DRAFT ENVIRONMENTAL ASSESSMENT FOR THE VILLAGE OF FLOSSMOOR STORM SEWER IMPROVEMENT PROJECT FLOSSMOOR, ILLINOIS SECTION 219, WRDA 1992, AS AMENDED

EAXX-202-00-H6P-1738838245

March 2025

U.S. Army Corps of Engineers Chicago District, Planning Branch 231 South LaSalle Street Suite 1500 Chicago, Illinois 60604 Page intentionally left blank for double-sided printing

DRAFT FINDING OF NO SIGNIFICANT IMPACT VILLAGE OF FLOSSMOOR STORM SEWER IMPROVEMENT PROJECT FLOSSMOOR, ILLINOIS

The U.S. Army Corps of Engineers (USACE), Chicago District has conducted an environmental analysis in accordance with the National Environmental Policy Act of 1969, as amended. The Draft Environmental Assessment (EA) dated_____, for the Village of Flossmoor Environmental Infrastructure project addresses the need to increase stormwater conveyance to reduce flooding at the Flossmoor viaduct in Flossmoor, Illinois. The final recommendation is contained in the letter report dated _____.

The EA, incorporated herein by reference, evaluated a "no action" alternative and two alternative plans that would reduce flood risk in the project area. The recommended plan is Alternative 1, which includes:

• Installation of 300 feet of 72-inch diameter Reinforced Concrete Pipe (RCP) storm sewer and 130 linear feet of 12-inch RCP storm sewer along Sterling Avenue from Maryland Avenue towards the Flossmoor viaduct. Construction would be conducted through an opencut trench and includes the removal of existing 10-inch to 42-inch storm sewer and roadway reconstruction with curb and gutter rehab in the public right-of-way (ROW).

The EA evaluated the no action alternative as well as two other alternatives. The alternatives include:

- No Action Alternative Under this alternative, USACE would not provide funding for the project and the Village of Flossmoor would not reduce the risk of flooding in the Flossmoor viaduct area. Without this proposed project, flooding would likely continue and result in property damage and safety hazards. The non-federal sponsor would need to find other sources of funding and technical expertise to complete the desired stormwater improvements, further prolonging the risk of adverse effects to public health and safety within the affected community.
- Alternative 1 Regional Detention Phase 4 Open Trench Methods This alternative includes Phase 4 Regional Detention for Flossmoor Road Viaduct Drainage Improvements project and would involve the installation of 300 linear feet of 72-inch RCP storm sewer and 130 linear feet of 12-inch RCP storm sewer along Sterling Avenue from Maryland Avenue towards the Flossmoor Road viaduct.

The proposed storm sewers would connect to the future Phase 5 of storm sewer improvements from Flossmoor Road, where the viaduct flooding occurs, to the downstream limit of the Phase 3 construction along Sterling Avenue south of Maryland Avenue.

The storm sewers would be constructed with open cut methods under the roadway and includes the removal of existing 10-inch to 42-inch storm sewer. Due to the deep trenches in the ROW and the existing conditions of the road, full depth resurfacing of the roadway with curb and gutter repairs would occur.

• Alternative 2 – Regional Detention Phase 4 Trenchless Methods – This alternative is similar to Alternative 1 but incorporates trenchless installation methods for storm sewer. Trenchless installation requires jacking pits measuring approximately 15 feet by 40 feet and

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a receiving pit measuring approximately 15 feet by 20 feet. This method provides the same flood protection benefits but substantially increases construction costs due to the large diameter size of the newly installed storm sewer pipes.

For the No Action and two design alternatives, the potential effects were evaluated, as appropriate. A summary assessment of the potential effects of the recommended plan are listed in the below table:

	Insignificant effects	Insignificant effects as a result of mitigations	Resource unaffected by action
Aesthetics	\boxtimes		
Air quality	\boxtimes		
Aquatic resources/wetlands			\boxtimes
Terrestrial communities	\boxtimes		
Invasive species			\boxtimes
Threatened/Endangered species/critical habitat			\boxtimes
Historic properties			\boxtimes
Other cultural resources			\boxtimes
Floodplains			\boxtimes
Hazardous, toxic & radioactive waste			\boxtimes
Hydrology			\boxtimes
Land use			\boxtimes
Navigation			\boxtimes
Noise levels	\boxtimes		
Public infrastructure			\boxtimes
Socioeconomics			\boxtimes
Soils			\boxtimes
Tribal trust resources			\boxtimes
Water quality	\boxtimes		
Climate			\boxtimes

Summary of Potential Effects of the Recommended Plan

All practicable and appropriate means to avoid or minimize adverse environmental effects were analyzed and incorporated into the recommended plan. Best management practices, as detailed in the EA, would be implemented, if appropriate, to minimize impacts.

No compensatory mitigation is required as part of the recommended plan.

Public and agency review of the draft EA and Finding of No Significant Impact (FONSI) was completed on _____, 2025. ____ comments were received from the general public and resource agencies. Responses to comments from public and agency review may be found in Appendix B.

Pursuant to Section 7 of the Endangered Species Act (ESA) of 1973, as amended, USACE determined the recommended plan would have "no effect" on federally listed species or their designated critical habitat. This concludes USACE responsibilities for this action under ESA Section 7.

Pursuant to Section 106 of the National Historic Preservation Act of 1966, as amended, USACE determined that no historic properties will be adversely affected by the recommended plan. USACE sent a determination letter to the Illinois State Historic Preservation Office on January 7, 2025. Coordination is ongoing and USACE anticipates concurrence. Pursuant to regulations for Section 106 (36 CFR § 800) of the NRHP (54 U.S.C. § 300101, et seq.), USACE is making a good faith effort to gather information from affected Tribes

Pursuant to Sections 401 and 404 of the Clean Water Act of 1972, as amended, does not apply to the proposed infrastructure project since the project does not involve any discharge or placement of fill into waters of the U.S.

All applicable environmental laws have been considered and coordination with appropriate agencies and officials has been completed.

Technical, environmental, economic, and cost effectiveness criteria used in the formulation of alternative plans were those specified in the Water Resources Council's 1983 Economic and Environmental Principles and Guidelines for Water and Related Land Resources Implementation Studies. All applicable laws, executive orders, regulations, and local government plans were considered in evaluation of the alternatives. Based on this report, the reviews by other federal, state and local agencies, tribes, input of the public, and the review by my staff, it is my determination the recommended plan would not cause significant adverse effects on the quality of the human environment; therefore, preparation of an Environmental Impact Statement is not required.

