



Environmental Assessment

Septic System Installation



Prepared by:

**Effigy Mounds National Monument
and
NPS Midwest Regional Office**

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Cover Illustration: Effigy Mounds Visitor Center, Effigy Mounds National Monument Photo Gallery, National Park Service.

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Executive Summary

Effigy Mounds National Monument (Monument) is proposing to install a new septic system at its headquarters area to serve the Visitor Center. The proposed construction is needed to address a failed system currently in place and serving the Visitor Center.

This Environmental Assessment (EA) evaluates two alternatives: Alternative 1 - a No Action and Alternative 2 – Proposed Action. Under Alternative 1 - No Action, the Monument’s existing septic system would remain and other measures to serve sewage needs would be implemented. Under Alternative 2 – Proposed Action, a new septic system would be constructed within a previously developed area of the Monument. Each alternative is described in more detail in the document, as well as several alternatives that were considered but dismissed from further analysis.

This EA has been prepared in compliance with the National Environmental Policy Act (NEPA) to provide a decision-making framework as follows: 1) assess a reasonable range of alternatives to meet the underlying purpose of the proposed action; 2) evaluate potential issues and impacts to the natural and cultural resources of the Monument; and 3) identify required mitigation measures designed to lessen the degree or extent of impacts.

Resources (impact topics) determined to potentially be affected by the alternatives include cultural and historic resources, and visitor experience. All other resource topics were dismissed because an interdisciplinary team determined the Proposed Action would result in negligible to less than minor effects. No major effects were identified as a result of this project.

This proposed action fulfills a park priority for long-term facility, resources, and visitor management at the park. Once completed, the assessment updates and amends the park’s general management plan relative to facilities. This follows the National Park Service’s “Planning Portfolio” construct, consisting of a compilation of individual plans, studies, and inventories, which together guide park decision making. The planning portfolio enables the use of targeted planning products (such as this one) to meet a broad range of park planning needs. The general management plan remains a critical piece of the planning framework and will be revised in a timely manner through the park’s planning portfolio.

Public Comment

The National Park Service Planning, Environment and Public Comment (PEPC) site provides access to current plans and related documents on public review. Users of the site can submit comments for documents available for public review. If you wish to comment on the Environmental Assessment, you may post comments online at <https://parkplanning.nps.gov/efmoseptic> or mail comments to:

Superintendent
151 Hwy 76
Harpers Ferry, IA 52146

This Environmental Assessment will be on public review for 30 days. Before including your address, phone number, email address, or other personal identifying information in your comment, you should be aware that your entire comment—including your personal identifying information—may be made publicly available at any time. While you can ask us in your comment to withhold your personal identifying information from public review, we cannot guarantee that we will be able to do so.

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1.0 Purpose and Need

The septic system serving the Visitor Center at Effigy Mounds National Monument (Monument) was constructed between 1959 and 1961. This septic system has failed, and needs to be replaced with another system capable of treating wastewater from tens of thousands of visitors each year. This Environmental Assessment (EA) assesses the potential effects of a proposed new septic system in the park. The proposed location for this new system would be adjacent to the main parking lot, on the south side (see Figure 1 for a general layout of the project area).



Figure 1. General project area showing Administrative and Maintenance buildings, north and south parking lots, and the Visitor Center. Current septic tanks and leech fields are also shown.

1.1 Introduction

The Monument is proposing to install a new septic system at its headquarters. There are currently two wastewater systems, one serves the Visitor Center and a second serves the maintenance and office buildings at the opposite end of the parking lot. The system for the Visitor Center utilizes a dosing siphon/sand filter system and a drain field; this is the system which has failed. Replacement of this system is necessary to comply with State of Iowa/Environmental Protection Agency (EPA) Clean Water Act regulations. This EA evaluates the potential impacts of installing a new system, which would serve the Visitor Center.

Background. Effigy Mounds National Monument, in northeastern Iowa, was established by presidential proclamation in 1949 to preserve outstanding examples of significant phases of prehistoric American Indian mound building cultures; to protect wildlife, scenic, and other natural values of the area; and to provide for scientific study of its features--for the benefit of this and future generations.

The Monument includes outstanding examples of effigies, or animal-shaped mounds, and represents one of the largest concentrations of extant mounds in North America. The mounds are a legacy of the belief systems and practices of some of the continent’s original people.

The landscape of the Monument reveals evidence of a continuum of mound building cultures and their relationships to the environment over a span of at least 1,800 years. The Monument’s varied landforms and habitats, characteristic of the unglaciated “driftless zone,” provide exceptional habitat to support a diversity of plant and animal species. These natural resources are important both for understanding past cultures, which depended on them, and monitoring the health of present ecosystems.

Monument staff routinely consult with representatives of 19 Federally Recognized Tribes with cultural ties to the area. Consultation on this topic has been underway since the existing system began to fail approximately two years ago. See Chapter 5 for details about Tribal consultation efforts to date.

1.2 Purpose and Need

The existing septic system serving the Visitor Center is well past its design life and has failed. Replacing this system is necessary to support visitor services at the Monument, and to comply with State of Iowa/EPA Clean Water Act regulations. The underlying purpose of the proposed action is to provide an appropriate level of sewage treatment to support visitors and employees.

1.3 Issues and Impact Topics

Issues as discussed in National Environmental Policy Act (NEPA) documents can be problems, concerns, conflicts, obstacles, or benefits that would result if the proposed action or alternatives, including the no-action alternative, are implemented. Issue statements describe the relationship between the potential impacts of an action and the specific resource(s) affected. Internal and external scoping was conducted for this EA to determine the extent and nature of issues and alternatives to be considered during the NEPA review.

NEPA documents identify issues as either “significant” or “insignificant.” Significant issues are pivotal or of critical importance and are carried forward to analysis, while insignificant issues can be dismissed. Significant issues identified through the scoping process were:

- Ground disturbance with the potential to disturb culturally important resources. Prior to agricultural uses, the project area and surroundings contained dozens of burial mounds held sacred by the Monument’s Tribal partners. Although these mounds were severely disturbed prior to the Monument’s establishment, and further disturbed during the grading of the Monument’s terrace in 1959, remnants of the mounds may still exist in some areas.
- Traffic, vehicles, equipment, and work associated with digging and installing the new septic system.

With respect to disturbances prior to and during establishment of the Monument, current information and data collection has brought recognition of these past issues to light and, as a result, the Monument is engaging new actions with particular sensitivity to new potential impacts, and with close involvement of federally recognized Tribal partners.

1.3.1 Impact Topics Retained for Further Analysis

The impacts analysis will focus on specific resources (or impact topics) potentially affected by the actions associated with the project. Two impact topics were retained for analysis based on the issues identified above:

Cultural and Historic Resources

The Visitor Center and parking area are located on a terrace known to have contained dozens of burial mounds in the pre-agricultural era [Lewis 1892]. Lewis stated the majority of these mounds were heavily impacted by agricultural practices (such as plowing) or by private excavators prior to the end of the nineteenth century—well before the establishment of the Monument in 1949. In the 1950s, National Park Service staff, believing the mounds had been completely destroyed, thought the terrace suitable for the Monument’s future headquarters. Despite the damage inflicted by agricultural practices and by the National Park Service’s development, geophysical studies (DeVore and Vawser, 2018) have revealed remnants of several mounds are still discernible in some areas. Thus, without careful consideration, the excavation necessary to install the new septic system has the potential to affect mound remnants, burials, and/or artifacts.

The Monument was set aside specifically to preserve mounds such as those that formerly existed—or may still exist in some forms—on this site. Tribal partners have frequently made it known to park staff that they consider this area sacred, including areas aside from existing mounds. Therefore, actions will be considered for their potential impacts to this sacred cultural relationship with American Indian Tribes, as well as to the archeological artifacts (or historic resources) that may be present.

