North Chicago Storm Sewer Project

March 19, 2024

Background

Project Information

Project ID:	LPDM-PJ-05-IL-2022-002
Recipient:	Illinois Emergency Management Agency
Subrecipient:	Lake County Stormwater Management Commission (Lake County)
Title:	North Chicago Storm Sewer Project
Address:	Strawberry Condominiums, Shore Crest Estates Pond, US-41, Naval Base Great Lakes, Skokie River Channel, Virginia Drive, Alabama Avenue
Locality:	North Chicago, Lake County, Illinois
GPS:	Western Limit: 42.304952, -87.880071; Northern Limit: 42.308601, -87.872299; Eastern Limit: 42.290143, -87.866721; Southern Limit: 42.289536, -87.868582
PLSS:	S7 T44N R12E

Purpose and Need

The objectives of the Federal Emergency Management Agency (FEMA) Legislative Pre-Disaster Mitigation (LPDM) grant program are to provide technical and financial assistance to states and local governments to assist in the implementation of pre-disaster hazard mitigation measures that are cost effective and designed to reduce injuries, loss of life, and damage and destruction of property, including damage to critical services and facilities resulting from natural disasters.

The purpose of the Proposed Action is to reduce flood hazards in the vicinity of the project area. The Proposed Action would improve stormwater conveyance and increase flood storage capacity at several locations along the Skokie Highway (US-41) south of Buckley Road (IL-137) in North Chicago, Illinois, as shown in Figure 1. Historically, flooding along US-41, at the Strawberry Condominiums, and Navy housing has resulted in impacts on people, property, infrastructure, transportation, and the local economy throughout the area. The project area experienced a large storm event (determined to be approximately a 130-year storm) in July 2017 that produced over 7 inches of precipitation in 12 hours. The storm resulted in widespread flooding throughout the area due to a lack of stormwater conveyance capacity and the presence of undersized storm sewers. Flood waters from this storm covered US-41, causing it to become impassable.

Climate change is increasing the frequency of flooding throughout Illinois; over the last half century, the average annual precipitation in the Midwest has generally increased by 5 to 10 percent. Additionally, rainfall during the four wettest days of the year has increased by about 35 percent, and the amount of water flowing in most streams during the worst flood of the year has increased by more than 20 percent. These patterns are expected to continue to increase over the next century, increasing the risk of future flooding (U.S. Environmental Protection Agency [EPA] 2016). The Proposed Action is needed to reduce the risk of precipitation-induced flooding within and adjacent to the project area.

Alternatives Analysis

The National Environmental Policy Act (NEPA) requires FEMA to evaluate alternatives to the proposed project and describe the environmental impacts of each alternative. NEPA also requires an evaluation of the No Action alternative, which is the future condition without the project. This section describes the No Action alternative, the Proposed Action, and reviews the alternatives that were previously considered but eliminated from further evaluation.

Alternative 1 – No Action

The No Action alternative is included to describe potential future conditions if no action is taken to reduce flood risks. Under the No Action alternative, Lake County Stormwater Management Commission, or Lake County, (Subapplicant) would not have FEMA funds to implement hazard mitigation or flood risk management activities. Under this alternative, no conveyance improvements would be implemented along the Skokie Highway in North Chicago and the Skokie River in the project area would not be widened to increase flood storage capacity. Structures and roadways within and surrounding the project area would remain at risk of inundation and damage. Additionally, flood risk in the project area and vicinity would worsen because of climate change, which is increasing precipitation in the Midwest, as discussed above.

Alternative 2 – Proposed Action

Lake County proposes to implement conveyance improvements at several locations in North Chicago and construct a two-stage channel along the Skokie River to provide increased flood storage capacity. Figure 1 shows the location of these activities. The activities that would occur in each area are described below.

Conveyance Improvements

Conveyance improvements would include the removal and replacement of undersized storm sewers, installation of a new 60-inch relief storm sewer and restrictor plate, removal of existing culverts, installation of a box culvert, and construction of a water quality channel. Each conveyance improvements site would be cleared of trees, vegetation, concrete, and other materials identified for

removal for construction. Minimal tree clearing is expected as most work would occur within the rights-of-way. Soil erosion and sediment control measures would be implemented prior to any land disturbance and in accordance with state and county requirements. Specifically, construction of the Proposed Action would comply with the General National Pollution Discharge Elimination System Permit for Stormwater Discharges from Construction Site Activities (Permit No. ILR10) or General Construction Permit, which is required for construction disturbance of one or more acres. In accordance with the General Construction Permit, Lake County would develop a stormwater pollution prevention plan (SWPPP) for the Proposed Action, which would require implementation of measures to reduce pollutants in stormwater discharges erosion and sedimentation from construction activities. Example control measures include minimizing areas of exposed soil, retaining natural buffers around waters, and installing erosion controls.

