



**US Army Corps
of Engineers**®
Chicago District

**BUBBLY CREEK, SOUTH BRANCH OF THE
CHICAGO RIVER, ILLINOIS INTEGRATED
ECOSYSTEM RESTORATION FEASIBILITY
REPORT & ENVIRONMENTAL ASSESSMENT**

**APPENDIX B
COMPLIANCE, COORDINATION
& INFORMATION**



March 2020

Bubbly Creek, South Branch of the Chicago River, Illinois Ecosystem Restoration Feasibility Study

Appendix B – Compliance, Coordination and Information

March 2020

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Figure 2 – Bubbly Creek

b. General Description

The Preferred Plan, the National Ecosystem Restoration (NER) Plan, includes the following proposed measures:

- Substrate restoration consisting of placing sand and an armor layer composed of rounded river rock or quarried stone over 30.7 acres within the Bubbly Creek channel and turning basin.
- Riparian plant restoration consisting of invasive species removal, soil amendments and native riparian plantings over 9.3 acres within the channel corridor.
- Emergent plant restoration consisting of substrate amendments and native emergent plantings over 1.0 acre within the channel.
- Submergent plant restoration consisting of substrate amendments and native submergent plantings over 3.3 acres within the channel and turning basin.
- Woody debris restoration consisting of anchoring trees, rootwads, trunks and large branches in areas that experience high velocities in approximately 10 locations within the channel.

The construction is estimated to last one construction season. During this time, access to Bubbly Creek would be restricted. A staging area would be created adjacent to the waterway for storage of materials and easy transfer of those materials to and from barges. If the staging area is not within Bubbly Creek, increased navigation traffic between the staging area and Bubbly Creek during construction is anticipated.

Implementation of the Preferred Plan, would greatly improve the ecosystem conditions of Bubbly Creek. The addition of several native habitat types and close to 50⁺ native plant species would increase species richness and abundance of the surrounding environment. The Preferred Plan is the most environmentally and economically justifiable that would address the degraded ecosystem found in Bubbly Creek.

c. Authority and Purpose

This study is being conducted in accordance with the study resolution adopted by the Committee on Environment and Public Works, United States Senate, July 20, 2005. The purpose of the study is to assist in habitat restoration of Bubbly Creek through substrate restoration. The study resolution authority reads as follows:

“Resolved by the Committee on Environment and Public Works of the United States Senate, that, the Secretary of the Army, is requested to review the report of the Chief of Engineers on the Illinois River, Illinois submitted in Senate Document Numbered 126, Seventy-first Congress, second session, and other pertinent reports, to determine whether any modification to the South Fork of the South Branch of the Chicago River (commonly known as Bubbly Creek) for ecosystem restoration is advisable at this time.”

Before the 1830s, Bubbly Creek was a prairie slough that drained five square miles of a pristine aquatic and terrestrial habitat mosaic. Over a period of several decades, this ecosystem was severely altered by human activities. Currently, Bubbly Creek no longer provides a diversity of habitats, nor has the existing habitat quality structure sufficient to maintain and support healthy plant and animal communities. To date, there have been numerous studies and assessments describing and characterizing the Bubbly Creek study area. Based on these and additional information and modeling produced by the USACE, a set of [Problems](#) and [Opportunities](#) were developed by the study team, non-federal sponsors and supporting stakeholders. These drive the need for action, which is summarized as the historic loss of significant migratory bird,

fish and wildlife aquatic habitat. The purpose of this study and environmental assessment is to identify the most environmentally beneficial, cost effective and publicly supported habitat restoration project to restore resources impacted in Bubbly Creek.

d. General Description of Proposed Fill Material

1) General Characteristics of Material

Substrate Placement – Channel and turning basin substrates would be placed as soon as site preparation is completed. First, a survey and subsequent removal of any large pieces of foreign debris would be removed if it is determined they would impede substrate layer placement. A small barge(s) would be used to place substrate. Sand would be placed in a 6 inch thick layer within the channel and turning basin. This would then be followed by the placement of a 6 inch thick layer of rounded fluvial or glacially derived gravels in shallow sections of the channel and a 6 inch thick layer of quarried rock in deep sections of the channel. Cobbles and boulders would then be placed around any structures or non-conformities (e.g. bridge abutments, outfalls, protruding revetments, etc.) to provide additional protection against high flow velocities in and around these structures. Additionally, rounded fluvial or glacially derived pebbles and cobbles would be added to wood cribs within the channel to create additional spawning habitat for fishes and provide shelter for aquatic macroinvertebrates. All visible stone (placed in the shallower sections of the project) would be of glacial or fluvial material since quarried, angular riprap is not indicative and detrimental to natural stream and aquatic habitats. Fill materials used for the substrate would be free from the presence of environmental contaminants and would be washed.

Large Woody Debris – Various types of large woody debris or snag habitats would be placed within the Bubbly Creek channel. Trees would be primarily derived from invasive tree species removal; Siberian elm, box elder, and potentially a few cotton woods would be used. Parts utilized would be the rootwad, trunk, and limbs over 6-inches in diameter. All small branches and leaves would be chipped and used in the soil amendment. Fish and turtle snags would consist of trunks and large limbs to be placed in 5 to 2 feet of water, where about $\frac{3}{4}$ of the snag would be submerged (below the water surface) and $\frac{1}{4}$ of the snag would be emergent (above the water surface). Heron snags would consist of the trunk and limbs vertically placed into the channel so as to mimic a downed standing tree. These would be placed in more secluded and near-bank areas. Rootwads would be used to provide both submerged habitat and stability to establishing aquatic beds and emergent zones. Rootwads could be lined up and wedged together to form a protective barrier for these planting zones. Certain plant species would grow on top of the root wads as well. Finally, certain trees would be selected to be girdled (terminated) in place and would not be removed. Tree girdling provides heron and woodpecker habitat by mimicking a downed tree.