Visitor Experience

The Monument hosts 70,000 to 80,000 visitors per year. The headquarters area is home to the Monument’s sole Visitor Center, and several trailheads for the park’s most popular hiking trails also start from this area. Thus, the majority of visitors to the park utilize the parking area and Visitor Center at some point during their stay. Activities associated with constructing a new septic system would take place in the midst of the Monument’s most heavily visited area. Though temporary in nature, activities associated with construction would affect the visitor experience in a variety of ways, including parking, noise, and physical presence. The current situation is requiring temporary bathroom facilities (portable toilets) to accommodate visitors.

1.3.2 Impact Topics Dismissed from Further Analysis

Soils

The project area consists of a Zwingle series soil with about a 50% - 60% clay content with low permeability. The site has been farmed and the top soil layers may have been removed or mixed during construction of the Visitor Center and the parking lot. Soil impacts would be minimized to the extent possible by utilizing low disturbance techniques. Due to the small footprint of the proposed actions and minimal impact to the soil, this topic was eliminated from further analysis in this document.

Water Resources/Water Quality

This project occurs on a terrace approximately 35 feet in elevation above the adjacent floodplain and wetlands and about 40 feet in elevation above the Mississippi and Yellow Rivers. The nearest point from the septic system to an adjacent wetland is approximately 150 meters. The system would be a ‘closed system’, meaning no discharge into any body of water is expected. Because the proposed action is not expected to affect water quality in the Monument, impacts to water resources/water quality will not be analyzed further in this document.

Socioeconomics and Environmental Justice

The potential treatment alternatives for this project would not impact the employment, occupations, income or tax base at the Monument or surrounding area. Any economic impact due to construction would be short term and of negligible magnitude, unlikely to affect the regional economy. Not taking

action may result in a loss of visitors to the Monument, but any economic impact would be minimal, unlikely to affect the regional economy. According to U.S. Census Bureau data, Clayton, Allamakee counties in Iowa and Crawford County in Wisconsin do not contain high concentrations of minority and low-income populations. Therefore, the potential impacts to socioeconomic and environmental justice from proposed action alternatives will not be analyzed further in this document.

Air Quality

During construction, equipment with diesel engines would be used to trench and excavate soils over the course of a few weeks. Air quality in the immediate vicinity may be slightly affected by both the dust generated from disturbing soils as well as the exhaust from diesel engines. The impacts are limited to short term and unlikely to affect local or regional air quality. Therefore this topic was dismissed from further consideration.

Soundscape Management

The area of the proposed work is located adjacent to a busy highway and an active railroad line. The additional noise caused by the intermittent use of an excavator and trucks is not expected to add significantly to the overall soundscape. The noise associated with the project addressed within this document would be minimal and temporary, resulting in occasional, short-term, adverse impacts to the soundscape of the Monument. The potential for excessive noise impacts is not expected; therefore, this topic is dismissed from further consideration.

Threatened and Endangered Species

The Monument has three federal and sixteen state listed species. The federal species include the Higgins eye mussel (*Lampsilis higginsii*) (Endangered), the Northern long-eared bat (*Myotis septentrionalis*) (Endangered), and the rusty patched bumble bee (*Bombus affinis*) (Endangered).

The project occurs within the confines of the Visitor Center parking lot and the adjacent mowed lawn near the Visitor Center, a lawn which consists primarily of non-native turf grasses. None of the state or federally listed species or species of special concern are found at this site nor does the site, as managed, provide critical habitat for any native plant communities or wildlife species. Moreover, the proposed action would not have impacts on habitat or critical environmental functions which support those species. Therefore, the topic of Threatened and Endangered species was dismissed from further analysis.

Indian Trust Resources

Secretarial Order 3175 mandates any anticipated impacts to Indian trust resources from proposed project or action by the Department of Interior agencies be explicitly addressed in environmental documents. The federal Indian trust responsibility is a legally enforceable fiduciary obligation on the part of the United States to protect Tribal lands, assets, resources, and treaty rights, and it represents a duty to carry out the mandates of federal law with respect to American Indian and Alaska Native Tribes. There are no designated Native American trust resources in the project area. Therefore, Indian Trust Resources was dismissed as an impact topic for further analysis.

2.0 Alternatives

As a result of internal and external scoping two alternatives were developed: Alternative 1 - No Action, and Alternative 2 - Develop an Onsite Drainfield System. Several other action alternatives, explained in more detail below, were considered but dismissed from further consideration.

2.1 Alternative 1 – No Action

The No Action Alternative would retain the existing facilities and associated septic system in its current state. This means the Monument would either continue using portable toilets (keeping the Visitor Center restrooms closed), or open the restrooms and regularly pump the tank. Currently, portable toilets are placed along the back side of the north parking lot. The portable toilets are serviced on a regular schedule. During peak visitation times, more portable toilets may be required, and would need to be serviced.

Opening the restrooms and using the existing tank as temporary storage would require the park to pump the 5,000 gallon septic tank at least once per week through summer and fall, and every few days during the busiest visitation periods. The tank is located behind the Visitor Center. Pumping the tank involves a pumper truck driving onto the Visitor Center lawn area and using hoses to empty the holding tank. Compounding the issue, the storage tank is nearly 60 years old, as are the lines feeding into it, and engineers inspecting the system have determined the incoming lines and/or the tank itself could fail at any time, resulting in a return to portable toilets.

2.3 Alternative 2 – Develop an Onsite Drainfield System

Under this alternative, the NPS would develop an on-site drainfield septic system, and abandon and fill the existing system in place. Developing an on-site system would require the NPS to install a small lift station near the Visitor Center and a 2-inch force main to carry wastewater to a gravel-free leach bed drain field to be located between the existing parking lot and Highway 76. The 2-inch force main for this system would be installed so as to minimize disturbance to cultural resources, utilizing both boring technology and open cut trenches where appropriate. The new septic system would have an expected operational life of 30 or more years. Some replacement area would be designated within the new drain field area for future use, if required. State certifications for operating the new system would be required of monument staff.

The designated drain field area has been soil tested and is suitable for this system, and was the only location within a reasonable distance that tested adequately to be a septic drain field. Below is a description of the specific actions required to install the new sewage system and connect it to the Visitor Center. Figure 2 (below) illustrates the approximate locations and orientation of the new structures to be installed. Schematic drawings of some of the components can be seen in the Memorandum of Agreement between Effigy Mounds National Monument and the Iowa State Historical Preservation Office (Effigy Mounds National Monument, 2017).



Figure 2. Project Area showing the proposed wastewater system layout and main components.

2.3.1 Timing

Ideally, construction would occur early in the spring of 2018, as soon as the ground thaws and prior to daily visitation increasing beyond a few dozen visitors per day. It is anticipated that construction of the new system could be accomplished within a 4 to 6 week time frame, resulting in the new system being on line before higher summer visitation begins to kick in.

If construction cannot take place in the spring, the NPS would work to minimize the area needed for staging by the construction crew. The challenge would be to maintain the circulation pattern of the parking lot while keeping equipment, visitors, and workers safe.

2.3.2 Equipment

Equipment expected to be used to complete this project would include:

- Compact/Mini Rubber-Tracked Excavator - This machine would be used for making trenches and small excavations in smaller work spaces.
- Skid Loader (Tracked or Wheeled) with attachments - This machine would be used to move loose material or make shallow excavations over a larger area.
- Rubber Tire Tractor Back-hoe or Larger excavator - This machine would be used for making larger excavations in an open area.