Excavated materials would be hauled off site to a designated disposal location. Equipment would be staged in parking lots near the project area, such as the Strawberry Condominium or Jazzy Motors parking lots. Staging would impact up to approximately 1 acre. Upon completion of construction, disturbed areas would be covered with topsoil, graded, and seeded with turf grass. Temporary stabilized entrances, and staging areas would be cleared and restored to their pre-construction condition.

Lake County would coordinate with the necessary public and private utilities, including ComEd, Union Pacific Railroad, and East Skokie Drainage District (ESDD) for the relocation of utility equipment and would also coordinate with the Illinois Department of Transportation (IDOT) to secure the necessary easements for the US-41 roadway improvements.

Work at each conveyance site is discussed in more detail below.

Strawberry Condominium Improvements

Proposed improvements include the removal and replacement of the existing outlet control structure at the northeastern end of Shore Crest Estates Pond (latitude and longitude: 42.304895, -87.879794) and the replacement of approximately 490 feet of existing 18- to 24-inch storm sewer with a 36- to 42-inch storm sewer. These improvements would occur at the Strawberry Condominium residential property (3334 Berwyn Avenue, North Chicago) and the Krugel Cobbles Inc. industrial property (3337 Berwyn Ave, Lake Bluff). The total area of disturbance for stormwater improvements at this location would be approximately 0.22 acres, with a maximum disturbance depth of 10 feet.

Shorecrest Estates Pond / Bittersweet Avenue Improvements

Proposed improvements include the removal and replacement of the existing outlet control structure at the southern outlet of the Shore Crest Estates Pond (latitude and longitude: 42.303559, -87.879979) and the removal and replacement of approximately 1,200 feet of the existing 36-inch storm sewer with a 60-inch storm sewer. The majority of the new storm sewer would be installed in the right-of-way of Bittersweet Avenue and would end just west of US-41. These improvements would

occur at the Shorecrest Pond property (12716 W Bittersweet Avenue, North Chicago) the Mulch Center (12660 Bittersweet Avenue, Lake Bluff). The total area of disturbance at this location would be approximately 0.6 acres with a maximum disturbance depth of 10 feet.

US-41 and Naval Base Great Lakes Improvements

Proposed improvements include the construction of 48-inch and 60-inch relief storm sewers that would run from just west of US-41 to a drainage swale at the outfall to the Skokie River. These improvements would occur on five properties, including two Jazzy Motors properties (30347 N Skokie Highway, North Chicago and 30375 N Skokie Highway, North Chicago), a Union Pacific Railroad Property (30565 N Skokie Highway, North Chicago), ComEd property (30245 N Skokie Highway, Lake Bluff), and within the public right-of-way at Bittersweet Avenue and US-41.

Due to limited pipe cover under US-41 and constraints with existing utilities, a twin 48-inch storm sewer would be installed in the upstream portion of the improvements area, from just west of US-41 to east of Union Pacific Railroad. A total of four junction chambers would be required to accommodate the twin 48-inch storm sewer. The twin 48-inch storm sewer would transition to a 60-inch relief sewer, which would run approximately 300 feet southeast through ComEd right-of-way before turning east along the right-of-way under Erie Court. The storm sewer would run through the middle of ComEd right-of-way to reduce impacts to Navy security fencing and adhere to ComEd offset requirements from their existing transmission towers. An approximately 94-foot section of sewer along Erie Court would be converted to a 48-inch by 76-inch elliptical pipe on the Navy property to avoid impacts to critical fiber optic lines in this location. At the junction of Vermont Avenue and Vermont Court, the storm sewer would turn southeast, where it would flow through a restrictor plate and then a 5-foot-wide drainage swale at the Skokie River. The total length of the 60-inch storm sewer would be approximately 1,000 feet.