2) Quantity of Material

The amount of material for substrate restoration is approximately 30,980 cubic yards of clean sand, approximately 22,280 tons of round river rock, approximately 10,250 tons of quarried stone, and approximately 795 tons of pebble/cobble mixture.

The amount of material needed for the woody debris placement would vary depending on what is available on site. However, approximately 10 woody debris piles of various type and size would be placed within the Bubbly Creek channel.

3) Source of Material

Materials for substrate restoration would be clean, inert materials free of fines, weed seeds and foreign debris obtained from a commercial supplier.

Materials for the placement of woody debris would be invasive species removed from the riparian zone of the site, as part of the Preferred Plan.

e. Description of Proposed Discharge Site

1) Location

The proposed substrate restoration area would include the 1.25 mile long channel of Bubbly Creek, located entirely within the City of Chicago, Cook County, Illinois, in the Englewood quadrangle, township 30, region 14 and section 32 (*Figure 1*). There would be no discharge of aqueous materials.

2) Size,

The proposed substrate restoration area would cover the entire 1.25 mile long channel of Bubbly Creek, or approximately 30.7 acres.

The proposed placement of woody debris would cover approximately 1.0 acre of the Bubbly Creek channel.

3) Type of Site

The proposed substrate restoration and placement of woody debris piles require fill in open water.

4) Type of Habitat

Both the proposed substrate restoration and placement of woody debris would fill in stream habitat within Bubbly Creek. This waterbody is classified for secondary use by the Illinois Pollution Control Board, which indicated the water is only suitable for limited contact activities such as boating and fishing (Section 35 Illinois Administrative Code Section 303.441). Bubbly Creek is also listed as an impaired stream by IEPA according to Section 303(d) of the Clean Water Act. The listed causes of impairment include high pH, low dissolved oxygen, and high total phosphorous with combined sewer overflows (CSOs) as the primary source of impairment.

5) Timing and Duration of Discharge

The placement of the sand and gravel substrate is expected to take up to 18 months. Placement of materials in the channel is the first element of construction.

The placement of the woody debris is expected to take up to 3 months, and would occur once placement of the sand and gravel substrate is complete.

f. Description of Placement Method

Sand and gravel materials would be transported by barge and broadcast spread from the barge utilizing specialized machinery.

Woody debris would be placed from the barge using specialized machinery or from land using light weight machinery

II. Factual Determinations

a. Physical Substrate Determinations

1) Substrate Elevation and Slope

Invert elevations in Bubbly Creek channel range from a high of 572 ft to a low of 548 ft at the outfall of the RAPS pumping station. The normal water level is approximately 577.1 feet at RAPS.

2) Sediment Type

The sediment within Bubbly Creek reflects the history of the area. Originally containing a mixture of fine grained materials placed by a combination of glacial, lacustrine, fluvial and Aeolian processes, the sediment bed has been highly impacted by past industrial and other urban activities within the drainage area. Discharges of animal waste from the former stockyard industry and urban waters, including CSOs, have resulted in a fine-grained, highly organic, anaerobic material which is known for gas production.

Geotechnical subsurface exploration and investigation were conducted in September 2008 by USACE. The range of sediment depth (i.e., depth of the non-native material above the natural glacial till layer) is approximately 8 to 18 feet with the average sediment depth being approximately 13 feet. The sediment is generally thickest upstream of the 35th Street Bridge and is thinner where the channel constricts at West 34th Street. The thickness of the sediment increases at Canal Origins Park, just south of the turning basin. Generally, the subaqueous material can be divided into a top layer characterized by somewhat coarser materials, and the bottom layer is characterized as layers of very soft silty sand, silt, and clay. Beneath the organic materials is native hardpan, which is significantly denser and stiffer in comparison with the overlying materials and ranges from a silt and sand mixture to a silt and clay mixture.

3) Fill Material Movement

Hydraulic and geotechnical analyses have been completed to ensure that the size and type of substrates placed for habitat restoration would be stable. After Racine Avenue Pumping Station (RAPS) events, monitoring would be conducted for five years after construction completion to identify whether the substrate has scoured in areas of anticipated elevated velocity. If scour is identified, the adaptive management calls for placing larger sized armor stone in the scoured areas. See **Appendices A and D**.

Woody debris placed within the channel would be anchored into the substrate or into the streambank and is not expected to move with the anticipated elevated velocity within the channel.

4) Physical Effects on Benthos

Currently, the benthic macroinvertebrate species richness and abundance is very low and only tolerant species are found within the project area. There is currently no physical habitat for a diverse assemblage of benthic macroinvertebrates to colonize and temporal water quality issues exacerbate the issue. The Preferred Plan recommends providing a substrate layer composed of sand, and an armor layer of rounded river rock and quarried stone, large woody debris, submergent plantings and buffering tree, shrubs and herbaceous plants. Existing benthic macroinvertebrates within the channel are expected to be covered by the addition of the 12 inches of substrate. However, since the current benthic macroinvertebrate community has low abundance and is primarily comprised of tolerant species, the proposed fill is expected to have an insignificant effect on the benthic macroinvertebrate population. It is expected that after placement of the 12 inches of substrate, the benthic macroinvertebrate population would repopulate from the nearby South Branch of the Chicago River and the Chicago Sanitary and Ship Canal. Additionally, the placement of substrate, the placement of woody debris, and planting of submergent and emergent aquatic vegetation is expected to provide high quality habitat for benthic macroinvertebrates resulting in a long-term beneficial impact on the benthic macroinvertebrate community.