- Small to Medium Sized Directional Boring Machine - This machine is able to install pipe underground without disturbing the soil surface.
- Small to Large Trucks - A variety of vehicles would be needed to move workers and materials to the project site.

2.3.3 Lift Station

The NPS-hired contractor would be responsible for excavating a pit, twelve feet deep by thirteen feet wide, to house the boring machine. Once excavation is complete, boring equipment would be lowered into the excavated pit to allow the contractor to horizontally bore a 640 foot long, 2-inch line from an area behind the Visitor Center to the approximate entrance to the Visitor Center parking lot (near the present location of the entrance sign). The line would connect to two septic tanks, each 13 feet long by 6.5 feet wide, and each holding 2,000 gallons. A pit would be excavated to house the two tanks.

The decision to horizontally bore the two inch force main, as opposed to install the line in an open (excavated) trench, permits the NPS to stay well below (underneath) potentially existing archeological resources, mounds, or mound remnants near the Visitor Center. The lift station would be brought to the site on the back of a flatbed truck where a backhoe would be used to lift the lift station from the flatbed before lowering it into the excavated pit.

2.3.4 Septic Tanks

As noted above, in an area at the approximate entrance to the Visitor Center parking lot (near the present location of the entrance sign) two septic tanks, each 13 feet long by 6.5 feet wide, and each holding 2,000 gallons would be installed. A pit would be excavated to house the two tanks.

2.3.5 Force Main

The force main is a single 2-inch diameter line, which unlike a gravity line, is under pressure. The pressure generated by the pump in the lift station forces the wastewater through the line (640 ft) to the septic tanks at the other end. The benefit to installing a force main is, due the fluid being under pressure, engineers have the ability to make turns, bends, and even 'go uphill'—all possible because of the benefit of the pump. Pumping is required because the proposed drain field area is located at a higher elevation than the Visitor Center outfall sewer main. Gravity lines are lower maintenance, because there's no pump or working components to maintain, but in this instance contractors would not be able to divert the line around sensitive areas because doing so would create a 'low point,' which gravity lines cannot have. As described in the 'Lift Station' section, this force main line would be installed with special equipment, allowing the contractor to horizontally bore through the earth at the same depth as the installed line. This process avoids open trenching, and minimizes ground disturbance at the depths that archeological deposits would occur (if they are present). Although the boring equipment requires pits at both ends, because the lift station and the septic tanks each require excavation as well, the excavation pits can serve multiple purposes, further minimizing the need for ground disturbance.

2.3.6 Leach Field

The leaching chambers are semi-circular plastic tubes which allow for slow leaching of treated wastewater to be absorbed by adjacent soils. To install the chambers, contract crews would trench sixteen forty inch wide trenches of varying length (55 to 85 feet long). In addition to the trenches of varied length, the contractor would install five one hundred foot long trenches to house five extra-long leaching chambers.

In order to excavate the necessary material for all leaching chambers (21 chambers total) heavy equipment, likely a backhoe, would be used to excavate soils to a depth of approximately 40 inches. Once

the 21 trenches have been dug, crews would install the plastic chambers and the associated distribution lines connecting each chamber to one of five distribution boxes. These chambers would be placed below ground.

2.3.7 Junction (Drop) Boxes

The junction boxes (or drop boxes) are square 2-foot by 2-foot boxes made of concrete and plastic pipe. A single distribution line runs to each box which then separates the waste water into three 'outlet' pipes; the pipes running from the outlet distribute wastewater to each of the leaching chambers.

2.3.8 Existing System Components

The existing septic tank and dosing siphon tank lids would be removed and the tanks would then be filled with sand and abandoned in place. The tank locations would have top soil replaced and would then be seeded to match the existing terrain. The existing buried gravity lines and existing sand filter and buried perforated lines would be disconnected from the Visitor Center and also abandoned in place.

2.3.9 Staging Area

A portion of the parking area would likely be used for the staging materials and equipment. If visitation is low (as it is in the spring), the NPS may close the southern half of the parking lot to accommodate this need for staging materials and equipment, leaving only the northern half of the parking lot available for visitors. If this occurs, the flow of traffic would have to be changed, and all vehicles would be entering and exiting the parking lot from a single point. Such actions would require temporary signs (and potentially striping), and may prevent longer vehicles from being able to utilize the parking lot at all, since there would be inadequate space to turn around and exit.

If construction occurs during the summer or fall months when visitation is much higher, the NPS would work with the contractor to minimize the size of the staging area on the south side of the parking lot, and would attempt to maintain the traffic circulation pattern around the loop, provided this can be safely done.

2.3.10 Required Mitigation Measures

The following mitigation measures would be required as part of the proposed action:

- An archeologist meeting the Secretary of the Interior's standards would be onsite observing construction crews and their actions at all times during excavation. If an artifact or human remains are found, procedures outlined in the December 11, 2017 Memorandum of Agreement between the NPS, the Iowa State Historic Preservation Office, and the Iowa Tribe of Kansas and Nebraska will be followed.
- Under Section 110 of the National Historic Preservation Act (as amended), the NPS will conduct an archeological assessment of the proposed leach field site prior to ground disturbance to determine where the original ground surface may be present, or if it remains at all. If artifacts, including bone fragments, are found, the NPS would initiate consultation with both Tribes and the Iowa State Historic Preservation Office.
- The NPS would require the contractor to lay down plywood before bringing heavy equipment (including trucks and backhoe) onto unpaved surfaces such as lawns or areas of natural vegetation.
- To minimize impacts in the area surrounding the project site, the NPS would require the contractor to use the smallest excavator possible to accomplish the job.
- To limit impacts to the visitor experience, the NPS would require the contractor to stage equipment outside of the designated staging area to avoid congestion in the south parking lot

area. Further, the contractor would not leave the backhoe (when not in use) on areas of soil or natural vegetation, even if mats or plywood are present to distribute vehicle weight. This mitigation seeks to minimize the opportunity for large equipment to further compact natural soils.

- The contractor would be responsible for developing and implementing a traffic control plan to safely allow visitors to enter and exit the Visitor Center parking lot, and for installing appropriate signage and construction site barriers/fencing to warn visitors and protect them from potential hazards.
- No trees would be permitted to be removed, unless authorized by the Contracting Officer's Representative.

2.4 Alternatives Considered but Dismissed from Further Analysis

Below are five alternatives to the proposed action that were considered but dismissed from further analysis because they were not reasonable actions that could be implemented at this time.

2.4.1 Convey Sewage to City System

The City of Marquette, Iowa is located approximately 3.2 miles to the south of the Monument. This option would convey sewage to the City sewage treatment facilities for disposal utilizing many lift stations, gravity sewer, and force main sewer.

Although this alternative would minimize ground disturbance within the Monument, it was deemed infeasible due to the nature of the route to Marquette. The route follows an exceptionally narrow corridor between the Mississippi River and the foot of the bluffs. Already sandwiched into this very narrow corridor are a railroad and Highway 76. Permission would have to be granted by the State of Iowa (which owns the road right of way) for the NPS to construct the line, and in many locations the line would have to be constructed under the roadway itself. This would mean a substantial disruption to normal traffic. Estimates for the construction of such a line, with all of its associated lift stations, run from \$1 million to \$2 million, and annual cost for maintaining the line would be much higher than other alternatives. While this may not be prohibitive, the cost is high and would present considerable budgetary challenge. Finally, while the alternative would result in less ground disturbance within the Monument, it would still result in some disturbance, since a lift station still would be installed near the Visitor Center, and a force main would have to exit the park towards the highway.

The NPS notes that while this alternative is not currently feasible or the best option, it may be the only viable option for the Monument at the end of the operational life of the proposed septic system. Due to the limited space available at the Monument for a septic field, another relocation may not be possible. Connecting to the City system may be explored further in the future, if other technical options are not available.