The total area of disturbance at this location would be approximately 0.6 acres with a maximum disturbance depth of approximately 15 feet. There would be no ground disturbance at the second Jazzy Motors property or the Union Pacific Railroad property as the pipe would be jacked underneath the properties.

Virginia Drive at Naval Base Great Lakes Improvements

Proposed improvements include the removal of approximately 200 feet of a triple 7-foot by 4-foot elliptical corrugated metal pipe and the restoration of this area as natural open channel. This work would be within the Skokie River channel in the ESDD boundary area at the Naval Base Great Lakes (NBGL), west of the intersection of Great Lakes Drive and Virginia Drive and east of Superior Street. Construction work within the Skokie channel would be conducted during dry conditions, as discussed in more detail in the Two-Stage Channel improvements section below. The total area of disturbance would be approximately 3,200 square feet (0.07 acre) and the maximum width, length, and depth of disturbance would be 80 feet, 40 feet, and 10 feet, respectively.

Alabama Avenue at Naval Base Great Lakes Improvements

Proposed improvements include the removal of approximately 38 feet of a 12-foot by 7-foot elliptical corrugated metal pipe and the construction of approximately 38 feet of a 12-foot by 7-foot box culvert. This work would be within the Skokie River channel in the ESDD boundary area at NBGL, at Alabama Avenue. Construction work within the Skokie channel would be conducted during dry conditions, as discussed in more detail in the Two-Stage Channel improvements section below. The total area of disturbance would be approximately 1,200 square feet (0.03 acre) and the maximum width, length, and depth of disturbance would be 30 feet, 40 feet, and 10 feet, respectively.

Skokie River Two-Stage Channel

The existing Skokie River within the project area would be widened into a two-stage channel to increase flood storage capacity. The channel improvements would begin at Skokie River at Buckley Road and extend south approximately 3,860 feet to the railroad. The improvements would occur within the ESDD easement at NBGL and span 50 feet on either side of the channel. An additional temporary construction easement would span 20 feet on either side of the ESDD easement. The maximum depth of ground disturbance would be approximately 6 feet.

Excavation and grading would be required to widen the Skokie River to incorporate floodplain benches above the bottom of the channel. The bottom of the channel would be approximately 6 feet wide, followed by channel slopes, a flat floodplain "bench," and proposed finished slopes. The channel slopes would have a ratio of 2 horizontal units to 1 vertical unit. The floodplain bench would be approximately 3 feet wide on either side of the channel. The proposed finished slopes would have a ratio of 3 to 4 horizontal units to 1 vertical unit. The two-stage typical channel design is shown in Figure 2.

A limited Phase II Environment Site Assessment was conducted in October 2023 to evaluate subsurface soil conditions along the two-stage channel project area for the presence of constituents of concern, including volatile and semi-volatile organic compounds, polychlorinated biphenyls, pesticides, metals, perfluorooctanesulfonic acid (PFOS), and perfluorooctanoic acid (PFOA) (A3E Consultants 2023). A total of 43 soil borings were conducted at 10 feet below ground surface within the two-stage channel area. Analytical results identified the presence of heavy metals, including barium, manganese, selenium, and arsenic at concentrations that exceed their respective soil remediation objectives at multiple soil boring locations; additionally, PFOS and PFOA were detected in soil samples at concentrations exceeding their laboratory method detection limit at multiple soil boring locations. The boundaries of the soil contamination have been defined and will be mitigated during construction. During construction, soils at these locations would be tested, excavated in their entirety, and properly disposed of at a licensed waste facility for handling such material.

Channel widening would not occur within Land Use Controls (LUC) 13/Site 2 and 12/Site 3 and Site 24, as shown on Figures 3 and 4. Site 24 was formerly used as a waste disposal site and it is currently enrolled in the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA),

also known as Superfund. A Phase 2 Site Investigation is planned for the site in 2024. LUC 13/Site 2 and 12/Site 3 were formerly landfills; currently LUCs are implemented on these sites and annual long-term groundwater monitoring is being conducted. Because of monitoring requirements and established LUCs, these sites are excluded from the project area.