5) Other Effects

The past has brought much alteration to the physical resources of the Bubbly Creek watershed. Geology, soils, topography, hydrology, and fluvial geomorphology have all been modified and the surrounding landscape was modified from its natural form as a prairie slough. Prior to modern day waste management practices, sanitary sewage, industrial waste, and animal waste from the adjacent Union Stockyards were disposed of in the channel for conveyance downstream. As a result, water and sediment quality have been impacted due to historic uses, as well as daily activities such as road salting, and CSOs. It is reasonably foreseeable that other small projects within the Chicago River system for ecological restoration purposes would occur. There are no irrecoverable losses of resources identified in terms of geology, soils, substrates, topography, hydrology, water quality and fluvial geomorphology due to implementation of the Preferred Plan. Cumulative beneficial effects to the Chicago River system are anticipated in terms of soils, substrates, hydrology, hydraulics, and water quality.

6) Actions Taken to Minimize Impacts

The new substrates would be broadcast spread to minimize disturbance and suspension of existing sediments. No additional special measures would be taken to minimize the temporary or long-term impacts on physical substrates associated with the proposed activity since this project is both beneficial to ecology and water quality.

b. Water Circulation, Fluctuation, and Salinity Determinations

1) Water

Salinity – No change expected.

Water Chemistry – There may be a short-term increase in turbidity in the channel due to resuspension of the current channel sediments during substrate placement. Resuspension effects can be minimized by broadcasting the substrate material and the use of Best Management Practices (BMPs) to minimize distribution of suspended sediments through the project area. The Preferred Plan would not adversely

affect water quality in the long-term. Instead it is expected that the Preferred Plan would greatly improve water quality and water resources within the area by significantly reducing SOD, reducing contaminant and particle movement from the sediment, providing a physical barrier between the highly organic sediment and aquatic plants and animals, as well as providing habitat for aquatic plants and animals. No long-term adverse effects are expected.

Clarity – Turbidity in the channel may increase temporarily during restoration implementation but can be minimized by particle broadcasting during substrate placement. Based on the current turbidity of Bubbly Creek, the habitat project is expected to improve water clarity in the long term, primarily due to the substrate layer preventing movement of the underlying sediment to the water column via ebullition. No long-term adverse effects are expected.

Color – It is expected that the water color would become clearer, a significant improvement from the current greenish-gray color. Therefore, no adverse effects are expected.

Odor – Temporary increases in odor may occur during construction as new substrates are spread throughout Bubbly Creek. As the material is spread, the compression of the current sediment may increase the rate at which trapped gasses escape. Since these gasses are primarily a result of decaying organic matter, a temporary increase in odor is expected, but should dissipate quickly. Ultimately, the odors of Bubbly Creek from underlying sediment would be lessened by the proposed restoration project. No long-term adverse effects are expected.

Taste – Bubbly Creek is not used as a source of drinking water; therefore, no adverse effects are expected.

Dissolved Gas Levels – Minor, temporary decreases in dissolved oxygen levels may occur in the immediate area of construction due to temporary increases in turbidity; this is not considered significant. Expected long-term benefits include increased and more stable dissolved oxygen concentrations within Bubbly Creek. No adverse effects are expected.

Nutrients – Small, temporary increases in nutrients may or may not occur in the immediate area of construction due to temporary increases in turbidity while the substrate is broadcast over the channel bottom. Movement of nutrients from the underlying sediment to the water column may decrease in the long term due to the isolation characteristic of the new substrate layer. No adverse effects are expected.

Eutrophication – Eutrophication within Bubbly Creek would begin to decrease with placement of the sand and rounded river rock and quarried stone substrate layer relatively quickly due to the reduction in Sediment Oxygen Demand (SOD). No adverse effects are expected.

Other Impacts – No other adverse effects are expected.

2) Current Patterns and Circulation

Current Patterns and Flow – Bubbly Creek only flows when the RAPS pumps turn on. The Preferred Plan is expected to slightly increase water velocities in the channel during a RAPS event. Slight changes in velocity are due to the inclusion of the 12 inches of sand and rock in the channel cross section. The initial impact of the fill would dissipate over time as the substrate settles. Therefore, no long-term adverse effects are expected.

Velocity – The habitat restoration project is designed not to alter hydraulic conditions within the Bubbly Creek channel. A slight increase in water velocities during a RAPS discharge may occur in the channel after implementation of the Preferred Plan. No adverse effects are expected.

Stratification – Not applicable.

Hydrologic Regime – The habitat restoration project is designed not to alter hydrologic conditions within the Bubbly Creek study area. The channel would maintain its conveyance. No adverse effects are expected.

3) Normal Water Level Fluctuations

The proposed habitat restoration project has been determined not to alter water levels or fluctuations within Bubbly Creek.

4) Salinity Gradients

Not applicable to freshwater environments.