2.4.2 Onsite Wastewater Treatment Plant

Under this alternative, a small wastewater treatment plant would be installed in the Visitor Center area. This wastewater treatment plant would actively treat sewage from the headquarters area prior to releasing it, much like a municipal system, only smaller in scale.

This alternative would solve the Monument's sewage disposal issues, but it is ill-suited for the varying levels of sewage produced during the long winter months, when visitation slows to a trickle. Low flows at these times would not generate proper bacterial growth for the treatment of the Monument's sewage. A certain level of constant flow is required for a treatment plant to function effectively. Additionally, since the Monument has no onsite storage capacity for sewage, a treatment plant would require discharge into

the Mississippi River. A State of Iowa discharge permit would need to be acquired and maintained, and monument staff would have to be certified and licensed to operate the plant. Frequent testing of the discharge would be required either with an onsite lab or a State approved lab. Lab costs of up to \$100/day throughout the system's existence would be absorbed by the Monument's budget. Capital costs to build a treatment plant/lab are estimated at \$500,000, making it more expensive than other alternatives, and construction of the treatment facility and piping discharge would still need to be constructed onsite at the Monument, so there would still be a great deal of ground disturbance.

2.4.3 Vault Toilets

Under this alternative, the Monument would switch over to a vault system for capturing and holding all sewage produced onsite. The vault or vaults would have to be pumped and emptied whenever they reached capacity. The emptying would be accomplished by septic tank pumper trucks that would transport the sewage to an offsite location for treatment.

This alternative would solve the Monument's sewage disposal issues, but it would require septic pumping costs which, over time, would be much higher than an onsite disposal system. The vault toilets—and the vaults themselves—would have to be placed outside the Visitor Center, meaning that ground disturbance would still be required. Vault toilets can also be a maintenance issue in winter environments, and can introduce odor issues that currently don't exist during warmer months. Further, because flush toilets would not be available, installing two vault toilets likely means fewer visitors could use the restroom at any given time, a potential problem during busy periods or when buses of people arrive. New vaults and associated structures would have to be constructed, with construction costs estimated to be around \$200,000.

2.4.4 Composting Toilets

Under this alternative, high capacity composting toilets would be installed at the Monument. Historically, these units have not worked well with the high volumes of sewage produced at NPS sites. Although the concept of composting sewage within the Monument is an appropriate goal, past experience at other NPS units has not produced compost as designed due to higher hydraulic and organic loading. Approximately 90-95% of all composting toilets have been removed from NPS units within the Midwest Region, since they did not generate compost as designed. Therefore, this alternative does not correct the sewage treatment issue at the Monument. Additionally, maintenance is extremely difficult for staff due to the need to frequently turn the pile and maintain proper moisture requirements for composting. This exposes monument staff to untreated sewage, creating a public health issue. Composting is also difficult in winter and cold temperatures, generating extreme foul odors from the untreated sewage. And since the composting toilets would have to be constructed outside the Visitor Center, there would still be a certain amount of ground disturbance associated with their construction.

2.4.5 Removal of Failed System Components

Under this alternative, at the completion of the proposed new septic system, the existing failed system would be removed, instead of filled and abandoned in place. While returning the ground to a more natural state without these newer materials embedded in the landscape seems ideal, the disturbance associated with physically removing these components has the potential to be considerable. This alternative was dismissed because removing the existing failed system would require additional ground disturbance, have additional impacts on visitors, and incur additional expense, without any significant benefits to resources or visitors. Given that these components are already in the ground, the most reasonable way forward is to disconnect, fill them, and leave them in place.

3.0 Affected Environment and Environmental Consequences

This chapter describes the existing environmental conditions in and around the project area for each impact topic and how the existing condition would be impacted as a result of implementing each alternative. Cumulative impacts resulting from the incremental impacts of the alternatives when added to other past, present, and reasonably foreseeable future actions are also considered.

3.1 General Site/Operating Conditions

Site layout. The project area is contained within a heavily developed and previously disturbed landscape that has served as the Monument's headquarters and base of operations since soon after the Monument was established (see Figure 1). In 1959, as a part of the National Park Service's Mission 66 program, construction began on the Visitor Center, the parking lot loop, maintenance facilities, and two ranch-style residences later converted to office space. In addition to the structural facilities, the infrastructure for water and wastewater treatment was installed at nearly the same time. Also, most hiking in the Monument begins or concludes near the Visitor Center because trailheads for the North Unit hiking trails and the Yellow River Boardwalk are located immediately adjacent to the parking lot.

Prior to the establishment of the Monument, this area had been a farmstead since the 19th century; the current location of the maintenance and office building complex is approximately where the old farmhouse and outbuildings were located. The Visitor Center and associated parking lot are located within what was then an agricultural field. An American Indian village predated the establishment of the farm, and much of the now-developed area was covered with burial mounds. A vast majority of the above-ground portions of these mounds were obliterated by agriculture prior to the establishment of the Monument.

Visitors arrive at the headquarters site via Highway 76. Immediately after turning off the state highway and driving past the welcome sign, the entrance road splits, with public traffic proceeding to the right (east), while administrative traffic veers left (west) towards the maintenance compound. The main visitor lot is best described as a one way loop with a southern half available for 19 vehicle parking spaces and a northern half which accommodates 43 spaces, plus RV/bus parking; a short one-way road joins the two halves providing a counter-clockwise circulation pattern through the parking complex. Surrounding the parking lot on all sides, and separating the north and south lots are grassy areas and sidewalks. The small manicured lawn between the north and south parking lots is referred to as "the island." The proposed location for the septic system is the grassy area between the south parking lot and Highway 76. It would stretch from the Visitor Center on the east to the present location of the Monument's large entrance sign on the west (see Figure 2).

Climate/Weather. The weather from April through August is variable, with lows dipping below freezing and highs in the 90s (Fahrenheit). Depending on the severity of the preceding winter, soils generally thaw by late April. April and May are known to be damp, with heavier rain events occurring in June. Spring construction may be interrupted by precipitation events.

3.2 Cultural and Historic Resources

Cultural and historic resources refer to both the ethnographic relationship that American Indians have with a site and to the physical artifacts that are considered historic resources under the National Historic Preservation Act.

3.2.1 Affected Environment

Through consultation with culturally associated American Indian Tribes, the National Park Service has heard repeatedly the landscape within the Monument is considered sacred. Although this sacredness exists in part because generations of American Indian ancestors are buried here—the NPS also has come to understand the mounds were constructed in this area because the area itself was important. While the National Park Service is not privy to all the cultural beliefs and practices underlying these assertions, the NPS does recognize the landscape is sacred. Any construction project taking place within the Monument requires close consultation with Tribal partners. The NPS has been consulting with Tribal partners on this effort for approximately two years.

The Visitor Center area is located upon a terrace, known as the Nazekaw Terrace, which has been heavily altered over time. When T. H. Lewis of the Northwest Archeological Survey visited the site in May 1892 (see Lewis Field Notebook 32, page 17), he surveyed only 5 mounds, but noted at least another 50 mounds were already suffering from serious impacts—either from agriculture or from excavation. Aerial photographs from 1938 show the terrace under agriculture, and it was presumed the majority of these mounds had been plowed under.

The abundance of other mounds in the area eventually led to the creation of the Monument in October 1949. Burial mound structures in the park represent a variety of time periods, construction methods, and styles, with some being as old as 2,500 years, while others were constructed more recently, within the past 750 years or so. Excavations of a small number of mounds in the early park era and excavations throughout southern Wisconsin, northeast Iowa, southeast Minnesota, and northwest Illinois all demonstrate the mounds tend to be associated with burials and funerary objects. Even heavily disturbed mounds may contain intact contents. Additionally, Tribal Partners have cautioned the NPS not all burials occur *in* mounds. Burials in proximity to mounds are possible.

