and vastness would be lower than that available with the proposed action, due to the presence of man-made structures on the landscape. The effect may be positive for the visitor looking for a history-based experience because the physical presence of the arsenal would remain. The long term satisfaction of the visitor seeking arsenal history may decline over time as the arsenal facilities begin to decay and become over grown with no maintenance to maintain them.
- Wildlife and bird watching – The potential opportunity for bird and wildlife watching would not change.
- Hunting – The potential opportunity for hunting deer and turkey would not change.
- Interpretation – More opportunities would be available for interpretation of the historic resources with this alternative. Fewer opportunities for interpretation of the natural environment of Midewin would be available with implementation of this alternative.

*Alternative 3 – Board-up*

Boarding-up the old Army structures would have some effects on current and future aspects of recreation at Midewin.

- Visitor experience – The effects of this action would vary depending on the desired experience of the visitor. Public participation in tour events held at Midewin indicates a strong interest in ammunition plant history. Volunteer programs at Midewin also indicate a strong interest in prairie restoration and wildlife programs at Midewin. The effect would be negative for the visitor looking for a natural experience because the landscape would be segmented by the existence of roads and rail beds with major inclusions of former army infrastructure such as buildings, bunkers, and utility poles. The opportunity for solitude and vastness would be lower than that available with the proposed action due to the presence of man-made structures on the landscape. The effects may be positive for the visitor that is looking for a history based experience because the physical presence of the arsenal would remain. However, many structures would be fenced off or boarded up, reducing the full potential of experiencing the historic arsenal.
- Wildlife and bird watching – The potential opportunity for bird and wildlife watching would not change.
- Hunting – The potential opportunity for hunting deer and turkey would not change.

- Interpretation – More opportunities would be available for interpretation of the historic resources. Fewer opportunities for interpretation of the natural environment of Midewin would be available.

## Economics, Civil Rights and Environmental Justice

The alternatives are not expected to disproportionately impact human populations. There are some human health and safety factors associated with the alternatives; however these factors are limited to lands within Midewin boundaries and will be mitigated appropriately. No alternative will have a negative affect on low income or minority populations in the Wilmington, Joliet, or Kankakee area. None of the alternatives are expected to affect the civil rights of anyone in the area.

# REFERENCES

Illinois Environmental Protection Agency. 2005. Illinois Annual Air Quality Report. Illinois Environmental Protection Agency, Bureau of Air, Springfield, IL. 28 pp + appendices.

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# CONSULTATION AND COORDINATION

The Forest Service consulted the following individuals, Federal, State, and local agencies, tribes and non-Forest Service persons during the development of this environmental assessment:

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***FEDERAL, STATE, AND LOCAL AGENCIES:***

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Illinois State Historic Preservation Office

***TRIBES:***

Citizen Potawatomi Nation

Forest County Potawatomi Community

Hannahville Indian Community

Prairie Band Potawatomi Nation

Kickapoo of Kansas tribal Council

Kickapoo Tribe of Oklahoma

# APPENDIX 1: PARTICIPATION IN NATURAL AND AMMUNITION PLANT TOURS FOR THE 2007 TOUR SEASON

| | Number of Tours Offered | Number of Participants | % of All Participants |
|---|---|---|---|
| Natural or Prairie Restoration Theme | 27 | 79 | 24 |
| Ammunition Plant Theme | 9 | 139 | 42 |
| All Tours Offered | 53 | 328 | 100 |

Notes:
1. The 2007 Midewin Tour Season ran from April 2007 through October 2007.
2. Forty two tour events were actually held during the 2007 calendar year. The remaining eleven were cancelled because no participants signed up for the tour or because poor whether.
3. Data was compiled by Pat Thrasher, interpretive specialist at Midewin National Tallgrass Prairie.
4. The remaining 27 tours had themes other than Ammunition Plant, Natural or Prairie Restoration.

### Volunteer Participation in Prairie Restoration and Wildlife Monitoring Programs and Heritage Programs at Midewin for the 2007 Fiscal Year

| | Prairie Restoration and Wildlife Monitoring | Heritage |
|---|---|---|
| Hours Donated | 4,412 | 572 |

Notes:
1. Numbers reflect volunteer hours during the 2007 fiscal year which ran from October 1, 2006 to September 31, 2007.
2. This data does not reflect the number of workdays or opportunities to volunteer for each of the programs.

# APPENDIX 2: BUILDING LIST AND PICTURES

**Photo 1: Box Culvert prior to demolition**

**Photo 2: Box Culvert after demotion**

**Photo 3: Group 27 Warehouse prior to demolition**

**Photo 4: Warehouse following demolition**

**Photo 5: Group 62 Warehouse prior to demolition**

**Photo 6: Group 62 following demolition.**