5) Actions That Will Be Taken to Minimize Impacts

No special measures would be taken to minimize the temporary impacts on water circulation, fluctuation, or salinity.

c. Suspended Particulate/Turbidity Determinations

1) Expected Changes in Suspended Particulates and Turbidity Levels in Vicinity of Fill Site

Turbidity in the channel may increase temporarily during restoration implementation but could be minimized by particle broadcasting during substrate placement and the use of BMPs to limit the distribution of suspended sediments. Based on the current turbidity of Bubbly Creek, the habitat project would improve water clarity greatly in the long-term, primarily due to the substrate layer preventing movement of the underlying sediment to the water column via ebullition.

2) Effects on Chemical and Physical Properties of Water Column

There would be improvements to the chemical and physical properties of the water column in Bubbly Creek resulting from the habitat restoration project. The restoration project is expected to improve water quality by significantly reducing sediment oxygen demand (SOD), reducing contaminant and particle movement from the sediment, providing a physical barrier between the highly organic sediment and aquatic plants and animals, as well as providing habitat for aquatic plants and animals that may aid in water quality improvements.

Light Penetration – The proposed fill activity is expected to have localized and temporary impacts to light penetration due to the temporary increase in turbidity in the channel during substrate placement. During the placement of the substrate it is expected that resuspension of the current sediments would occur;

however, these effects are expected to be temporary in duration. Overall, no significant long-term negative effects to light penetration are expected with the proposed construction activities.

Dissolved Oxygen – The proposed fill activity is not expected to have any significant long-term negative effects to dissolved oxygen concentrations within the water. Minor, temporary decreases in dissolved oxygen levels may occur in the immediate area of construction due to temporary increases in turbidity; however, these effects are expected to be temporary in duration. In addition, resuspension effects may be minimized by broadcasting the substrate material and the use of BMPs to minimize distribution of suspended sediments through the project area. Overall, no significant long-term negative effects to dissolved oxygen concentrations are expected with the proposed construction activities.

Toxic Metals and Organics – The proposed fill activity is not expected to introduce any toxic metals or organics to the project area.

Pathogens – The proposed fill activity is not expected to introduce any pathogens into the project area.

Aesthetics – There would be temporary increases in turbidity, noise, dust and visual disturbance within Bubbly Creek during the placement of substrate within the channel. However, any impacts to aesthetics would be brief in duration. Overall, aesthetics would be improved in the long-term after native vegetation is established in the area and existing water quality is improved.

Other – No additional long-term negative impacts to system components not listed above are expected as a result of the proposed fill activity.

3) Effects on Biota

Overall, there are expected to be improvements to the diversity of macroinvertebrates, fish and wildlife in Bubbly Creek resulting from the habitat restoration project.

Primary production, Photosynthesis – Localized turbidity increases in the channel due to resuspension of current sediments during substrate placement are expected to cause a decrease in light penetration which could in turn affect primary production; however, the effects would be temporary in duration. In addition, resuspension effects may be minimized by broadcasting the substrate material and the use of BMPs to minimize distribution of suspended sediments through the project area. Overall, no significant long-term adverse effects are expected.

Suspension/Filter Feeders – Localized turbidity increases due to resuspension of current sediments during substrate placement could likely affect suspension/filter feeders; however, the effects would be temporary in duration. In addition, resuspension effects may be minimized by broadcasting the substrate material and the use of BMPs to minimize distribution of suspended sediments through the project area. No significant long-term adverse effects are expected.

Sight Feeders – Localized turbidity increases due to resuspension of current sediments during substrate placement could likely affect sight feeders; however, the effects would be temporary in duration. In addition, resuspension effects may be minimized by broadcasting the substrate material and the use of BMPs to minimize distribution of suspended sediments through the project area. No significant long-term adverse effects are expected.

4) Actions Taken to Minimize Impacts

The Preferred Plan provides ancillary water quality benefits. Additionally, construction methods call for broadcast spreading of the new substrates to minimize disturbance to the sediment. Best management practices, control measures and turbidity monitoring would be considered during design and may be implemented during construction as deemed necessary.

d. Contaminant Determination

The habitat restoration project is expected to improve sediment conditions by placing sand topped with a mixture of rounded river rock and sandy silt or quarried stone on the channel bottom. The sand and rock is expected to isolate the current channel bottom from the water column. Past urban and industrial activities in the local drainage area have impacted Bubbly Creek. The channel was channelized and historically received untreated, highly organic waste from stockyards and slaughterhouses and additional waste from industrial sites. The sediment's fine-grained structure resulting from the decaying organic matter prevents the colonization of plants and animal life. The Preferred Plan proposes to restore the current sediments by adding new substrates to cover the channel bottom and reestablish the substrate found in a backwater. The new substrate layer is expected to support healthy benthic macroinvertebrate, fish and plants communities. Adverse impacts to Bubbly Creek's sediment quality from implementation of the Preferred Plan are not expected.

e. Aquatic Ecosystem and Organism Determinations

1) Effects on Plankton

Only beneficial affects to planktonic organisms are expected.

2) Effects on Benthos

Currently, the species richness and abundance of macroinvertebrates is very low and only tolerant species are found within in the project area. There is currently no physical habitat for a diverse assemblage to colonize and temporal water quality issues exacerbate the issue. The Preferred Plan recommends providing a substrate layer composed of sand, rounded river rock and quarried stone, large woody debris, aquatic macrophyte beds and buffering tree, shrubs and herbaceous plants. The macroinvertebrates that are currently found in the sediment may be impacted by implementation of the Preferred Plan which includes the addition of 12 inches of substrates in the channel; however, these new substrates are anticipated to have long-term benefits to the macroinvertebrate community. Macroinvertebrate effects resulting from the implementation of the Preferred Plan are considered to be very beneficial.