Date: _____

Kenneth P. Rockwell Colonel, U.S. Army Commanding

VILLAGE OF FLOSSMOOR STORM SEWER IMPROVEMENT PROJECT FLOSSMOOR, ILLINOIS

DRAFT ENVIRONMENTAL ASSESSMENT

March 2025

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List of Acronyms

APE	Area of Potential Effects
ASTM	American Society for Testing and Materials
CEQ	Council of Environmental Quality
CO ₂	Carbon Dioxide
CO _{2e}	Carbon Dioxide equivalent
EA	Environmental Assessment
EcoCAT	Ecological Compliance Assessment Tool
ECOS	Environmental Conservation Online System
EO	Executive Order
ESA	Environmental Site Assessment
FEMA	Federal Emergency Management Agency
FONSI	Finding of No Significant Impact
FWCA	Fish and Wildlife Coordination Act
GHG	Greenhouse Gas
GWP	Global Warming Potential
HTRW	Hazardous, toxic, and radioactive waste
IDNR	Illinois Department of Natural Resources
IEPA	Illinois Environmental Protection Agency
IPaC	Information for Planning and Consultation
MAC	Maximum Allowable Concentration
MRR	Mandatory Reporting Rule
NAAQS	National Ambient Air Quality Standards
NEAT	Net Emissions Analysis Tool
NEPA	National Environmental Policy Act
NOAA	National Oceanic and Atmospheric Administration
NRCS	Natural Resources Conservation Service
NWI	National Wetlands Inventory
PID	Photoionization Detector
PL	Public Law
PM	Particulate Matter
RCP	Reinforced Concrete Pipe
REC	Recognized Environmental Condition
ROW	Right-of-Way
SHPO	State Historic Preservation Office
USACE	U.S. Army Corps of Engineers
USEPA	U.S. Environmental Protection Agency
USFWS	U.S. Fish and Wildlife Service
WIIN	Water Infrastructure Improvements for the Nation
WRDA	Water Resources Development Act

CHAPTER 1 – PURPOSE AND NEED

1.1 Purpose

The purpose of the proposed project is to provide improvements to a portion of the Village of Flossmoor's storm sewer infrastructure to reduce roadway and residential flooding along Sterling Avenue in Flossmoor, Illinois (Figure 2).

1.2 Need for Action

The Village of Flossmoor, located in Cook County, Illinois, experiences frequent roadway and residential flooding at the intersection of Flossmoor Road and Sterling Avenue due to insufficient storm sewer drainage infrastructure. Flooding during moderate to heavy rainfall events poses safety concerns for motorists and pedestrians, prevents emergency vehicle access across the railroad, and results in property damage due to overland flow and basement backups (Figure 1).



Figure 1: Flossmoor viaduct flooding – September 27, 2019.

1.3 Authority

The study is authorized under Section 219(f)(54) of the Water Resources Development Act (WRDA) of 1992, Public Law (P.L.) 102-580; as amended by Section 108(d) of the Consolidated Appropriations Act of 2001, Public Law 106-554; Section 142 of the Energy and Water Appropriations Act of 2004, Public Law 108-137; Section 1157 of the Water Infrastructure Improvements for the Nation Act (WIIN Act) of 2016, Public Law 114-322. These amended authorities allow USACE to provide planning, design, and construction assistance for water-related environmental infrastructure projects.

1.4 Non-federal Sponsor

The project's non-federal sponsor is the Village of Flossmoor in Flossmoor, Illinois.



Figure 2: Location of the Flossmoor, Illinois Storm Sewer Improvement Project Area.

CHAPTER 2 – PROPOSED ACTION AND ALTERNATIVES

2.1 Action Alternatives

Alternative 1 – Regional Detention Phase 4 Open Trench Methods

Alternative 1 includes the Regional Detention Phase 4 for Flossmoor Road Viaduct Drainage Improvements project and would involve the installation of 300 linear feet of 72-inch RCP storm sewer and 130 linear feet of 12-inch RCP storm sewer along Sterling Avenue from Maryland Avenue towards the Flossmoor Road viaduct (Figure 3).

The proposed storm sewers would connect to the future Phase 5 of storm sewer improvements from Flossmoor Road, where the viaduct flooding occurs, to the downstream limit of the Phase 3 construction along Sterling Avenue south of Maryland Avenue.

The storm sewers would be constructed with open cut trench methods under the roadway and includes the removal of existing 10-inch to 42-inch storm sewer. Due to the deep trenches in the ROW and the existing conditions of the road, full depth resurfacing of the roadway with curb and gutter repairs would occur.

Alternative 2 – Regional Detention Phase 4 Trenchless Methods

Alternative 2 also includes the Regional Detention Phase 4 for Flossmoor Road Viaduct Drainage Improvements project and involves the installation of 300 linear feet of 72-inch RCP storm sewer and 130 linear feet of 12-inch RCP storm sewer along Sterling Avenue from Maryland Avenue towards the Flossmoor Road viaduct, and the removal of existing 10-inch to 42-inch storm sewer. However, Alternative 2 incorporates trenchless installation methods for storm sewer. Trenchless installation requires jacking pits measuring approximately 15 feet by 40 feet and a receiving pit measuring approximately 15 feet by 20 feet. This method provides the same flood protection benefits but substantially increases construction costs due to the large diameter size of the newly installed storm sewer pipes.

2.2 No Action Alternative

Under the no action alternative, storm sewer replacement would not occur. USACE would not provide funding for the project and the Village of Flossmoor would not reduce the risk of flooding in the Flossmoor viaduct area. Without this proposed project, flooding would likely continue and result in property damage and safety hazards. However, the no action alternative is included in the alternatives analysis to establish a baseline condition for existing human and natural environmental conditions to allow comparison between future without and with project actions.

2.3 Recommended Plan (Proposed Action)

The recommended plan is Alternative 1. The recommended plan includes the installation of new 72-inch storm sewer along Sterling Ave via open trench methods and repavement with asphalt at completion. Alternative 1 was selected as the recommended plan because it provides a higher level of flood protection than the no action, for the project vicinity without increasing flows and downstream flood risk into Butterfield Creek, while being the economically responsible alternative compared to alternative 2.

Alternative 1 – Regional Detention Phase 4

10-Year Storm Event

Village of Flossmoor, Illinois



Figure 3: Regional Detention for Flossmoor Road viaduct flooding. Phase 4 (purple) location of Alternatives 1 and 2.

CHAPTER 3 – ENVIRONMENTAL SETTING AND CONSEQUENCES

This section discusses the existing conditions by resource category and any potential environmental impacts associated with the no action alternative as well as with implementation of Alternative 1 (recommended plan) and Alternative 2.

USACE evaluated the potentially affected environment and the degree of the effects of the action, respectively, to consider whether the proposed action's effects are significant. In considering the potentially affected environment, USACE considered the affected area and its resources. USACE defined effects or impacts to mean changes to the human environment from the proposed action or alternatives that are reasonably foreseeable, including direct, indirect, and cumulative effects. In considering the degree of the effects, USACE considered short and long-term effects; beneficial and adverse effects; any effects to public health and safety; and whether the action threatens to violate federal, state, or local laws established for the protection of the human and natural environment. USACE considered the severity of an environmental impact as follows:

• None/negligible – No measurable impacts are expected to occur.

• Minor – A measurable and adverse effect to a resource. A slight impact that may not be readily obvious and is within accepted levels for permitting, continued resource sustainability, or human use. Impacts should be avoided and minimized if possible but should not result in a mitigation requirement.

• Significant – A measurable and adverse effect to a resource. A major impact that is readily obvious and is not within accepted levels for permitting, continued resource sustainability, or human use. Impacts likely result in the need for mitigation.

• Adverse – A measurable and negative effect to a resource. May be minor to major, resulting in reduced conditions, sustainability, or viability of the resource.

• Beneficial – A measurable and positive effect to a resource. May be minor to major, resulting in improved conditions, sustainability, or viability of the resource.

• Short-Term – Temporary in nature and does not result in a permanent long-term beneficial or adverse effect to a resource. For example, temporary construction-related effects (such as, an increase in dust, noise, traffic congestion) that no longer occur once construction is complete. May be minor, significant, adverse, or beneficial in nature.

• Long-Term – Permanent (or for most of the project life) beneficial or adverse effects to a resource. For example, permanent conversion of a wetland to a parking lot. May be minor, significant, adverse, or beneficial in nature.

USACE used quantitative and qualitative analyses, as appropriate, to determine the level of potential impact for all alternatives. USACE analyzed ecological, aesthetic, historic, cultural, economic, social, and health effects, as applicable. Based on the results of the analyses, this Environmental Assessment (EA) identifies whether a particular potential impact would be adverse or beneficial, and to what extent.