Construction equipment would be staged in parking lots near the project area, such as parking lots for the Naval Base Great Lakes. As mentioned above, Lake County would follow all requirements from the General Construction Permit, including development of a SWPPP and implementation of sedimentation and pollution control measures. Construction work within the Skokie channel would be conducted during dry conditions. Prior to construction, water in the channel would be dewatered; diverted using channels, cofferdams, or pumps; or temporarily stopped to create dry conditions. Per the SWPPP, erosion and sedimentation control barriers and containment systems would be implemented to capture sediment and pollutants before water is discharged back into the stream. The dewatering or diversion system would be monitored to ensure it working properly and in accordance with the SWPPP.

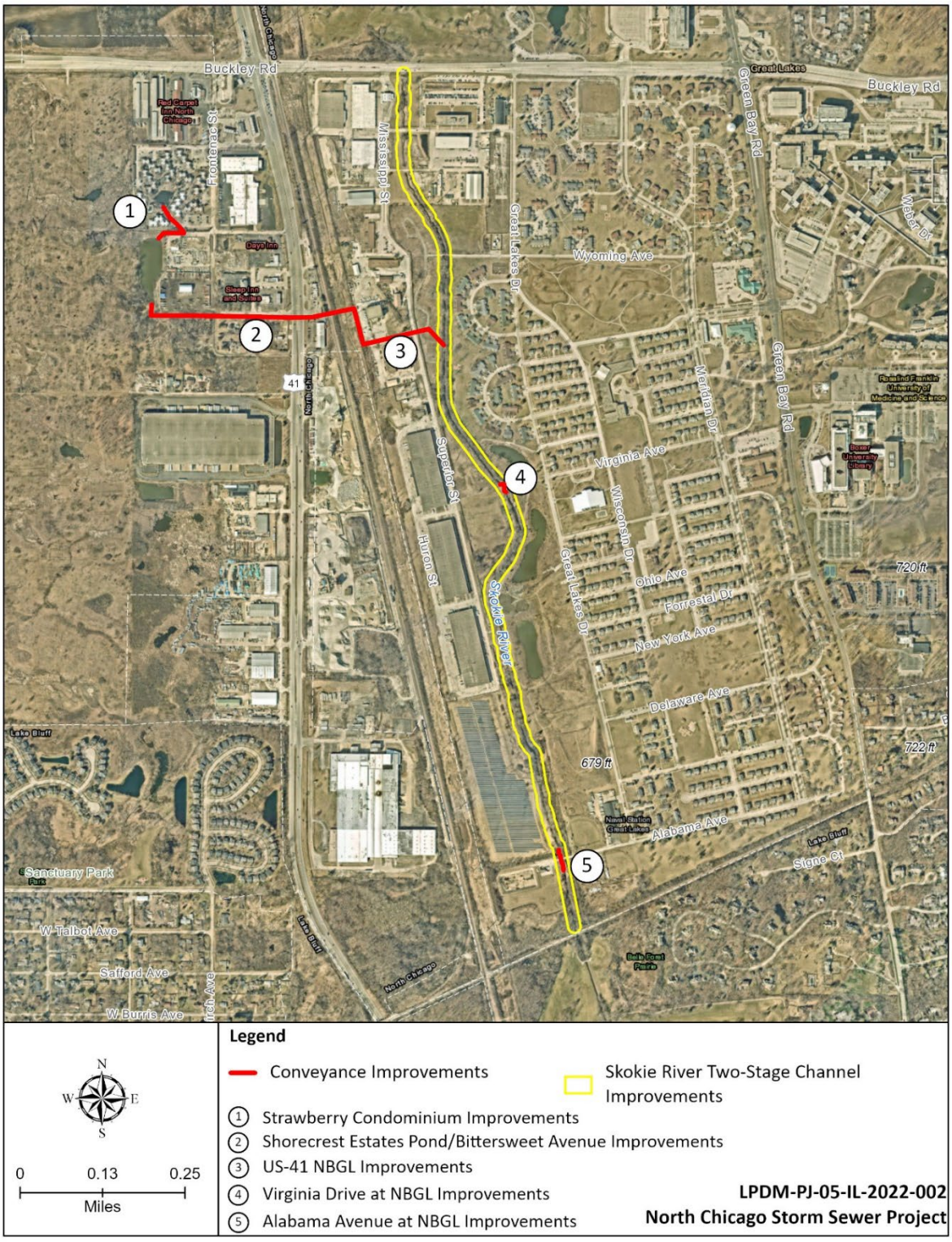
All vegetation within the 100-foot-wide corridor along the Skokie River would be removed for construction. Existing vegetation in the area generally includes willow (Salix alba), cottonwood (*Populus deltoides*), sycamore (*Platanus occidentalis*), box elder (*Acer negundo*), sedge (*Cyperaceae*), bulrush (*Scirpus spp*), cattail (*Typha latifolia*), phragmites (*Phragmites australis*), and buckthorn (*Rhamnus cathartica L*). There are few large trees in the project area. Immediately upon completion of grading, ditch slopes would be stabilized through the installation of permanent erosion control blanket protection. As soon as feasible, a wetland seed mix would be applied to the floodplain bench immediately adjacent to the channel and an upland seed mix to the proposed finished slopes. The wetland seed mix would include cover crop, grass, sedge, and rush species, such as annual rye (*Lolium multiflorum*), river bulrush (*Bolboschoenus fluviatilis*), and prairie cord grass (*Spartina pectinata*). The upland mix would include grass species such as little bluestem (*Schizachyrium scoparium*) and rye. The four inches at the surface of the proposed finished slopes would consist of high-quality topsoil, either from the topsoil stripped and temporarily stockpiled onsite during construction or imported to the project area. The top of the banks would be seeded with a flatland seed mix and protected where disturbed.