3) Effects on Nekton

Currently, the species richness and abundance of fishes is very low and only tolerant species are found within the project area. There is currently no physical habitat for a diverse assemblage to colonize and temporal water quality issues exacerbate the issue. The Preferred Plan recommends providing a substrate layer composed of sand, rounded river rock and quarried stone, large woody debris, aquatic macrophyte beds and buffering tree, shrubs and herbaceous plants. During placement of the new substrates, the fish communities or nekton may be affected by the increased turbidity. However, any effects due to substrate placement would be temporary in duration. Overall, the effects to fish communities or nekton within

Bubbly Creek or downstream in the Chicago River South Branch resulting from implementation of the Preferred Plan are considered to be very beneficial.

4) Effects on Aquatic Food Web

Beneficial improvements to the food web are expected due to anticipated increases in macroinvertebrate richness and abundance resulting from restoration of a natural hydrological regime.

5) Effects on Special Aquatic Sites

- a) Sanctuaries and Refuges – Not Applicable
- b) Wetlands – restoration of backwater habitat; increases in hydrophytic vegetation
- c) Mud Flats – Not Applicable
- d) Vegetated Shallows – increase in aquatic bed and emergent wetland
- e) Coral Reefs – Not Applicable
- f) Riffle and Pool Complexes – Not Applicable

6) Threatened and Endangered Species

Federal – Currently, there are no known federally endangered or threatened species, or their critical habitats within the Bubbly Creek study area. Based on this, there would be no adverse effects to federally-listed species resulting from implementation of the Preferred Plan.

State – Currently, the only known state-listed species occurring within Bubbly Creek is the state threatened black-crowned night-heron. This species typically hunts along the banks of Bubbly Creek. This species is not known to nest within the Bubbly Creek study area. Based on this information, no adverse effects are expected to affect the state threatened and endangered species within Bubbly Creek resulting from implementation of the Preferred Plan. Black-crowned night-heron effects resulting from the implementation of the Preferred Plan are considered to be very beneficial. The placement of large woody debris or snag habitats is expected to provide foraging habitat for herons while girdling trees is expected to provide heron roosting habitat. USACE will coordinate with the Illinois Department of Natural Resources on the black-crowned night-heron during detailed design.

7) Other Wildlife

No adverse effects are expected to other wildlife.

8) Actions to Minimize Impacts

The habitat restoration project is expected to provide macroinvertebrates (including crayfish and mussels), fishes, amphibians, reptiles and birds (resident/migratory) with necessary habitat components, in which Bubbly Creek currently does not provide.

f. Proposed Discharge Site Determinations

1) Mixing Zone Determination

A mixing zone is not applicable to this project as no discharge of water is expected during construction.

2) Determination of Compliance with Applicable Water Quality Standards

The proposed activity would not cause significant or long-term degradation of water quality within Bubbly Creek and would comply with all applicable water quality standards.

3) Potential Effects on Human use Characteristic

Overall, no significant impacts to municipal and private water supplies, water-related recreation, aesthetics, recreational, or commercial fisheries are expected. During project implementation, recreational uses of Bubbly Creek are expected to be limited. Overall, long-term improvements in fisheries are expected with the addition of aquatic habitat (e.g., substrate, aquatic vegetation and woody debris).

Municipal and Private Water Supply – No adverse effects to municipal and private water supplies are expected as a result of implementation of this project. Bubbly Creek is not used as a source of drinking water.

Recreational and Commercial Fisheries – No adverse effects to recreational or commercial fisheries are expected as a result of implementation of this project. Overall, recreational fisheries are expected to benefit from the implementation of this project due to the addition of aquatic habitat.

Water Related Recreation – Water related recreation is expected to be temporarily impacted during implementation of this project; however, the duration of the impact would only be during placement of the substrate and planting of aquatic vegetation.

Aesthetics – No adverse effects to aesthetics are expected as a result of implementation of this project. Overall, aesthetics are expected to benefit with the planting of native vegetation.

Parks, National and Historical Monuments, National Seashores, Wilderness Areas, Research Sites, and Similar Preserves – None are present within the project location.

g. Determination of Cumulative Effects on the Aquatic Ecosystem

The Bubbly Creek watershed is no longer diverse due to historic uses of the area. The watershed was once a diverse mosaic of marsh, prairie, savanna, woodland, and glacial ponds that had a steady and dependable hydrology, but now it is an urban landscape. The channel no longer provides appropriate habitat for fish and other aquatic life. Considering the past, current and future conditions of the Bubbly Creek watershed, the implementation of the Preferred Plan is minor in terms of the vast array and quantity of significant effects caused by industry and urbanization; however, it is instrumental in beginning to address the human induced problems the watershed suffers. There are no irrecoverable losses of resources identified in terms of plant, insect, fish, amphibian, reptile, bird, and mammal taxa or to the habitats they occupy due to implementation of the Preferred Plan. Cumulative beneficial effects to the Chicago River system are anticipated in terms of fish and wildlife and their preferred habitats.

h. Determination of Secondary Effects on the Aquatic Ecosystem

During construction, downstream turbidity may increase but would be minimized by the broadcast spreading techniques and the use of BMPs. Control measures and turbidity monitoring would be

considered during design and may be implemented during construction, as deemed necessary. Long term adverse effects are not expected to occur in or downstream of Bubbly Creek.