Since the Monument was established, the Nazekaw Terrace has been home to the Monument's headquarters and the center of most visitor activities for the park. Archeological investigations conducted in the 1950s and 1960s suggest agriculture destroyed most of the mounds formerly present on the Terrace. Further, limited test excavations failed to identify intact archeological remains (Beaubien 1952). Acting on the belief no burial mounds remained intact at this location, the NPS chose the terrace as the permanent home of the Monument's headquarters; during the late 1950s and early 1960s, a series on large-scale construction projects resulted in the majority of the infrastructure present today. Photographs of the construction show widespread and extensive grading took place on the Terrace, with fill material from high areas being used to level low spots to create the large level parking area that exists today. This resulted in a jumbling of any intact deposits which might have existed at the time. Some areas also were scraped well below the cultural zone.

In subsequent years, the belief the area had been thoroughly disturbed, first by agriculture and later by the construction of NPS facilities, led to very limited compliance-driven investigations comprising small-scale shovel testing and surface examination (Vawser 2005, Stadler and Nickel 2010). Because the small scale of traditional archeological testing (i.e. shovel tests) usually failed to yield evidence to the contrary, when artifacts were observed they were assumed to have been from contexts previously disturbed by agriculture or NPS facility construction. In 2008, Steven DeVore and others from the Midwest Archeological Center conducted a series of geophysical investigations of the terrace and noted a number of possible mound remnants (De Vore 2009). The DeVore study provided a sobering reminder that although the terrace was heavily impacted by past land use practices and development, certain portions of the Terrace may still contain intact cultural deposits, including burials. DeVore's work and NPS construction reports heavily influenced project designers when it came to choosing a proposed location

for the new septic system. Care was taken to avoid concentrations of possible remnants and methods are proposed that would bore beneath possible remnants rather than trenching through them.

As suggested in the Issues section in Chapter 1, there are two ways the proposed action may impact cultural resources at the site: (1) by affecting the sacred or ethnographic relationship Indian Tribes have with the site, and (2) through the physical impacts the construction and installation of new subsurface infrastructure may have on still unearthed archeological artifacts.

Cultural Relationship. The landscape within the Monument is culturally significant to many Americans, especially the following associated Federally Recognized Tribes:

- Ho-Chunk Nation of Wisconsin (formerly the Wisconsin Winnebago Tribe),
- Iowa Tribe of Kansas and Nebraska,
- Iowa Tribe of Oklahoma,
- Otoe-Missouria Tribe of Indians, Oklahoma,
- Lower Sioux Indian Community of Mdewakanton Sioux Indians of Minnesota,
- Prairie Island Indian Community in the State of Minnesota,
- Sac and Fox Tribe of the Mississippi in Iowa,
- Sac and Fox Nation of Missouri in Kansas and Nebraska,
- Sac and Fox Nation, Oklahoma,
- Shakopee Mdewakanton Sioux Community of Minnesota,
- Upper Sioux Community, Minnesota,
- Winnebago Tribe of Nebraska,
- Yankton Sioux Tribe, Omaha Tribe of Nebraska,
- Ponca Tribe of Nebraska,
- Standing Rock Sioux Tribe,
- Sisseton-Whapeton Oyate,
- Santee Sioux Nation,
- Crow Creek Sioux Tribe.

Just like no two families have the same traditions, each American Indian community has unique beliefs, customs, and practices passed down through the generations. As a result, there is no one American Indian perspective of the Monument. Each Tribe has different stories and traditions that correspond to the mounds, natural features, and cultural use of the landscape. As noted above, American Indian Tribes have asserted in consultations the area is a sacred site, although specific cultural beliefs and practices were closely held and are not available.

The National Park Service is developing a broader understanding of these diverse connections through ethnographic research focused on the traditional cultural significance of the Monument. The traditional cultural significance of a historic property is derived from the role the property plays in a community's historically rooted beliefs, customs, and practices. The Monument's legislative boundaries may qualify as a traditional cultural property (TCP), as a location associated with the traditional beliefs of an American Indian group about its origins, its cultural history, or the nature of the world; and/or a location where American Indian religious practitioners have historically gone, and are known or thought to go today, to perform ceremonial activities in accordance with traditional cultural rules of practice.

Archeological Resources. In response to plans to build a boardwalk and trail for access to a mound group on the south edge of the Nazekaw Terrace, staff from the Midwest Archeological Center (MWAC) conducted shovel test surveys along the proposed alignment in 1999 and 2001 (Stadler and Nickel 2010). The shovel testing identified the presence of subsurface artifacts in three areas along the alignment that were not a part of this project's APE. In 2008, University of Nebraska-Lincoln student James Lindsay undertook a project focusing, in part, on the archeology of the terrace for his master's thesis research (Lindsay 2009). His unique approach of evaluating the historic maps and aerial photographs and combining that information with results of geophysical prospection, conducted by MWAC Archeologist Steven DeVore (2009), revealed mound remnants for five of the mounds previously mapped by T.H. Lewis (and later by Ellison Orr), calling into question the assumption all of the mounds on the terrace had been destroyed.

The northern part of the Nazekaw Terrace contains numerous magnetic anomalies associated with the park construction of the Visitor Center, parking lot, sidewalks, paved access roads, and other related structures. In addition, there are buried utility lines including gas, water, telephone, and electrical lines, and there are three locations containing existing septic lines (abandoned and functioning). Two areas are east of the Visitor Center and one is east of the maintenance facility. All of these modern features may have impacted the more subtle prehistoric features that may have been present at the time of their construction.

Geophysical investigation by DeVore and others has provided the NPS with hints of mound remnants that may still be present on the Nazekaw Terrace. Circular or oval shaped magnetic anomalies could potentially represent the locations of truncated conical, linear, and effigy mounds. They may also be the results of earth moving related to construction of the parking lot or buried utility lines. Some (not all) of these anomalies are illustrated by the polygons in Figure 3, which also shows the location of heavy soil disturbance that would be part of the proposed action. The two anomalies depicted in the project area were identified from old 1930s aerial photos, and these areas were considerably altered during the 1950s and early 1960s construction described above. There are a total of five anomalies within the project area, but three of them were determined not to be true mounds due to evaluations of the past disturbance, and these are not depicted in Figure 3. The likelihood that any of these anomalies are intact mounds is very small; but to be certain, an archeological investigation of the project area—with cores taken specifically to evaluate the key anomalies—will be performed prior to ground disturbance, and will aid in determining whether any anomalies in the project area are, indeed, related to mound features. If they are, ground disturbing activities would be modified to avoid these areas.

As discussed above, the project area (area of potential effect, APE) has in the past been leveled from a rolling terrace with high and low points to a more level area. The construction of the Visitors Center, and subsequent infrastructure, moved a massive amount of soil, but there is limited documentation of what exactly took place during the construction. This work was accomplished prior to the passing of the National Historic Preservation Act (NHPA) of 1966, as amended, and the Archeological Resource Protection Act (ARPA). A geo-archeological survey will be conducted under section 110 of the NHPA to investigate if and where the native ground surface is or if it still exists within the APE. By having an understanding of the native ground location, the park will be able to determine how much damage may or may not have occurred through past excavations, and avoid further impacts to archeological resources.