Construction Duration and Maintenance

Construction of the Proposed Action would occur over approximately 16 months. Construction activities, including vegetation removal, and restoration activities would occur in the spring, summer, and fall. Work would not occur in the winter (between December and February).

The City of North Chicago would be responsible for the long-term maintenance of improvements made to the city storm sewer system. IDOT would be responsible for the long-term maintenance of the improvements made to their stormwater infrastructure. ESDD would be responsible for the improvements made to their drainage system which includes the two-stage channel, and conveyance

improvements at the Virginia Drive and Alabama Avenue sites. Finally, Lake County would ensure the long-term maintenance of the 60-inch storm sewer constructed at the NBGL. The long-term maintenance may be provided by one or a combination of the following entities: IDOT, ESDD, Lake County, or another agency.



Note: The project area figure will be revised in the Draft EA to reflect the correct disturbance area

Figure 1: Project Location

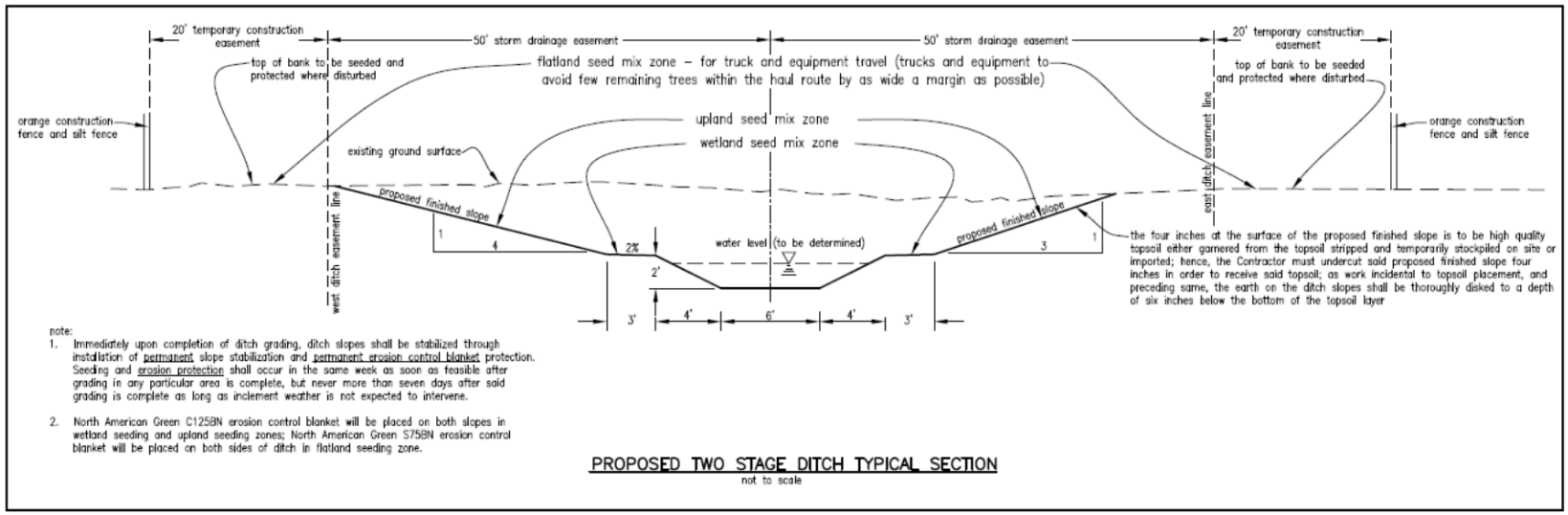


Figure 2: Two Stage Channel Typical Design

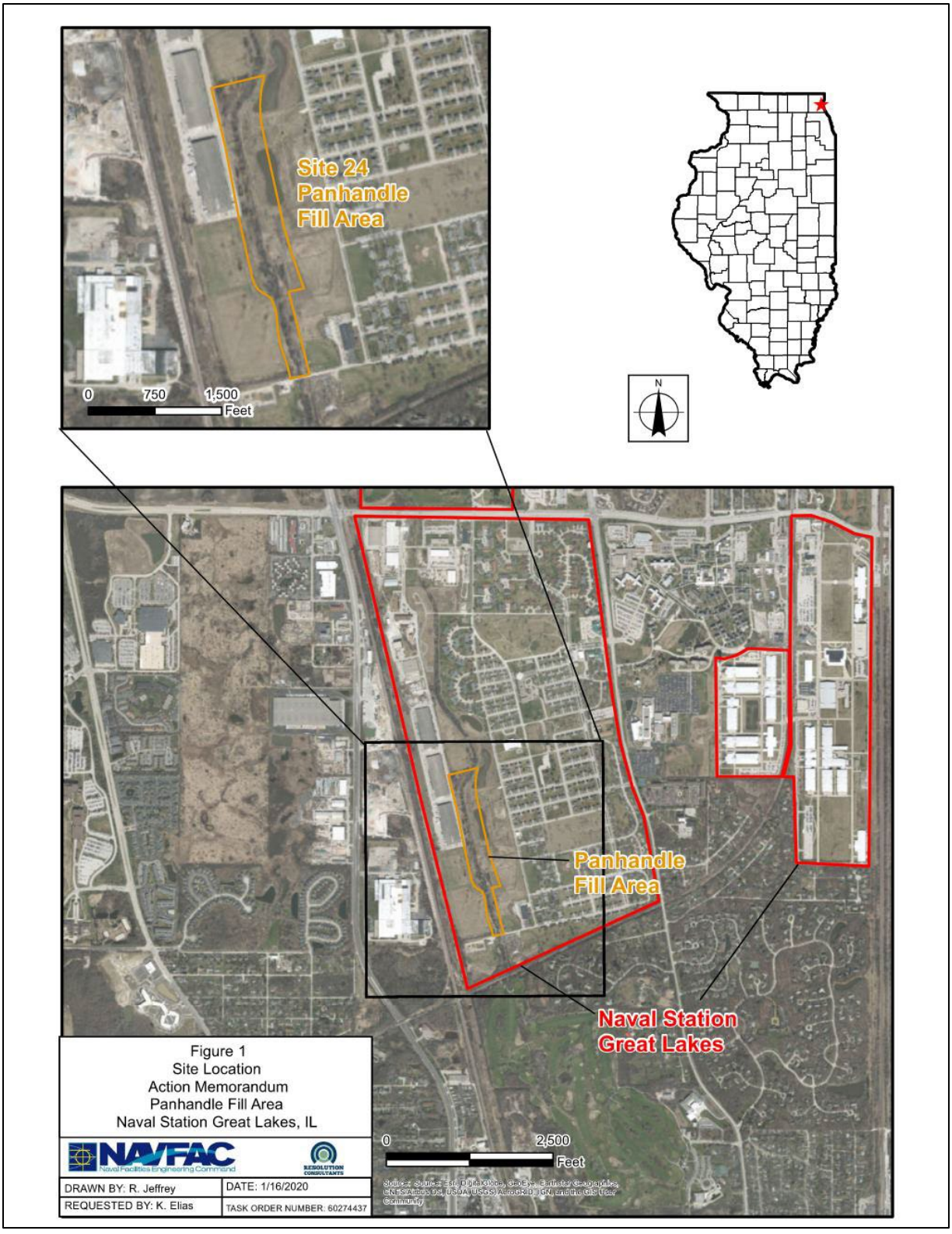


Figure 3: Site 24 (Excluded From Project Area)