III. Findings of Compliance with Restrictions on Discharge

- a. No adaptation of the Section 404(b)(1) guidelines was made for this evaluation.*
- b. No practical alternatives are available that produce fewer adverse aquatic impacts than the preferred plan.*
- c. The proposed project would comply with applicable water quality standards.*
- d. The project is in compliance with applicable Toxic Effluent Standards under Section 307 of the Clean Water Act; with the Endangered Species Act of 1973; with the National Historic Preservation Act of 1966; and with the Marine Protection, Research, and Sanctuaries Act of 1972.*
- e. The proposed fill activity would have no significant adverse impact on human health or welfare, including municipal and private water supplies, recreational and commercial fisheries, plankton, fish, shellfish, or wildlife communities (including community diversity, productivity, and stability), special aquatic sites, or recreational, aesthetic, and economic values.*
- f. Typical erosion control measures would be taken to minimize construction impacts other than selection of the least environmentally damaging construction alternative.*
- g. On the basis of the Guidelines, the proposed site for the discharge of fill material is specified as complying with the requirements of these guidelines with the inclusion of appropriate and practical conditions to minimize pollution or adverse impacts to the aquatic ecosystem.*

B2. Draft FONSI

DRAFT FINDING OF NO SIGNIFICANT IMPACT

BUBBLY CREEK, SOUTH BRANCH OF THE CHICAGO RIVER, ILLINOIS INTEGRATED ECOSYSTEM RESTORATION FEASIBILITY REPORT AND ENVIRONMENTAL ASSESSMENT

CHICAGO, COOK COUNTY, ILLINOIS

The U.S. Army Corps of Engineers, Chicago District (Corps) has conducted an environmental analysis in accordance with the National Environmental Policy Act of 1969, as amended. The final Integrated Feasibility Report and Environmental Assessment (IFR/EA) dated November 2019, for the Bubbly Creek Ecosystem Restoration addresses a degraded aquatic ecosystem and the feasibility of restoring the ecosystem located in the South Branch of the Chicago River, Illinois. The final recommendation is contained in the report of the Chief of Engineers, dated November 2019.

The Final IFR/EA, incorporated herein by reference, evaluated various alternatives that would restore a functional backwater habitat and riparian buffer zone for resident and migratory birds and spawning in the study area. The recommended plan is the National Ecosystem Restoration (NER) Plan and includes:

- Substrate restoration consisting of placing sand and an armor layer composed of rounded river rock and quarried stone over 30.7 acres within the channel and turning basin.
- Riparian plant restoration consisting of invasive species removal, soil amendments and native riparian plantings over 9.3 acres within the channel corridor.
- Emergent plant restoration consisting of substrate amendments and native emergent plantings over 1.0 acre within the channel.
- Submergent plant restoration consisting of substrate amendments and native submergent plantings over 3.3 acres within the channel and turning basin.
- Woody debris restoration consisting of anchoring trees, rootwads, trunks and large branches in approximately 10 locations within the channel to further enhance habitat diversity and provide sheltering areas for aquatic species.

The monitoring and adaptive management plan is included in Appendix H – Monitoring and Adaptive Management and is expected to last five years.

In addition to a “no action” plan, four alternatives were evaluated. In Chapter 4 of the EA, the alternatives were formulated and evaluated. The alternatives included:

- Alternative 0 – No Action
- Alternative 1 – Riparian Planting in Entire Channel;
- Alternative 2 – Substrate Restoration in the Turning Basin, Submergent Planting in the Turning Basin, and Riparian Planting in Entire Channel;
- Alternative 3 – Substrate Restoration in the Entire Channel and Turning Basin, Submergent Planting in the Entire Channel and Turning Basin, Riparian Planting in Entire Channel, Emergent Planting, and Woody Debris [Recommended Plan];
- Alternative 4 – Substrate Restoration in the Entire Channel/Turning Basin, Submergent Planting in the Entire Channel/Turning Basin, Riparian Planting, Exclusive with Bank

Restoration, Emergent Planting, Woody Debris, and Bank Restoration in
Downstream/Midstream/Upstream Locations

For all alternatives, the potential effects were evaluated, as appropriate. A summary assessment of the potential effects of the recommended plan are listed in Table 1:

Table 1: Summary of Potential Effects of the Recommended Plan

	Insignificant effects	Insignificant effects as a result of mitigation*	Resource unaffected by action
Aesthetics	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Air quality	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Aquatic resources/wetlands	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Invasive species	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Fish and wildlife habitat	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Threatened/Endangered species/critical habitat	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Historic properties	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Other cultural resources	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Floodplains	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Hazardous, toxic & radioactive waste (HTRW)	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Hydrology	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Land use	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Navigation	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Noise levels	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Public infrastructure	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Socio-economics	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Environmental justice	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Soils	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Tribal trust resources	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Water quality	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Climate change	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Recreation	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

For the invasive species, the Recommended Plan calls for removing invasive species from the 9.3 acres of riparian area which is a positive effect. Navigation, as listed in the chart, was assumed to be navigation in a federally-authorized navigation channel. Bubbly Creek has been deauthorized as a federally-authorized navigation channel and therefore, this resource has been identified as being unaffected by 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 (BMPs) as detailed in the IFR/EA would be implemented, if appropriate, to minimize impacts.