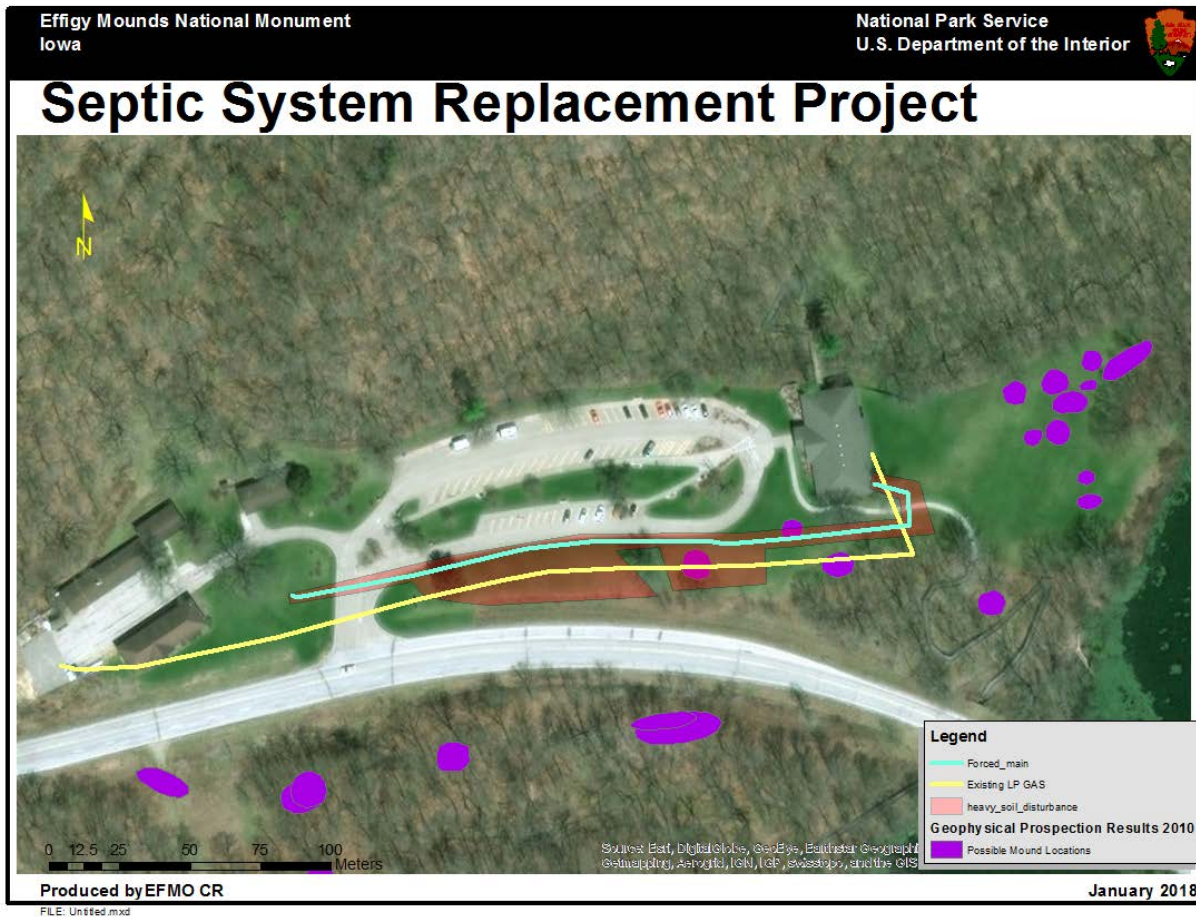


Figure 3. Possible mound remnant locations or anomalies based on geophysical investigation by DeVore (2009). An archeological investigation of the project area is being performed prior to ground disturbance to aid in identifying whether any anomalies in the project area are, indeed, related to mound features.

3.2.2 Direct and Indirect Effects

Alternative 1 – No Action

If the NPS elects to take no action, the Visitor Center’s septic tank would need to be emptied on a routine basis (weekly). A pumper truck continually driving on the lawn to empty the existing tank may cause damage to extant resources, such as suspected mound remnants in the immediate vicinity of the Visitor Center, and may cause permanent compaction of soils containing archeological deposits. The operation of the still-functioning remnants of the current septic system would most likely cause no adverse effects to the area until the eventual collapse of the tank, which would lead to leakage of sewage into the ground, a large depression in the field behind the Visitor Center, and the shifting of overlying soils. The placement of the portable toilets would slightly impact the cultural landscape, and may introduce unpleasant odors to the area surrounding the Visitor Center as well, including the trailhead for the North Unit trails.

The pipes leading from the Visitor Center to the storage tank are about the same age as the septic system in general. If these pipes should fail, sewage could leak into the ground or back up into the Visitor Center basement, where the Monument’s archeological/ethnographical/cultural artifacts and records are located. These important resources would be at high risk of being contaminated by raw sewage, if the issue was

not caught in time. Cleaning and decontaminating the collection would be cost prohibitive and information would be lost. Another direct effect of this scenario is that the collection would not be accessible to Tribal Partners and researchers as it would be a human health and safety concern.

Alternative 2 – Install septic system

Cultural Relationship. The landscape within Effigy Mounds is culturally important to many American Indian Tribes (see the list above under Affected Environment). As described above, the many burial mounds protected by the park are culturally significant in a variety of ways to American Indian Tribes. In government to government consultations, Tribal partners have asserted the area has long been a sacred site, which is why the burial mounds were placed here in the first place. Actions that disturb burial mounds or create a disturbance to the general landscape of the site could be perceived by culturally associated Tribes as detrimental. Impacts can be reduced by spending less time engaged in activities with potential to disturb the landscape and also by reducing the scope and physical impact to the landscape. Accordingly, the proposed action would be limited to an already heavily-developed administrative area of the park (see Figure 2), where (as described above) there are unlikely to be direct impacts to culturally important mounds or artifacts. Because the entrance road, parking lot, and south lawn are previously disturbed areas used daily by staff and visitors, the proposed action is unlikely to create substantial impacts. Furthermore, the physical activities required to install the new septic system would be temporary, and likely to be completed within a four to six week timeframe, after which the site would be returned to a visually equivalent state. Nonetheless, new construction materials and wastewater would be added underground in the project area, which could have an impact on the sacred relationship of Indian Tribes with the site. In recognition of this potential, the Monument has consulted extensively with the associated Indian Tribes (see Chapter 4); these discussions between park staff and Tribal partners (see Chapter 4 for a description of Tribal consultation activities) did elicit concerns about the installation activities associated with the new septic system, and many of the mitigation measures recommended in this document are a direct response to the concerns that were expressed. Consultation with Tribal partners will continue, and park staff would remain in especially close communication with Tribal partners during the entire construction period. Therefore, impacts in terms of the cultural relationships resulting from actions implemented would be temporary and localized in the administrative complex, and would avoid direct impacts to historic properties of particular concern to Tribal partners. The park as a whole, including significant mound sites and other important areas, would not be disturbed.

Archeological Resources. Installing a new septic system to serve the Visitor Center for the park involves a variety of equipment and certain ground disturbing activities such as excavation of a pit for a lift station, excavation of a broad area adjacent to the south parking lot for a leach field, and horizontal boring to install a force main (see Chapter 2 for specifics). Such activities have the potential for direct impacts to archeological resources unearthed in open trenches or by excavating top layers of soil. However, given the history of agriculture and development at the site (as described under Affected Environment), it is unlikely that significant resources would be disturbed by earth moving activities in the upper 40 inches (for the leach field) or at specifically located deeper pit sites on the landscape.