Figure 4: Land Use Controls Sites (Excluded From Project Area)

Alternatives Considered and Eliminated from Further Analysis

Separate Storm Sewer Improvement Projects

Initially, improvements to increase storm sewer capacity at each location listed in Section 2.2 were considered as standalone projects; however, each project, if implemented alone, would either not significantly reduce localized flooding or would increase flood elevations in downstream areas. Thus, the series of stormwater conveyance improvements need to be combined to maximize potential benefits to the project area.

Construction of a Compensatory Floodwater Storage Reservoir

In addition to the storm sewer capacity and conveyance improvements described in Section 2.2, a flood storage reservoir, or a combination of reservoirs, was assessed. The reservoir would be on Lake Bluff Golf Course property and would be designed to hold up to 8 acre-feet of stormwater volume. However, constructing this reservoir within the Lake Bluff Golf Course property would have complications related to ownership, project timing, and public opinion. Additionally, this alternative would have fewer environmental benefits than the Proposed Action as it would not restore the Skokie channel. Therefore, this alternative was eliminated from consideration.

Affected Environment

The Proposed Action would occur along over 3,400 feet of existing storm sewer systems in urbanized areas and along approximately 3,860 feet of the Skokie River Channel within the City of North Chicago in Lake County, Illinois. Up to 14 acres would be disturbed from the Proposed Action. The area where the proposed activities would occur is composed of both industrial/urbanized areas and natural areas.

Preliminary Screening of Assessment Categories

- Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA)
- Clean Water Act (CWA)
- Clean Air Act (CAA)
- Coastal Barrier Resources Act (CBRA)
- Coastal Zone Management Act (CZMA)
- Endangered Species Act (ESA)
- Farmland Protection Policy Act (FPPA)
- Migratory Bird Treaty Act (MBTA)
- National Historic Preservation Act (NHPA)
- Wild and Scenic Rivers Act (WSR)
- Resource Conservation and Recovery Act (RCRA)
- Executive Order 11988 – Floodplains
- Executive Order 11990 – Wetlands

- Executive Order 12898 – Environmental Justice for Low Income & Minority Populations
- Executive Order 13112 – Invasive Species
- Executive Order 13175 – Consultation and Coordination with Indian Tribal Governments

Resources Not Present

Based on a preliminary screening of resources and the project's geographic location, resources governed by the following federal laws and executive orders are not present in the project area and therefore do not require assessment.

- Coastal Barrier Resources Act (CBRA)
- Coastal Zone Management Act (CZMA)
- Farmland Protection Policy Act (FPPA)
- Wild and Scenic Rivers Act (WSR)

No or Negligible Impacts to Minor/Moderate Impacts

The alternatives listed above are likely to result in no impacts or minor/moderate impacts to resources governed by the following federal laws and executive orders. Little to no coordination will be required for these impacts.

- Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA)
- Clean Water Act (CWA)
- Clean Air Act (CAA)
- Endangered Species Act (ESA)
- Migratory Bird Treaty Act (MBTA)
- National Historic Preservation Act (NHPA)
- Resource Conservation and Recovery Act (RCRA)
- Executive Order 11988 – Floodplains
- Executive Order 11990 – Wetlands
- Executive Order 12898 – Environmental Justice for Low Income & Minority Populations
- Executive Order 13112 – Invasive Species
- Executive Order 13175 – Consultation and Coordination with Indian Tribal Governments

Major Impacts

The alternatives listed above are not likely to result in major impacts. Thus, close coordination with agencies to identify and mitigate potentially significant impacts governed would not be required.

Reasonably Foreseeable Future Actions

In addition to the Proposed Action, a number of other flood risk reduction projects have been recently constructed or are currently being constructed/proposed in Lake County. These reasonably foreseeable future actions are summarized below.

Lake County has designed a flood control berm along the west side of the Strawberry Condominium property to prevent overflow from the wetland mitigation area into the Condominium property. The has not been constructed yet, however, storm sewer improvements on the west side of the Strawberry Condominiums have been recently constructed.