The Recommended Plan includes planting submergent plants in the turning basin which is a contributing element within the Illinois and Michigan Canal National Heritage Corridor. The submergent plantings were selected to maintain the open water visual characteristics of the turning basin. Therefore, the Recommended Plan has insignificant effects on the historical resources.

The effect on HTRW and water quality is insignificant. The substrates would be placed in the channel by broadcast spreading. Broadcasting the substrates allows the substrate weight to be loaded slowly and uniformly across the channel bed to confine the sediment. The use of in-water turbidity curtains during placement would be utilized to minimize temporary impacts to downstream water quality, when needed. After implementation, the new substrate would reduce the contaminant transport from the sediment into the water column resulting in an improvement to water quality.

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

Public review of the draft IFR/EA and FONSI was completed on May 15, 2015. All comments submitted during the public review period were responded to in the Final IFR/EA and FONSI. A 30-day state and agency review of the Final IFRA/EA was completed on <INSERT DATE>.

Pursuant to section 7 of the Endangered Species Act of 1973, as amended, the U.S. Army Corps of Engineers determined that the recommended plan will have no effect on federally listed species or their designated critical habitat.

Pursuant to section 106 of the National Historic Preservation Act of 1966, as amended, the U.S. Army Corps of Engineers determined that historic properties would not be adversely affected by the recommended plan. The Illinois Historical Preservation Office concurred with the determination on March 29, 2010.

Pursuant to the Clean Water Act of 1972, as amended, the discharge of dredged or fill material associated with the recommended plan has been found to be compliant with section 404(b)(1) Guidelines (40 CFR 230). The Clean Water Act Section 404(b)(1) Guidelines evaluation is found in Appendix B – Compliance, Coordination & Information.

A water quality certification pursuant to section 401 of the Clean Water Act would be obtained from the Illinois Environmental Protection Agency (IEPA) prior to construction. The IEPA did not provide any comments during the public review of the draft report. All conditions of the water quality certification would be implemented to minimize adverse impacts to water quality.

A determination of consistency with the Illinois Coastal Zone Management (CZM) program pursuant to the Coastal Zone Management Act of 1972 would be obtained from the Illinois Department of Natural Resources prior to construction. In its letter submitted during the public comment period, the Illinois Department of Natural Resources did not reference whether the project was consistent with the Illinois CZM program. Prior to construction, USACE would submit a request for a consistency determination. All condition of the consistency determination would be implemented to minimize impacts to the coastal zone.

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

Environmental 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 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 that 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

COL Aaron W. Reisinger
District Engineer
USACE, Chicago District

B3. Coordination

B3.1 News Release



U.S. Army
Corps of Engineers
Chicago District

News Release

Contact: Vanessa Villarreal
Telephone: (312) 846-5331
E-Mail: vanessa.villarreal@usace.army.mil
Release date: May 12, 2008

Army Corps of Engineers, City of Chicago to hold Bubbly Creek public meeting

The U.S. Army Corps of Engineers and the City of Chicago will hold a public scoping meeting to discuss the Bubbly Creek (South Branch of the Chicago River) Feasibility Study. The meeting is open to the public and will take place:

WHEN: Thursday, May 15, 2008
WHERE: Laborers' International Union of North America (Local 4)
3841 S. Halsted, Chicago, Ill. 60609
TIME: 6:30 p.m.

The Bubbly Creek ecosystem has been severely degraded by major physical alterations including deepening and widening of the channel, creation of sheet pile banks, complete filing of wetlands within the original drainage area, severe hydrologic alterations, and introduction of polluted sediments and runoff. Ecosystem restoration will restore habitat, improve water quality, protect public health, enhance recreational opportunities, and revitalize economic development.

The main objective of the Bubbly Creek Feasibility Study is to develop a plan to restore aquatic and riparian ecosystems within the channel's corridor. Alternatives will be evaluated based on their ability to increase the quantity and quality of river habitats. The primary study area consists of two square miles bounded by Cermak Road, Pershing Road, Halsted Street, and Ashland Avenue. Additional information can be found at www.bubblycreekstudy.org, a website sponsored by the Chicago Department of Environment.

The City of Chicago has entered into an agreement with the Army Corps to perform the feasibility study for ecological restoration in Bubbly Creek. The Chicago Department of Planning and Development will facilitate the public scoping meeting with the intent to solicit input from stakeholders to help identify significant problems and opportunities within the study area. All interested parties are encouraged to attend.

Those unable to attend the May 15th public scoping meeting and wish to comment on the study can write to David F. Bucaro, P.E., Planning Branch, U.S. Army Corps of Engineers, Chicago District, 111 N. Canal (Suite 600), Chicago, IL 60606, or call him at (312) 846-5583.

###

ATTACHMENT D

B3. NEPA Public Scoping Letters and Distribution List

Planning Branch
Environmental Formulation Section

SEE DISTRIBUTION

21 APR 2008

Dear _____:

The Chicago District, U.S. Army Corps of Engineers has initiated a Feasibility Study to identify ecosystem restoration opportunities for Bubbly Creek (South Fork of South Branch of Chicago River) in Chicago, Cook County, Illinois. The cost-sharing non-Federal sponsor for this effort is the City of Chicago. The objective of the Bubbly Creek Feasibility Study is to develop a plan to restore aquatic and riparian ecosystems within the channel corridor of Bubbly Creek. The primary study area consists of two square miles bounded by Cermak Road, Pershing Road, Halsted Street and Ashland Avenue.