3.1 Project Area

The project area is within the Village of Flossmoor, Cook County, Illinois. The storm sewer improvement project area is within the roadway right-of-way of Sterling Ave and is bound by Flossmoor Road to the north and Maryland Ave to the south (Figure 2).

3.2 Physical Resources

3.2.1 Climate

Existing Condition

The climate of the study area is predominantly continental with some modifications by Lake Michigan. The National Oceanic and Atmospheric Administration's (NOAA) Online Weather Data was queried for the Chicago Midway station since that is closest local climatology reporting location to the project area. Daily and monthly normals for temperature, precipitation, and snowfall between 1991 and 2020 were available (NOAA 2024) (Figure 4). The mean winter high temperature is 32.8°F while the mean winter low temperature is 19.5°F (January). The mean summer high temperature is 85.2°F while the mean summer low temperature is 62.7°F (July). Annual total precipitation for the Chicago area is 40.88 inches. In winter, total snowfall is generally heavy with an annual total snowfall of 38.8 inches. The majority of snowfall occurs between December and February with total snowfall ranging from 7.9 inches (i.e., December) to 10.1 inches (i.e., February) during this timeframe.



Figure 4: Normal Precipitation and Temperature for the General Project Area between 1991 and 2020 (NOAA 2024).

Alternative Impact

Only short duration, minor discharges of carbon-based pollutants would occur during construction activities that could contribute to greenhouse gases. Long-term climate trends indicate that the Chicago area will continue to see increased flooding in urban areas due to more intense precipitation events. Alternatives 1 and 2 would not adversely impact climate and would help to offset the impacts of changing climate conditions within the project area by reducing the risk of flooding. Therefore, implementation would have no direct or indirect, short-term or long-term adverse effect on climate.

No Action Impact

The no action alternative would not adversely impact climate.

3.2.2 Geology & Soils

Existing Condition

<u>Geology</u> – Glaciation within the Chicago region ended about 13,000 years ago when the glaciers receded from the area for the last time. In the Chicago region, the most common type of bedrock is a magnesium-rich limestone called dolomite that was originally deposited on reefs set in shallow seas during the Silurian period about 400 million years ago. The youngest bedrock in the Chicago region dates from the Pennsylvania period about 300 million years ago. Surface features in the region are all made of material deposited by the glaciers or by the lakes that appeared as the glaciers melted. In some places, these deposits are nearly 400 feet thick.

<u>Soils</u> – The U.S. Department of Agriculture Natural Resource Conservation Service's web soil survey was queried for soils present within the project area. According to the web soil survey for the project area, there are two types of soil comprising the project area: Orthents, clayey, undulating (13.3% of mapped area; map unit 805B) and Markham-Ashkum-Beecher (86.7% of mapped area; map unit 854B) (Figure 5). The Orthents soils are moderately well drained soils formed on lake plains. Orthents are defined as entisols that lack horizon development. The Markham-Ashkum-Beecher complex consists of 40 percent Markham Series, 30 percent Ashkum Series, 25 percent Beecher Series, and 5 percent minor components. These soils are moderately well to poorly drained soils that were formed on ground moraines or end moraines. Neither of the soils present in the project area are prime farmland soils.

Alternative Impact

Implementation of either Alternative 1 (recommended plan) or Alternative 2 would include excavation and ground disturbing activities; however, these activities would not impact any unique local geologic features as none are present within the area. Both Alternative 1 (recommended plan) and Alternative 2 include the installation of new storm sewers, but the areas where excavation and construction would occur are within roadway rights of way and have been previously disturbed. Therefore, neither Alternative 1 (recommended plan) nor Alternative 2 would have any direct or indirect short-term or long-term adverse impacts to local geological features or soils.

No Action Impact

No impacts to geologic features or soils are anticipated as part of the no action alternative.

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Figure 5: NRCS Map of Soils Within the Flossmoor Storm Sewer Improvements Project Area (NRCS 2024).

3.2.4 Water Quality

Existing Condition

The nearest water resource is Butterfield Creek which is located approximately 3,000 feet southeast of the project area. The creek is approximately 15 miles long and discharges into Thorn Creek, which flows into the East Arm of the Little Calumet River and eventually the Calumet-Saganashkee Channel. Butterfield Creek is a highly altered urban stream that has been heavily impacted by floodplain development and urban runoff.

Butterfield Creek is listed as an impaired waterway in the 2022 Illinois 303d list (IEPA, 2024). Fecal coliform impairs primary contact recreation and hexachlorobenzene impacts aquatic life.

Alternative Impact

Indirect impacts associated with run-off and erosion due to installation of storm sewer may temporarily impact water quality in the area under both Alternative 1 (recommended plan) and Alternative 2. Construction-related impacts under both Alternatives 1 and 2 would be short-term and mitigated through the use of best management practices, such as placement of silt fences throughout the project area to prevent runoff into adjacent surface waters. Implementation of either Alternative 1 (recommended plan) or Alternative 2 would not result in significant adverse short or long-term direct environmental impacts to aquatic habitat and water quality.

No Action Impact

Under the no action alternative, water quality in the project area would remain unchanged.

3.2.4 Air Quality

Existing Condition

The Chicago Metropolitan area, including the study area, is a non-attainment area for ozone. Existing air quality data are available for Cook, DuPage, and Will counties from the USEPA Air Data database (USEPA, 2022). Although the trends show overall improvement over the last 10 years, individual measurements and monitoring stations still have measurements that exceed the national standards. The existing air quality should be considered marginal but improving over time.

NAAQS	Area Name	Most Recent Year of Nonattainment		Classification
8-Hour Ozone (2015)	Chicago, IL-IN-WI	2024	Nonattainment	Moderate
8-Hour Ozone (2008)	Chicago-Naperville, IL-IN-WI	2021	Maintenance (Since 2022)	Serious
PM-10 (1987)	Southeast Chicago	2004	Maintenance (since 2005)	Moderate
PM-2.5 (1997)	Chicago-Gary-Lake County, IL-IN	2012	Maintenance (since 2013)	Former Subpart 1
Lead	Chicago, IL	2017	Maintenance (since 2018)	

Table 1: Chicago Area Status for NAAQS Six Criteria Pollutants (USEPA 2021).

On January 9, 2023, the Council on Environmental Quality (CEQ) issued interim guidance to assist agencies in analyzing greenhouse gas (GHG) emissions and climate change effects of their proposed actions under NEPA. This guidance builds upon and updates CEQ's 2016 Final

Guidance for Federal Departments and Agencies on Consideration of Greenhouse Gas Emissions and the Effects of Climate Change in National Environmental Policy Act Reviews.

The State of Illinois aims to adhere to the federal emissions target of reducing greenhouse gas emissions to net zero by 2050. The United States Environmental Protection Agency's (USEPA) Mandatory Reporting Rule of Greenhouse Gases (MRR-GHG) applies to direct GHG emitters, fossil fuel suppliers, industrial gas suppliers, and facilities that inject carbon dioxide (CO2) underground for sequestration (containment) or other reasons.

Alternative Impact

During project implementation of either Alternative 1 (recommended plan) or Alternative 2, construction equipment would cause negligible, temporary air quality impacts as described below with the discussion of GHG emissions. All equipment used would be in compliance with current air quality control requirements for diesel exhaust, fuels, and similar requirements. Long-term, once constructed, the project would be neutral in terms of air quality, with no features that either emit or sequester air pollutants to a large degree.