In May 2022, federal and state funding for 14 flood control projects in Lake County was announced (Patabook News 2022). The 14 projects include engineering, design, and construction of storm sewers, drainage improvements, culverts, stream stabilization, and stormwater basins throughout Lake County. These 14 projects are expected to benefit more than 2,300 properties and 25 roadways in Lake County (Patabook News 2022).

Two of these projects would be implemented approximately 3 miles north of the Proposed Action. One of these projects would mitigate riverine flooding of residential and commercial structures and roadways upstream of Dady Slough by creating an additional 60 acre-feet of flood storage in the wetland system and restoring approximately 28 acres of wetlands. Another flood risk reduction project would be implemented immediately south of the Dady Slough project area and would include the installation of a 6-inch by 4-inch box culvert extending from Belvidere Road/Route 120 to the northern edge of the Greenbelt Forest Preserve. This project is currently under construction and is expected to be substantially completed by September 2023 and finalized by December 2023.

Other construction projects, including road improvement projects, were assessed in the project area. According to the Lake County Department of Transportation, there are no other current or upcoming road projects near the Proposed Action (Lake County Department of Transportation n.d.).

Public Engagement

The Proposed Action has been discussed at several public meetings as well as with a range of staff, government agencies, and other stakeholders. A monthly coordination meeting for all project stakeholders has been ongoing for several years. Development of the Proposed Action involved many project partners and stakeholders, including the City of North Chicago, NBGL, IDOT, Union Pacific Railroad, Lake Bluff Park District, ESDD, Strawberry Condominium Association residence, and local businesses to obtain experience, expertise, values, and perspectives.

References

A3E Consultants. 2023. Limited Phase II Environmental Site Assessment. Skokie Drainage Due Diligence Great Lakes Naval Station. Prepared for Rubino Engineering.

Lake County Department of Transportation. n.d. "Current and Upcoming Projects." Accessed October 17, 2023. https://www.lakecountyil.gov/3379/Current-and-Upcoming-Projects.

Patabook News. 2022. "Lake County Gets Millions for Flood Control Projects." Accessed October 17, 2023. https://patabook.com/news/2022/05/09/lake-county-gets-millions-for-flood-control-projects/.

United States Environmental Protection Agency (EPA). 2016. What Climate Change Means for Illinois. Accessed on November 10, 2022. Available at: https://climatechange.chicago.gov/sites/production/files/2016-09/documents/climate-change-il.pdf.

Distribution List

The Tribal Nations and agencies listed below have been provided a copy of this document or will be notified of this project through FEMA Region 5 standard consultation procedures as directed under individual environmental laws and Executive Orders. Other state and local agencies and interested parties including local officials and organizations not listed below will also be provided with this scoping document.

- Local, county, state agencies/entities:
  - Union Pacific Railroad
  - City of North Chicago
  - ComEd
  - East Skokie Drainage District
  - Lake County Division of Transportation
  - Lake County Emergency Management Agency
  - Lake County Stormwater Management Commission
  - Illinois Commerce Commission
  - Illinois Department of Natural Resources
  - Illinois Department of Transportation
  - Illinois Emergency Management Agency
  - Illinois Environmental Protection Agency
  - Illinois Historic Preservation Office
- Federal agencies:
  - US Army Corps of Engineers, Chicago District
  - US Environmental Protection Agency, Region 5
  - US Fish and Wildlife Service, Illinois-Iowa Field Office

    - US Department of Defense (Naval Base Great Lakes)
- Tribal nations:
    - Citizen Potawatomi Nation
    - Forest County Potawatomi Community of Wisconsin
    - Hannahville Indian Community
    - Ho–Chunk Nation
    - Miami Tribe of Oklahoma
    - Pokagon Band of Potawatomi Indians
    - Prairie Band Potawatomi Nation
    - Shawnee Tribe

Provide Comments

Anyone interested in providing comment on this document may respond as noted below within 30 days of the publication of this document at https://www.fema.gov/emergency-managers/practitioners/environmental-historic/nepa-repository. Be sure to include your name and contact information along with your comments.

Respond by Mail

Federal Emergency Management Agency, Region 5
c/o Duane Castaldi, Regional Environmental Officer
536 South Clark Street, 6th Floor
Chicago, IL 60605-1521

Respond by Email

Send comments to fema-r5-environmental@fema.dhs.gov.