Trenching could potentially disturb cultural deposits, either those previously undisturbed or disturbed and relocated to the area by prior grading. An examination of construction photographs taken during the grading of the parking area shows the vast majority of the project area was either ungraded (areas near the Visitor Center), or was scraped to provide fill for low spots in the parking area (areas in the vicinity of the proposed drainfield, and near the present entrance sign). The area behind the Visitor Center was heavily disturbed by Visitor Center construction, and the construction of the existing septic system. Thus, with careful construction, any intact resources may be avoided. A large hole would need to be dug adjacent to the Visitor Center on the southeast side for the lift station associated with the new system. Prior to installing this lift station, the hole would be used for an innovative construction method—horizontal

directional boring. Using this method reduces the amount of excavation necessary for the force main—the entire 600+ foot length of the force main can be bored into place with no trenching necessary, and thereby reduce any potential for impacts.

The only excavation necessary should be for the septic tanks, which would be located near the entrance to the south parking lot, not far from the entrance sign. Again, this area was in all likelihood scraped below the cultural zone in the 1950s, minimizing the odds cultural material would be encountered. Additionally, excavation to a depth of three to four feet would be needed to install the drainfield in the grassy area south of the parking lot and north of the Highway 76 right-of-way. This area also appears to have been graded below the cultural zone in the 1950s, sharply reducing the odds of encountering cultural deposits.

In order to mitigate the potential effects of this ground disturbance, the NPS entered into a Memorandum of Agreement (MOA) with the Iowa State Historic Preservation Office and the Iowa Tribe of Kansas and Nebraska (with the Iowa State Archeologist as a concurring party) (Effigy Mounds National Monument, 2017). Under this agreement, a series of mitigation measures have been developed and would be required as part of the proposed action (see Mitigation section in Chapter 2 and Effigy Mounds National Monument, 2018). Also, prior to construction the NPS would conduct a geo-archeological profile of the construction area, drilling numerous soil profiles throughout the construction zone. Results from the study would be used to guide the precise placement of all associated lines, the septic tanks, and drainfield, further reducing the likelihood of any damage to cultural resources in the project area. Furthermore, a qualified archeological monitor would be onsite during excavation activities to ensure that in the unlikely event an artifact or archeological feature is uncovered, excavation activities would be halted and appropriate action taken to avoid impacts. The NPS has also invited Tribes to send representatives to act as independent monitors of all ground disturbing activity during the construction period. Under the MOA, construction would cease if cultural material is encountered, and consultation would be re-initiated.

In summary, effects to the archeological resources should be minimal as the area has been previously disturbed and developed, and the drain field and tanks would be located in an area without known archeological features above or below the surface. The use of subsurface horizontal boring would mitigate some of the cultural landscape effects, as well as some of the archeological concerns. Because materials were moved within the site historically, there may be various individual artifacts dispersed throughout the previously disturbed area. However, these artifacts are not, by definition, contributing elements to the site because they are not located in their original context. Mitigation measures are in place to ensure that impacts to archeological resources are avoided and minimized. In addition to providing a septic system to serve the park and its visitors, the replacement of the pipes connecting the Visitor Center and the new system would greatly lower the risks to the Park's stored cultural artifacts and records, by providing modernized infrastructure and limiting the possibility that the system could back up into the basement and place those resources at risk.

3.2.3 Cumulative Effects

Alternative 1 – No Action

Under the No Action alternative, as described above, use of portable toilets and pumping of the current tank would occur; however, the tank and lines feeding into it also could fail due to age. Further, past actions on the northern part of the Nazekaw Terrace have resulted in numerous magnetic anomalies associated with the park construction of the Visitor Center, parking lot, sidewalks, paved access roads, and other related structures. There are also buried utility lines, including gas, water, telephone, and electrical lines, and there are three locations containing existing septic lines (abandoned and functioning). Two areas are east of the Visitor Center and one is east of the maintenance facility. All of these modern features may have impacted the more subtle prehistoric features that may have been present at the time of their construction. No other past, present, or future actions were identified. The incremental impact of

Alternative 1, when added to these past, present, and reasonably foreseeable future actions would be very minimal.

Alternative 2 – Install septic system

Past actions in the area of potential effect changed the area from a rolling terrace, with high and low points, to a level area in order to support infrastructure; subsequently constructing the Visitor Center and its required infrastructure moved a massive amount of soil. This work was done prior to passing NHPA and the Archeological Resource Protection Act (ARPA). Because the lack of detailed analysis these laws required was not yet codified, there is limited documentation of what actions were undertaken during the construction. Nonetheless, the area underwent considerable disturbance. The only potential future action is the potential for the maintenance building septic system to be connected to the existing system at some future time if it begins to fail. The maintenance building system consists of a septic tank/drain field that serves the buildings in the vicinity of the maintenance area. The second system is still functioning properly but the same proposed system could serve the maintenance area in the future.

Due to the sensitive nature of cultural material that may be present throughout the developed headquarters area, and due to the choice to abandon previously existing systems in place after their failure (to prevent further ground disturbance), there also would be an increasing amount of modern material that would remain buried and forever mixed with any ancient cultural material. The incremental impact of Alternative 2 when added to these other past, present, and reasonably foreseeable future actions is limited to ground disturbing activities that would be mitigated and monitored to avoid impacts, and the increase in the amount of modern material buried in the area described above.

By conducting the geo-archeological survey described above, and requiring the mitigation measures listed in Chapter 2 (and in the Memorandum of Understanding: Effigy Mounds National Monument, 2018), the incremental risk of additional potential impacts to the archeological resources is expected to be minimal or greatly reduced.

3.3 Visitor Experience

3.3.1 Affected Environment

The affected environment for both alternatives is located just east of the main entrance to the Monument which includes the Visitor Center and two parking lots. This area represents the main public access by vehicle. A sign identifying the Monument is located at the entrance and swing gates are found at the entrance and exit for the lots. Trailheads for the North Unit and the Yellow River boardwalk are located at the Visitor Center. The original Visitor Center was built in 1960, remodeled in 1995, and is located on an old field terrace that once contained dozens of mounds, prior to the establishment of the Monument. The area surrounding the Visitor Center consists of mowed lawns and some planted trees and shrubs for landscaping.

Approximately 4.5 acres of lawn make up the remainder of the project area, bordered to the north by forested bluffs, to the east by a pond, to the south by the Highway 76 right of way, and to the west by the office and maintenance areas. The parking lot consists of a north and a south portion with a total of 62 car spaces and three bus slots all within an acre. Normal traffic flows in a one-way pattern through both lots. Without this one-way flow, larger vehicles such as delivery trucks or large RVs would have a difficult time entering and exiting the area.

The No Action Alternative (Alternative 1) would impact the area from the easternmost portion of the parking lot loop to the area just south of the Visitor Center. This area would be impacted by repeated use

of a heavy truck for pumping the septic tank. The portable toilets, if they were needed, would be located at the northeast corner of the north parking lot.

Alternative 2 would affect the area from the entrance gate along the south side of the south lot to the area south and east side of the Visitor Center. This area would receive the components of the septic system outlined in this alternative and house any staging activities for the work.

As discussed above in General Site Conditions, the project area is in a heavily used site at the primary entrance to the park and its Visitor Center. A few hundred to over a thousand visitors flow through the parking areas and Visitor Center each day during the summer and fall. As shown on the maps (Figures 1 and 2), the project site is directly adjacent to the entry driveway and parking lot.

3.3.2 Direct and Indirect Effects

Alternative 1 – No Action

This alternative consists of two approaches employed separately or together for dealing with the failed septic system. The primary approach is to pump the existing septic tank periodically and have the sewage hauled away to be treated off site. The second approach, using portable toilets, would be utilized if the nearly 60 year-old septic tank or lines fail.

To accommodate the varying levels of public visitation through the year, the septic tank may need to be pumped out one to seven times per week. Pumping the septic tank requires using a heavy truck (2,500 gallon capacity) that would need to back across the lawn in all types of weather throughout the year, creating a short road that would damage the lawn and cause a negative aesthetic appearance impacting the visitor's experience due to its proximity to the Visitor Center entrance and trailheads.