USACE analyzed GHG emissions under the No Action Alternative, Alternative 1, and Alternative 2. Construction of either Alternative 1 (recommended plan) or Alternative 2 would take approximately three weeks and the average working day is anticipated to be 8 hours (see Appendix A for machinery and vehicle usage estimates for Alternative 1 and Alternative 2). The tables below (Table 2, Table 3, and

Table 4) provide the total amount of GHG emissions that are expected to result from construction for each final array alternative. Emissions were calculated using the Fuel Volume Analysis Method Calculator (Air Quality and GHG Sub-CoP SOP) (USACE, 2024).

The Fuel Volume Emissions Method is used for projects with low to intermediate emissions anticipated and makes assumptions to simplify the quantification of emissions. This model assumed 25 gallons of fuel/hour and all equipment fuel to be Distillate Fuel Oil No.2 (diesel). Emissions Factors were acquired from the USEPA Emission Factors for Greenhouse Gas Inventories. To determine the sum of total GHG emissions, the emissions for each type of GHG were standardized to a common unit. This standard unit is the carbon dioxide equivalent (CO₂e), which is calculated by multiplying the GHG emissions for each gas by their respective Global Warming Potential (GWP). It is anticipated that GHG emissions from operation and

maintenance of either Alternative 1 (recommended plan) or Alternative 2 would be minimal and do not have enough significance to be quantified.

Alternative 2 would have the lowest GHG emissions compared to Alternative 1 (recommended plan) and the No Action Alternative. Alternative 1 (recommended plan) would have the second lowest GHG emissions (Table 2, Table 3, and

Table 4). None of the action alternatives would sequester carbon. None of the action alternatives would impact the ability of the State of Illinois or the Federal Government from meeting their emissions goals or achieving net-zero emissions by 2050 per EO 14057. Implementation of either Alternative 1 (recommended plan) or Alternative 2 would not result in significant short-term or long-term, direct or indirect impacts on GHG emissions as it relates to air quality within Cook County. Due to the short and temporary nature of any air quality impacts, a general conformity analysis was not conducted.

Table 2. GHG Calculations for the No Action Alternative. Fuel Volume Analysis Method Calculator used to calculate emissions (USACE, 2024).

	GHG	Miles Direct Input (Annually) *	Emissions Factor (Grams of Emissions/ Gallons of Fuel)	Emissions (Tons)	Carbon Dioxide Equivalents	Emissions (MT) (CO2e)
Nia	CO ₂	46,200	8,780	405,636	1.00	367.98
Action	CH ₄	46,200	0.38	0.017	28.00	0.44
	N ₂ O	46,200	0.08	0.003	265.00	0.88
						Total CO2e (MT)
						369.3

*2-mile detour for 23,100 vehicles annually. Annual average daily traffic on Flossmoor Road is 7,700 with an average of three flood rain events per year.

	GHG	Fuel Volume (Gallons)	Emissions Factor (Grams of Emissions/ Gallons of Fuel)	Emissions (Tons)	Carbon Dioxide Equivalents	Emissions (MT) (CO2e)	Net Emissions (MT; Action Alternative - No Action)
Action	CO _{2,}	41,300	10,210	421.67	1.00	382.53	14.55
Alternative	CH ₄	41,300	0.06	<0.01	28.00	0.06	-0.38
	N ₂ O	41,300	0.45	<0.02	265.00	4.46	3.58
						Total CO2e (MT)	Total Net Emissions
						387.06	17.75

Table 2	CHC Colculations for	Altornativa 1	Eucl Volumo	Analysis Mothod	Colculator	ucod to	colculato omiccione		20241
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Table 4. GHG Calculations for the Alternative 2. Fuel Volume Analysis Method Calculator used to calculate emissions (USACE, 2024).

	GHG	Fuel Volume (Gallons)	Emissions Factor (Grams of Emissions/ Gallons of Fuel)	Emissions (Tons)	Carbon Dioxide Equivalents	Emissions (MT) (CO2e)	Net Emissions (MT; Action Alternative - No Action)
Action	CO ₂	22,800	10,210	232.78	1.00	211.18	-156.8
Alternative	CH ₄	22,800	0.06	<0.01	28.00	<0.04	-0.4
2	N ₂ O	22,800	0.45	0.01	265.00	2.46	1.58
				<u> </u>		Total CO2e (MT)	Total Net Emissions
						213.68	-154.74

No Action Impact

Under the No Action Alternative, the storm sewer infrastructure within the project area would remain in place and continue to be insufficient in terms of capacity. Flooding of the Flossmoor viaduct would continue to occur with an average of three flooding events per year. These events would cause the average daily traffic of 7,700 vehicles to detour the approximately 2 miles to reroute their travels per rain event. It is then assumed that 23,100 vehicles would be rerouted for 2 miles annually with the no action alternative. Using this assumption, an additional 46,200 miles would be driven on an annual basis contributing to GHG emissions as it relates to air quality. These impacts would be insignificant.

3.2.6 Land Use

Existing Condition

Existing land use in the project area is comprised of the following categories: single family residential, and infrastructure (e.g. utilities/transportation). The new storm sewer installation project would occur within the roadway right of way. The Village of Flossmoor zoning map designates the areas adjacent to the project area as R-5 single family residential.

Alternative Impact

Implementation neither Alternative 1 (recommended plan) nor Alternative 2 is in conflict with the Village of Flossmoor's designation as a roadway right of way or the adjacent R-5 land use. To the contrary, implementation of either Alternative 1 (recommended plan) or Alternative 2 would provide stormwater drainage and reduce flooding of the roadway and surrounding residential properties. Neither alternative 1 or 2 would change the designation of the area from single family residential to another land use category, nor would there be any conversion of another land use category (such as open space) to single family residential. Therefore, there would be no direct or indirect, short-term or long-term adverse impacts on land use within the project area under either Alternative 1 (recommended plan) or Alternative 2.

No Action Impact

No impacts to land use would occur as part of the no action alternative.

3.2.7 Floodplains

Existing Condition

Executive Order 11988, as amended, requires federal agencies to consider the potential effects of their proposed actions on floodplains. In order to determine the alternatives' potential floodplain impact, the Federal Emergency Management Agency (FEMA) Flood Insurance Rate Maps (FIRM) were queried to determine if the proposed project area is located within a Special Flood Hazard Zone Area or Other Area of Flood Hazard. According to the Village of Flossmoor Flood Map (Area Number 17031C0741J), the proposed project is not located within the floodplain and the area has been designated as a Minimal Flood Hazard Area (FEMA 2024).

Alternative Impact

The construction of underground infrastructure such as storm sewers would result in no direct or indirect, short-term or long-term adverse impacts to floodplains as there are no floodplains within the project area.

No Action Impact

As no construction related activities would be implemented, no impacts to floodplains are anticipated to occur from the no action alternative.

3.2.8 Wetlands

Existing Condition

National Wetland Inventory (NWI) maps were reviewed for the proposed project area and are included in Appendix B. NWI mapping did not identify any wetlands within or adjacent to the project area (USFWS 2024).

Alternative Impact

No impacts to wetlands are anticipated because no wetlands are within or adjacent to the project area.

No Action Impact

No impacts to wetlands are anticipated for the no action alternative.

3.3 Biological Resources

3.3.1 Aquatic Communities

Existing Condition

The closest water resource to the project area is Butterfield Creek which is located approximately 3,000 feet southeast of the project area. The Butterfield Creek flows into Thorn Creek, which flows into the Little Calumet River. The Fishes of the Chicago Region Database (Veraldi, unpublished data) was queried for fish species that were collected from the East Branch of Butterfield Creek. No collections were made from the East Branch of Butterfield Creek, however, collections were made in the mainstem of Butterfield Creek just north of the project area. The following species were collected from the mainstem of Butterfield Creek and are likely found in the East Branch of Butterfield Creek tributary: black bullhead (*Ameiurus melas*), yellow bullhead (*Ameiurus natalis*), creek chub (*Semotilus atromaculatus*), fathead minnow (*Pimephales promelas*), green sunfish (*Lepomis cyanellus*), Johnny darter (*Etheostoma nigrum*), largemouth bass (*Micropterus salmoides*), white sucker (*Catostomus commersoni*), golden shiner (*Notemigonus crysoleucas*), and central stoneroller (*Campostoma anamolum*). The common carp (*Cyprinus carpio*), a non-native species, has also been collected from Butterfield Creek.

Aquatic Macroinvertebrates

As discussed above, the closest water resource to the project area is the East Branch of Butterfield Creek which is located approximately 3,000 feet southeast of the project area. A survey of the macroinvertebrate community within the East Branch of Butterfield Creek was not readily available. Macroinvertebrate sampling has occurred within Thorn Creek, which the Butterfield Creek mainstem flows into. Substrate and habitat types found within Thorn Creek are similar to those found in Butterfield Creek and the East Branch of Butterfield Creek. Therefore, the macroinvertebrates observed in Thorn Creek are likely present within Butterfield Creek and its tributaries. The following aquatic macroinvertebrates are likely to occur within the East Branch of Butterfield Creek and generally indicate good water quality: Flat worm (*Dugesia tigrina*), Earthworm (*Oligochaeta*), Leech (*Erpobdella punctate*), Leech (*Mooreobdella fervida*), Leech (*Helobdella stagnalis*), Leech (*Helobdella triserialis*), Isopod (*Caecidotea intermedius*), Crayfish (*Orconectes virilis*), Mayfly (*Baetis intercalaris*), Mayfly (*Stenacron interpunctatum*), Dragonfly (*Aeshna umbrosa*), Damselfly (*Calopteryx maculate*), Damselfly (*Argia apicalis*), Little Sister Sedge Caddisfly (*Cheumatopsyche sp.*), Caddisfly (*Hydropsyche depravata* complex), Caddisfly (*Hydropsyche sp*)., Caddisfly (*Hydropsychidae*), Riffle Beetle (*Stenelmis crenata*), Non-biting Midge (*Ablabesmyia mallochi*), Non-biting Midge (*Brillia flavifrons*), Non-biting Midge (*Brillia sp*)., Harlequin Fly (*Chironomus sp.*), Non-biting Midge (*Conchapelopia sp.*), Non-biting Midge (*Cricotopus bicinctus*), Non-biting Midge (*Cryptochironomus sp.*), Non-biting Midge (*Polypedilum fallax-gr.*), Non-biting Midge (*Polypedilum illinoense-gr.*), Non-biting Midge (*Polypedilum scalaenum-gr.*), Non-biting Midge (*Polypedilum sp.*), Non-biting Midge (*Rheocricotopus robacki*), Non-biting Midge (*Thienemanniella xena*), Striped Black Fly (*Similium vittatum* complex), Crane Fly (*Tipula sp.*), Limpet (*Ferrissia sp.*), Rusty Fossaria (*Fossaria sp.*), Mud Amnicola (*Amnicola limosa*), Asian Clam (*Corbicula flumineum*), Arab Muslim (*Musclium secures*), Little Mussel (*Musclium transversum*), Ridgebeak Peaclam (*Pisidium compressum*), Hydra (*Hydra sp.*), and Beetle (*Peltodytes duodecimpunltus*) (Northeastern Illinois Planning Commission, 2005).

Alternative Impact

Construction would not include any in-water work. Both the U.S. Fish and Wildlife Service (USFWS) and Illinois Department of Natural Resources (IDNR) were contacted during the scoping process for the proposed project. IDNR responded via letter (August 8, 2024), that it does not have any objections to the project described. Overall, since no in-water work would occur, the alternatives are not expected to have any direct or indirect short-term or long-term adverse impacts to aquatic resources.

No Action Impact

As no construction related activities would be implemented, no impacts to aquatic communities are anticipated to occur from the no action alternative.

3.3.2 Terrestrial Communities

Existing Condition

Reptiles and Amphibians

Due to the urban nature of the project areas, only common species of reptiles and amphibians would be expected to be present. Common species that may be in the general area of the project area could include common garter snake (*Thamnophis sirtalis*), northern watersnake (*Nerodia sipedon*), eastern racer (*Coluber constictor*), American bullfrog (*Lithobates catesbeianus*), and snapping turtle (*Chelydra serpentina*).

<u>Birds</u>

The western shoreline of Lake Michigan is recognized as "one of the most important flyways for migrant songbirds in the United States by many ornithologists and birdwatchers worldwide" (Shilling and Williamson, BCN), and is considered globally significant. An estimated 5 million songbirds use the north-south shoreline of Lake Michigan as their migratory sight line every year. Although the project area is within the vicinity of Lake Michigan, and the project area is within the vicinity of Butterfield Creek, there is no significant bird habitat present within the project area. The project area is located within the vicinity of open space, residential, and infrastructure (e.g., Governors Highway and elevated railroad lines) land use types. Due to the noise associated with the adjacent Governors Highway and the elevated railroad lines, birds that may be present within the area would primarily be common species that are fairly habituated to human disturbance. Common species that may be observed include: European starling (*Sturnus vulgaris*), American robin (*Turdus migratorius*), mourning dove (*Zenaida macroura*), house finch (*Haemorhous mexicanus*), Canada goose (*Branta canadensis*), and blue jay (*Cyanocitta cristata*).

<u>Mammals</u>

A list of mammals that have potential to occur within the project areas was assembled utilizing publications and available data. Large mammal habitat is degraded or non-extant within the project area; however, coyote (*Canis latrans*), red fox (*Vulpes vulpes*) and white-tailed deer (*Odocoileus virginianus*) make up the large mammal potential for the area. Small mammals that have the potential to occur within the areas include common urban species such as eastern gray squirrel (*Sciurus carolinensis*), eastern chipmunk (*Tamias striatus*), Virginia opossum (*Didelphis virginiana*), striped skunk (*Mephitis mephitis*), eastern cottontail (*Sylvagius floridanus*), and raccoon (*Procyon lotor*).

Alternative Impact

Implementation would have temporary negligible impacts to terrestrial communities d. Construction of both Alternative 1 (recommended plan) and Alternative 2 would occur in a residential area next to infrastructure (e.g., Governors Highway, elevated railroad lines). Therefore, only common species are anticipated to be present. The presence of construction equipment and construction activities is likely to disturb common terrestrial species and cause them to avoid the area in the short-term, however, this would be a negligible impact and the species would be expected to return to the area as soon as construction is complete.

Both USFWS and IDNR were contacted during the scoping process for the proposed project. IDNR responded via letter (August 8, 2024) that it has no objections to the project described.

No Action Impact No impacts to terrestrial communities are anticipated to occur from the no action alternative.

3.3.3 Threatened and Endangered Species

Existing Condition Federal

A query of USFWS's Environmental Conservation Online System Information for Planning and Consultation (ECOS-IPaC) (Consultation Code 2025-0003975) on February 6, 2025 resulted in an official species list of federally-listed species that may be present within the project areas. Obtaining the official species list from ECOS-IPaC fulfills the requirement for federal agencies to "request of the Secretary of the Interior information whether any species which is listed or proposed to be listed may be present in the area of a proposed action." Ten federally listed threatened, endangered, proposed endangered, experimental population, and candidate species were identified as potentially occurring within the project area (Table 5). Critical habitat has been designated for the Hine's emerald dragonfly and proposed for the Rufa Red Knot; however, the project location is outside the critical habitat and proposed critical habitat area for both of these species.