At times the sidewalk accessing the Yellow River boardwalk would be blocked by the siphon hose used to pump out the septic tank, creating further direct impacts to visitor flow and park experience. These impacts to park operations and the visitor experience would be long term as the pumping would need to be frequent throughout the busy season and would lack a definite end date.

This alternative may also have an additional direct impact on visitor use, since the use of portable toilets is not sustainable through the winter months. If the septic tank or incoming line fails, the impact could be closure of the Visitor Center throughout the cold weather months (below freezing). Impacts would include but are not limited to, cancellation of winter programming, including the winter film festival, and sharply reduced services for winter visitors. While visitation during this season is much slower than any other time of year, estimates based on previous visitor records indicate 3,000-5,000 visitors each year would be impacted by winter closures.

Alternative 2 – Install septic system

Installing the new septic system and filling and leaving the existing septic tank would take approximately four to six weeks, and would require the use of construction equipment in areas adjacent to the Visitor Center and the entrance area including the south parking lot. During construction, portions of the south parking lot may be used for staging materials and equipment for the job, resulting in limited or no access through the area by the public. This would disrupt the typical one-way traffic pattern through the current parking area and force the public to enter and exit through the same one lane for the north parking lot. Entering, parking, turning around and exiting would need to be negotiated by visitors, and could prove difficult or impossible for larger vehicles such as delivery trucks or large RVs. Parking lot capacity would be reduced by at least one-third for much of the construction period.

During portions of the project, the sidewalk access to the Yellow River boardwalk would be blocked to the public during construction work in the Visitor Center area. Park staff would seek to find a suitable and

safe bypass around the construction zone to allow visitors access to the boardwalk and the wetlands beyond, but there may be days when large equipment is operating too close to the path to be safe.

This alternative would have a temporary impact on visitor services by preventing the use of the south parking lot. Depending on the time of year construction takes place, there could be a temporary direct effect on the programming for school field trips, as the buses would not be able to turn around in the limited space in the north parking lot. They might have to reschedule or may not be able to come this year. Depending on the duration of the construction, the inability to use the south parking lot could have a temporary direct impact on the number of visitors that can visit the park at one time.

The viewscape and soundscape of the Visitor Center area would also experience temporary direct impacts during construction activities. The presence of large construction equipment and their accompanying noise would be readily apparent. The NPS would attempt to mitigate this by carrying out the construction as early in the spring or summer as possible, so as few visitors as possible are affected.

3.3.3 Cumulative Effects

Alternative 1 - No Action

The developed facilities in the area of the Visitor Center exist to accommodate the public and provide access to park resources. These accommodations are designed to minimize distraction from the purpose of the intended visit. The action proposed in Alternative 1 would add to the existing development of the area but it is the visual and physical impacts of portable toilets and trucks pumping sewage on a regular basis that would detract significantly from the overall experience of each visitor for well into the foreseeable future. The odor from the portable toilets near the Visitor Center would also detract from the overall quality of the visit for each visitor. The level of odor depends on the time since last servicing, the temperature, and the wind direction. Beyond these potential impacts of Alternative 1, the only past, present, or reasonably foreseeable future actions are continued visitor presence and the potential for increases in visitation. But this is not expected to be substantial and, therefore, the incremental impact of Alternative 1 when added to other past, present, or foreseeable future actions would be a very small addition to the intrusions already present.

Alternative 2 - Install Septic System

The landscape in the Visitor Center and parking lot areas is already significantly altered. Installing the proposed septic system would temporarily add to the existing impacts to the visual scene for visitors entering the park. The temporary addition of construction equipment and materials, ground disturbance, noise, and additional traffic would add to the congestion already present on busy days. These temporary intrusions would disappear after the project is completed, and the project area would look nearly identical to the present once grass has been seeded and reestablished.

This septic system would be designed to accommodate the flow from the administrative, maintenance and resource buildings when the existing system in this area fails. The proposed system would accept sewage from these buildings through gravity flow, and would only require the installation of a connecting pipe. The existing system in this area would then be filled and left in place. This is the only reasonably foreseeable future action that may be implemented, but its effects would be temporary and localized. Therefore, the incremental impact of Alternative 2 when added to other past, present, and reasonable foreseeable future actions is very small and temporary, and once completed, intrusions on experience would no longer be an issue.

4.0 Consultation and Coordination

The NPS places a high priority on public involvement in the NEPA process and on giving the public an opportunity to comment on the proposed action. Consultation and coordination with American Indian Tribes and federal, state, and local agencies were also conducted to identify issues and concerns related to natural and cultural resources within the Monument. This chapter provides a summary of the public and stakeholder involvement and agency and Tribal consultation that occurred in the preparation of this EA.

4.1 Tribal Consultation

In accordance with Section 106 of the National Historic Preservation Act of 1966 (as amended) and with Executive Order 13175 Government to Government Consultation with Indian Tribes, the Monument has begun the consultation process with all of its Tribal partners. Discussion began in the fall of 2015 when the current septic system began to experience problems, and would continue throughout the duration of this project. Two meetings occurred with Tribal representatives in 2017—one in April and another in November—in which increasingly detailed discussions took place as the septic system's failure accelerated. Tribal partners have been instrumental in helping the NPS identify the location of the future system, and in identifying construction techniques that would minimize disturbance related to construction. Further, Tribal partners have also been invited to have their own monitors on site during construction.

4.2 National Historic Preservation Act

In keeping with the National Historic Preservation Act of 1966 (as amended), consultation has begun with the Iowa State Historic Preservation Office and the Office of the State Archeologist. The area of potential effect (APE) lies within an archeological site that is eligible to the National Register of Historic Places. A memorandum of agreement (MOA) between the NPS and the Iowa State Historic Preservation Office has been developed to mitigate the adverse effects this project may have on historic properties within the APE. This MOA went into effect on December 11, 2017. Consultation would be ongoing throughout the duration of the project.

4.3 ESA Section 7

The Monument has three federal and sixteen state listed species that may occur within the Monument. The federal species include the Higgins eye mussel (*Lampsilis higginsii*) (Endangered), the Northern long-eared bat (*Myotis septentrionalis*) (Endangered), and the rusty patched bumble bee (*Bombus affinis*) (Endangered). A response from the FWS IPaC (Information Planning and Consultation) website indicated several other federally listed species could be within the broader area of the Monument: Sheepnose Mussel (*Plethbasus cyphus*), Northern Wild Monkshood (*Aconitum noveboracense*), Prairie Bush-clover (*Lespedeza leptostachya*), and Western Prairie Fringed Orchid (*Platanthera praeclara*). There were no critical habitats for federally listed species identified in the proposed project area.

The project occurs within the confines of the Visitor Center parking lot and the adjacent mowed lawn near the Visitor Center, a lawn which consists primarily of non-native turf grasses. None of the state or federally listed species or species of special concern are found at this site nor does the site provide critical habitat for any native plant communities or wildlife species. Moreover, the proposed action would not have adverse impacts on habitat or critical environmental functions which support those species. Therefore, the NPS determined that no adverse impacts to threatened or endangered species would occur as a result of the proposed action.

4.4 Reviewers and Preparers

The persons responsible for the review of the proposed action to install a new septic system, the supporting information and analyses, and the preparation of this EA are listed below:

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- Robert Reiss, Project Engineer
- Reed Robinson, Tribal Relations Indian Affairs Manager
- Anne Vawser, Archeologist
- Chris Buczko, Environmental Protection Specialist
- Leigh Johnson, Community Planner

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