Table 5: Federally-listed Species with the Potential of Occurring within the Project Area

Species Name	Federal Status	Habitat	Potential to Occur
Northern long-eared bat (<i>Myotis</i> <i>septentrionalis</i>)	Endangered	Hibernates in caves and mines – swarming in surrounding wooded areas in autumn. Roosts and forages in upland forests and woods during the summer.	Not expected to occur; lack of suitable habitat.
Tricolored Bat (<i>Myotis sodalis</i>)	Proposed Endangered	Hibernate in caves and occasionally mines. During summer, found in forested habitats and roost in trees, primarily among the leaves.	Not expected to occur; lack of suitable habitat.
Eastern Massasaugua (<i>Sistrurus catenatus)</i>	Threatened	Wet areas including wet prairies, marshes, and low areas along rivers and lakes. Use adjacent upland areas.	Not expected to occur; lack of suitable habitat.
Red knot (<i>Calidris canutus rufa</i>)	Threatened	Sandy beaches, saltmarshes lagoons, mudflats, mangrove swamps, and shorelines of large lakes.	Not expected to occur; lack of suitable habitat.
Whooping Crane (<i>Grus americana</i>)	Experimental Population, Non-essential	Found in wetlands, marshes, mudflats, wet prairies, and fields.	Not expected to occur; lack of suitable habitat
Hine's Emerald Dragonfly (Somatochlora hineana)	Endangered	Calcareous spring-fed marshes and sedge meadows overlaying dolomite bedrock	Not expected to occur; lack of suitable habitat.
Rusty patched bumble bee (<i>Bombus</i> <i>affinus</i>)	Endangered	Natural and semi-natural upland grassland, shrubland, woodlands and forests	Not expected to occur; lack of suitable habitat.
Monarch butterfly (<i>Danaus plexippus)</i>	Candidate	Prefer grassland ecosystems with native milkweed and nectar plants.	Not expected to occur; lack of suitable habitat.
Western Prairie Fringed Orchid (Platanthera praeclara)	Threatened	Mesic to wet unplowed tallgrass prairies and meadows.	Not expected to occur; lack of suitable habitat.
Leafy Prairie-Clover (<i>Dalea foliosa</i>)	Endangered	Prairie remnants along the Des Plaines River, IL in soils over limestone substrate	Not expected to occur; lack of suitable habitat.

<u>State</u>

The IDNR Ecological Compliance Assessment Tool (EcoCAT) was queried on October 9, 2024 for state-listed species that may be present within the vicinity of the project area (IDNR Project Number 2504760). The review resulted in no record of state-listed threatened or endangered species, Illinois Natural Inventory sites, dedicated Illinois Nature Preserves, or registered Land and Water reserves in the vicinity of the project location.

Alternative Impact

USACE determined that the implementation would have 'no effect' directly or indirectly on all of the federal-listed species listed in Table 5 because these species are not expected to occur within the vicinity of the project area due to lack of suitable habitat, or because there are no records of the listed species in the project area. Additionally, there are no plans for tree removal as part of the project scope.

IDNR provided a letter during the scoping period on August 8, 2024 in which the INDR concluded that they have no objection to the project. The Natural Resource Review Results letter generated from EcoCAT states that consultation is terminated and is valid for two years unless new information becomes available that was not previously considered.

No Action Impact

No impacts to federal-listed species are anticipated under the no action alternative.

3.4 Cultural & Social Resources

3.4.1 Cultural Resources

Existing Condition

USACE coordinated its environmental review of impacts on cultural resources for NEPA with its responsibilities to take into account effects on historic properties as required by Section 106 of the National Historic Preservation Act. USACE determined and documented the area of potential effect (APE) for both direct and indirect effects, as required at 36 C.F.R § 800.4 of the regulations implementing Section 106. The undertaking is in Section 12, Township 35 North, Range 13 East in Cook County, Illinois Figure 3. The APE for the undertaking encompasses the project area, including staging and access routes, and totals approximately 0.5 acres. USACE believes that the APE is sufficient to identify and consider potential effects of the proposed project.

USACE conducted a records search and literature review of the project APE on the Illinois Inventory of Archaeological Sites and the National Register of Historic Places (NRHP). The literature review and records search revealed that there are no previously known archaeological sites or historic properties listed in the NRHP within the project APE. USACE has made a good faith effort to gather information from affected Tribes identified pursuant to 36 C.F.R.§ 800.3(f). On July 12, 2024, USACE notified the Citizen Potawatomi Nation of Oklahoma, the Forest County Potawatomi Community of Wisconsin, the Hannahville Indian Community of Michigan, the Kickapoo Tribe of Oklahoma, the Little Traverse Bay Bands of Odawa Indians of Michigan, the Menominee Indian Tribe of Wisconsin, the Miami Tribe of Oklahoma, and the Prairie Band Potawatomi Nation to assist in identifying properties which may be of religious and cultural significance. The Tribes have not commented on the undertaking to date.

Alternative Impact

USACE made a reasonable and good faith effort to identify historic properties that may be affected by this undertaking. Due to the results of the archival research and previous disturbance in the project footprint, USACE determined there would be no historic properties adversely affected by the proposed undertaking. USACE sent the Illinois State Historic Preservation Office a letter with its determination on January 7, 2025. Coordination in ongoing and USACE anticipates concurrence.

No Action Impact

No impacts to Cultural Resources are anticipated under the no action alternative.

3.4.2 Recreation

Existing Condition

The Village of Flossmoor has a number of recreational opportunities including 9 parks maintained by the Homewood-Flossmoor Park District. Additional nearby recreation opportunities include golf courses, forest preserves, Iron Oaks Environmental Learning Center, Bartel Grassland Land and Water Reserve, and Tinley Creek Model Airplane Flying Field.

Alternative Impact

Since the project area is confined to the roadway and parkway, implementation would have no direct or indirect short-term or long-term impacts to recreation within the project area.

No Action Impact

No impacts to recreation are anticipated under the no action alternative.

3.4.3 Social Setting and Other Social Effects

Existing Condition

The project area is located within the city limits of Flossmoor, Illinois. The U.S. Census Bureau's Quick Facts (U.S. Census Bureau 2024) for Flossmoor, Cook County, and Illinois were reviewed for demographic information presented in Table 6.

Category	Flossmoor	Cook County	Illinois
Total Population	9,252	5,087,072	12,549,689
Under 18 years	22.9%	20.7%	21.6%
Under 5 years	6.5%	5.2%	5.3%
White	29.6%	65.2%	76.0%
Black or African American	63.4%	23.3%	14.6%
American Indian and Alaska	0.0%	0.8%	0.6%
Native			
Asian	1.7%	8.3%	6.3%
Native Hawaiian and Other	0.0%	0.1%	0.1%
Pacific Islander			
Hispanic of Latino	2.3%	27.0%	19.0%
Two or more races	5.0%	2.3%	2.3%
High School Graduate or Higher	98.5%	88.2%	90.1%

Table 6: Vintage Year 2019 U.S. Census Data for Flossmoor, Cook County, Illinois.

Category	Flossmoor	Cook County	Illinois
Bachelor's Degree or Higher	65.3%	41.3%	36.7%
Median Household Income	\$140,703	\$73,304	\$78,433
Below Poverty Level	3.7%	13.7%	11.6%

Alternative Impact

When evaluating potential impacts to economically disadvantaged or other historically vulnerable populations, USACE analyzed whether construction of the recommended plan would have a disproportionate impact to minorities, low-income households, or children (i.e., under the age of 18). To evaluate potential disproportional impacts to minority populations or to low-income households, USACE compared socioeconomic data from Cook County and the State of Illinois to socioeconomic data for the Village of Flossmoor.

Minorities comprise approximately 70.4% of the total population in the Village of Flossmoor. The minority population of the Village of Flossmoor is comparatively greater than that of the rest of Cook County (34.8%) and the State of Illinois (24%). The alternatives are expected to have a beneficial impact on all at risk sectors of the Flossmoor community by reducing the risk of flooding due to installation of the new storm sewer line.

3.7% of households in the Village of Flossmoor are below the poverty line, which is less than the poverty rates in Cook County (13.7%) and the State of Illinois (11.6%). Therefore, implementation is not expected to have a disproportionate adverse impact on low-income populations. Implementation is expected to have an overall beneficial impact on all at risk sectors of the Flossmoor community by reducing flood risk.

Lastly, approximately 22.9% of the total population in the Village of Flossmoor is comprised of children under the age of 18. In comparison, approximately 20.7% of the total population in Cook County and 21.6% of the total population in Illinois is comprised of children under the age of 18. These percentages are within range of each other and do not indicate that there is a significantly higher percentage of children under age 18 within the project area as compared to the County and State. Therefore, implementation would have no disproportionate impact on children. The project is expected to have an overall beneficial impact on all at risk sectors of the Flossmoor community by reducing flood risk.

Implementation either Alternative 1 (recommended plan) or Alternative 2 would have no direct or indirect short-term or long-term adverse impacts to the social setting within the area. Beneficial impacts are expected as implementation of the new storm sewer infrastructure is expected to reduce flood risk in the roadway and in adjacent residential areas.

Potential impacts to other social effects such as security of life, health, and safety were also considered for the impact analysis. A proposed action could have a beneficial or adverse impact depending on if the proposed action 1) reduces/increases/does not change risk of flood, drought, or other disaster affecting the security of life, health, and safety; 2) reduces/increases/does not change the number of disease-carrying insects and related pathological factors; 3) reduces/increases/does not change the concentration and exposure to water and air pollution; and 4) reduces/increases/does not change to providing a year-round consumer choice of food that contributes to the improvement of national nutrition. Implementation would potentially have a beneficial impact to life, health, and safety, by reducing the risk of flooding on roadways and adjacent residential properties.

No Action Impact

The no action alternative could have a long-term adverse impact to the social setting within the project area due to continued flooding and the resulting property damage and safety concerns.

3.5 Hazardous, Toxic, and Radioactive Waste (HTRW)

Existing Condition

A Phase I Hazardous, Toxic, or Radioactive Waste (HTRW) investigation has been conducted for the project area in accordance with American Society for Testing and Materials (ASTM) Practice E 1527-13 and USACE Engineer Regulation 1165-2-132. The investigation relies on site reconnaissance, visual observations, interviews with local officials, and a review of reasonably ascertainable environmental records, including database and Illinois Environmental Protection Agency (IEPA) Bureau of Land database research for regulated facilities, and historical aerial photographs to determine the likelihood that the project area contains a recognized environmental condition (REC), or HTRW. The Phase I Environmental Site Assessment (ESA) was conducted in general accordance with ASTM Standard Practice E-1527-13 and constitutes "all appropriate inquiry into the previous ownership and uses of the property consistent with good commercial or customary practice," as defined at 42 USC §9601(35) (B). No RECs were identified in the Phase I ESA. Soil sampling conducted in the project area suggests that the soils meet the maximum allowable concentration (MAC) for disposal at a clean fill facility. While initial soil screening conducted with a photoionization detector (PID) suggested elevated readings of organic vapors above background levels, more recent subsequent PID screening suggests that levels are below background. Contractor would be responsible for additional screening prior to disposition of soil materials offsite. Excavation restrictions would be placed in the contract to prevent excavation beyond the investigated area.

Alternative Impact

In accordance with ER 1165-2-132, Hazardous Toxic, and Radioactive Waste for USACE Civil Works projects, construction of civil works projects in HTRW contaminated areas would be avoided where practicable. Where HTRW contaminated areas or impacts cannot be avoided, response actions must be acceptable to the USEPA and applicable state regulatory agencies. Excess soil management and/or waste disposal would be conducted in accordance with federal, state, and local laws and regulations. All HTRW response actions, including off-site disposal of materials containing Comprehensive Environmental Response, Compensation, and Liability Act (CERLCA) regulated substances, are 100% non-federal project sponsor expenses.

No Action Impact

No impacts to HTRW contaminated areas are expected under the no action alternative.

3.7 Irreversible and Irretrievable Commitment of Resources

The recommended plan would not entail significant irretrievable or irreversible commitments of resources. Long-term sustainability actions were included for the benefit of environmental resources.

3.8 Short-term Use of Man's Environment and Maintenance of Long-term Productivity

NEPA, Section 102(2)(C)(iv) calls for a discussion of the relationship between local short-term uses of man's environment and maintenance and enhancement of long-term productivity in an environmental document. The short-term use of man's environment would consist of disturbances including construction noise, minor traffic disruptions, and visual impacts.

The negative short-term effects resulting from the recommended plan are of minor concern when compared with the positive long-term benefits that would enhance and maintain long-term productivity. Long-term reduction of flooding would create a less hazardous place for residents and would reduce the risk to motor vehicles, including emergency vehicles, because they would not be as likely to encounter flooded roadways.

Under the no action alternative, no project would be implemented. Therefore, the risk of flooding would not be reduced.

3.9 Probable Adverse Effects Which Cannot be Avoided

There are no probable effects which cannot be avoided from the implementation of proposed action.

3.10 Cumulative Effects

Consideration of cumulative effects requires a broader perspective than examining just the direct and indirect effects of a proposed action. It requires that reasonably foreseeable future impacts be assessed in the context of the past and present effects to important resources. Often it requires consideration of a larger geographic area than just the immediate "project" area. One of the most important aspects of cumulative effects assessment is that it requires consideration of how actions by others (including those actions completely unrelated to the proposed action) have and will affect the same resources. When assessing cumulative effects, the key determinate of importance or significance is whether the incremental effects of the proposed action will alter the sustainability of resources when added to other present and reasonably foreseeable future actions.

Cumulative environmental effects for the proposed infrastructure project were assessed in accordance with guidance provided by the President's Council on Environmental Quality. This guidance provides a means for identifying and evaluating cumulative effects in NEPA analysis.

The overall cumulative impact of the proposed action is considered to be beneficial environmentally, socially, and economically.

The cumulative effects issues and assessment goals are established in this environmental assessment, the spatial and temporal boundaries are determined, and reasonably foreseeable future actions are identified. Cumulative effects are assessed to determine if the sustainability of any of the resources are adversely affected with the goal of determining the incremental impact to key resources that would occur should the proposal be permitted. The spatial boundary for the assessment encompasses the parkland and the associated facilities and

surrounding streets served by the infrastructures to be improved. The temporal boundaries are:

- 1. Past-1835, when settlement and development of the area began.
- 2. Present-2025, when the selection plan was being developed.
- 3. Future-2075, the year used for determining project life end.

Projecting reasonably foreseeable future actions is difficult at best. Clearly, the proposed action is reasonably foreseeable, however, the actions by others that may affect the same resources are not as clear. Projections of those actions must rely on judgment as to what are reasonable based on existing trends and where available, projections from qualified sources. Reasonably foreseeable does not include unfounded or speculative projections. In this case, reasonably foreseeable future actions include:

- 1. Increased growth in water consumption.
- 2. Climate change may increase the number of severe storm events.

Cumulative Effects on geology and soils

The topography and soils of the project area have been affected by filling, excavation, construction, and the burial of infrastructure. The proposed action would not alter soil chemistry.

Cumulative Effects on Water Quality and Aquatic Communities

The proposed action would have no adverse effects on water quality or aquatic communities in the Butterfield Creek.

Cumulative Effect of Terrestrial Resources

Relatively small modifications for the proposed action will have no long-term adverse or cumulative effects to terrestrial resources, plants, or animals.

Cumulative Effects on Air Quality

The proposed action will have no long-term cumulative effect on air quality.

Cumulative Effects on Land Use

The proposed action will have no cumulative effect on land use.

Cumulative Effects on Aesthetic Values

The proposed action will have no cumulative adverse effects on the visual setting of the project area.

Cumulative Effects on Public Facilities

The proposed action will have no cumulative adverse effects on public facilities.

Cumulative Effects on Cultural Resources

The proposed action will have no cumulative adverse effects on cultural resources.

Cumulative Effects Summary

Along with direct and indirect effects, cumulative effects of the proposed project were assessed following the guidance provided by the Presidents' Council on Environmental Quality (Table 7). There have been numerous effects to resources from past and present actions, and reasonably foreseeable future actions can also be expected to produce both beneficial and adverse effects. The effects of the proposed action are relatively minor.

		Proposed Direct Impacts		
Potential Impact Area	Past Actions	Construction	Operation	Cumulative Impact
Geology & Soils	adverse	insignificant effects	no impact	no impact
Hydrology	adverse	no impact	no impact	no impact
Water Quality	major adverse	Insignificant effects	no impact	no impact
Sediment Quality	major adverse	no impact	no impact	no impact
Aquatic Resources	major adverse	no impact	no impact	no impact
Terrestrial Resources	adverse	insignificant effects	no impact	no impact
Air Quality	no impact	insignificant effects	no impact	no impact
Land Use	adverse	no impact	no impact	no impact
Aesthetics	no impact	insignificant effects	no impact	no impact
Cultural Resources	no impact	no impact	no impact	no impact

Table 7: Cumulative Effects Summary

3.11 Summary of Potential Effects

For all alternatives, the potential effects were evaluated, as appropriate. A summary of the potential effects of the recommended plan is presented in Table 8.

 Table 8: Environmental Impact Summary

	Insignificant effects	Insignificant effects as a result of mitigations	Resource unaffected by action
Aesthetics	\boxtimes		
Air quality	\boxtimes		
Aquatic resources/wetlands			\boxtimes
Terrestrial communities	\boxtimes		
Invasive species			\boxtimes
Threatened/Endangered species/critical habitat			

	Insignificant effects	Insignificant effects as a result of mitigations	Resource unaffected by action
Historic properties			\boxtimes
Other cultural resources			\boxtimes
Floodplains			\boxtimes
Hazardous, toxic & radioactive waste			\boxtimes
Hydrology			\boxtimes
Land use			\boxtimes
Navigation			\boxtimes
Noise levels	\boxtimes		
Public infrastructure			\boxtimes
Socioeconomics			\boxtimes
Soils	\boxtimes		
Tribal trust resources			\boxtimes
Water quality			\boxtimes
Climate			\boxtimes

CHAPTER 4 – COORDINATION AND COMPLIANCE

4.1 Regulatory Requirements

The proposed action is in full compliance with appropriate statutes, executive orders and regulations, including but not limited to the National Historic Preservation Act, as amended, Fish and Wildlife Coordination Act, as amended, Endangered Species Act of 1973, as amended, Section 10 of Rivers and Harbors Act of 1899, Clean Air Act, as amended, National Environmental Policy Act of 1969, as amended, EO 11990 (Protection of Wetlands), EO 11988 (Floodplain Management), and the Clean Water Act, as amended.

4.1.1 National Historic Preservation Act

Section 106 of the National Historic Preservation Act (54 U.S.C. § 300101, et seq.) requires federal agencies to consider the effects of proposed federal undertakings on historic properties included on or eligible for the National Register of Historic Places. The implementing regulations for Section 106 (36 C.F.R. § 800) require federal agencies to consult with various parties, including the SHPO and Indian tribes, to identify and evaluate historic properties, and to assess and resolve effects to historic properties. USACE submitted a finding of no Historic Properties Adversely Affected to the Illinois SHPO on January 7, 2025. USACE anticipates SHPO concurrence with this determination. Coordination is ongoing.

Pursuant to regulations for Section 106 (36 CFR § 800) of the NRHP (54 U.S.C. § 300101, et seq.), USACE is making a good faith effort to gather information from affected Tribes. Letters were sent on July 12, 2024 to the following tribal organizations: Citizen Potawatomi of Oklahoma, Forest County Potawatomi Community of Wisconsin, Hannahville Indian Community of Michigan, Kickapoo Tribe of Oklahoma, Little Traverse Bay Bands of Odawa Indians of Michigan, Menominee Indian Tribe of Wisconsin, Miami Tribe of Oklahoma, and the Prairie Band Potawatomi Nation.

4.1.2 Endangered Species Act

Section 7 of the Endangered Species Act requires USACE to ensure its activities are not likely to jeopardize the continued existence of federally listed species or destroy or adversely modify designated critical habit. USACE accessed the USFWS IPaC website on February 6, 2025 to determine whether endangered, threatened, proposed, or candidate species could potentially be present in the action area, and if the action area overlapped with any designated or proposed critical habitat (Project Code 2025-0003975; Appendix B). The results of the IPaC search are shown in Section 3.3.3. USACE used best available information to evaluate whether the species on the IPaC list would be potentially affected by the action. Due to the project occurring in an area where there is no suitable habitat present for the identified species, USACE determined the action would have "no effect" to federally listed species or their critical habitat.

4.1.3 Fish and Wildlife Coordination Act

Because the project will not affect or modify surface waters, including wetlands, consultation under the Fish & Wildlife Coordination Act (FWCA), 16 U.S.C. 661 et seq., is not required.

4.2 Public Review and Agency Coordination

Coordination with federal and state agencies, tribal organizations, and other stakeholders was conducted as set forth in policy. The following describes coordination, including scoping and public and agency review, that has occurred. The NEPA scoping process extended from July 12, 2024 through August 12, 2024. In total, one response was received from agencies and stakeholders. Public and agency review occurred from _____, 2025 through _____, 2025.

____comments were received during this review. All comments from public and agency review received during public review were considered, incorporated into the final EA, as appropriate, and are maintained in Appendix B.

4.2.1 U.S. Fish and Wildlife Service

See Section 4.1.3 above.

4.2.2 Illinois State Historic Preservation Office

See Section 4.1.1 above.

4.2.3 Tribal Coordination

See Section 4.1.1 above.

4.2.4 Illinois Department of Natural Resources

IDNR was consulted and provided a response to USACE's NEPA scoping process via a letter dated August 8, 2024. The letter stated that IDNR does not have any objections to the proposed project.

4.2.5 Illinois Environmental Protection Agency

The Illinois EPA was consulted during the scoping period.

CHAPTER 5 - BIBLIOGRAPHY

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Appendix A: Vehicle and Equipment Usage for Design Alternatives

Appendix B: Coordination