The study will develop alternative plans and recommendations for restoring aquatic and riparian ecosystems in the study area. Alternatives will be evaluated based on their ability to increase quantity and quality of lotic stream, riparian, and wetland habitats. A Feasibility Report and National Environmental Policy Act document will address various issues including habitat degradation; stagnant flow conditions; impacts from combined sewer overflows; sediment integrity; and water quality impairments to habitat. A website containing additional information is under development at: <http://www.bubblycreekstudy.org>.

We are currently identifying problems and opportunities in the study area, and developing and evaluating measures to address these issues. We request your input in accordance with the National Environmental Policy Act, other environmental laws, and executive orders. Responses will be used to help identify significant issues, deemphasize insignificant issues and assess impacts.

A public scoping meeting to discuss the study and solicit comments will be held on May 15th, 2008 at 6:30 P.M. at the Laborers' International Union of North America, Local 4, 3841 S. Halsted Street, Chicago, IL, 60609-1612. If you are unable to attend the public scoping meeting and wish to comment on the study or for further information, please contact: Mr. David F. Bucaro, P.E., U.S. Army Corps of Engineers, Planning Branch, 111 N. Canal Street, Suite 600, Chicago, IL, 60606-7206, or by telephone at 312-846-5583. 15th corrected 28 Apr 08

Sincerely,

ORIGINAL SIGNED

Fredric E. Kaehler, P.E.
Lieutenant Colonel, U.S. Army
Acting District Commander

FEDERAL ELECTED OFFICIALS

Honorable Barack Obama United States Senate 713 Hart Senate Office Bldg. Washington, DC 20510	Honorable Barack Obama United States Senator 230 S. Dearborn St., Suite 3900 Chicago, IL 60604
Honorable Richard J. Durbin United States Senate 309 Hart Senate Office Bldg. Washington, DC 20510	Honorable Richard J. Durbin United States Senator 230 S. Dearborn St., Suite 3892 Chicago, IL 60604
Honorable Luis Gutierrez United State House of Representatives 2266 Rayburn House Office Bldg. Washington, DC 20515	Honorable Luis Gutierrez Representative in Congress 3455 West North Avenue Chicago, Illinois 60647
Honorable Daniel Lipinski United States House of Representatives 1717 Longworth House Office Bldg. Washington, DC 20515	Honorable Daniel Lipinski Representative in Congress 6245 South Archer Avenue Chicago, Illinois 60638

STATE ELECTED OFFICIALS

Honorable Rod Blagojevich Governor of Illinois 207 Statehouse Springfield, IL 62706	
Honorable Mattie Hunter Senator – State of Illinois 611-C Capitol Bldg. Springfield, IL 62706	Honorable Mattie Hunter Senator – State of Illinois 2929 S. Wabash Ave. Chicago, IL 60616
Honorable Antonio Munoz Senator – State of Illinois 123 Capitol Bldg. Springfield, IL 62706	Honorable Antonio Munoz Senator – State of Illinois 2021 W. 35 th St. Chicago, IL 60609
Honorable Susana Mendoza Representative – State of Illinois 200-1S Stratton Bldg. Springfield, IL 62706	Honorable Susana Mendoza Representative – State of Illinois 2500 S. Millard Ave. Chicago, IL 60623
Honorable Kenneth Dunkin Representative – State of Illinois 290-S Stratton Bldg. Springfield, IL 62706	Honorable Kenneth Dunkin Representative – State of Illinois 1520 N. Wells St. Chicago, IL 60610
Honorable Esther Golar Representative – State of Illinois 244 Stratton Bldg. Springfield, IL 62706	Honorable Esther Golar Representative – State of Illinois 4926 S. Ashland Ave. Chicago, IL 60609
Honorable Edward Acevedo Representative – State of Illinois 109 Capitol Bldg. Springfield, IL 62706	Honorable Edward Acevedo Representative – State of Illinois 2021 W. 35 th St. Chicago, IL 60609

LOCAL ELECTED OFFICIALS

Honorable Richard M. Daley Mayor, City of Chicago City Hall, Room 507 121 N. La Salle St. Chicago, IL 60602	21 APR 2008
Honorable James A. Balcer Alderman, 11 th Ward City Hall, Room 203 121 N. LaSalle St. Chicago, IL 60602	Honorable James A. Balcer Alderman, 11 th Ward 3659 S. Halsted St. Chicago, IL 60609
Honorable John P. Daley Commissioner, Cook County 11 th District 118 N. Clark Street Chicago, IL 60602	Honorable John P. Daley Commissioner, Cook County 11 th District 3659 S. Halsted St. Chicago, IL 60609
Mr. Terrence J. O'Brien President, Metropolitan Water Reclamation District of Greater Chicago 110 E. Erie St. Chicago, IL 60611	

FEDERAL AGENCIES

USEPA Region V Environmental Review Branch ATTN: Kenneth Westlake 77 W. Jackson Blvd. Chicago, IL 60604	U.S. Fish & Wildlife Service Chicago Illinois Field Office ATTN: John Rogner 1250 S. Grove, Suite 103 Barrington, IL 60010
U.S. Coast Guard Marine Safety Unit Chicago ATTN: Commander Paul Mehler 16W215 83rd St., Suite D Burr Ridge, IL 60527	USDA-NRCS New Lenox Field Office ATTN: Robert Jankowski 1201 S. Gouger Road New Lenox, IL 60451

STATE AGENCIES

Illinois Dept. of Natural Resources Division of Ecosystems and Environment ATTN: Todd Rettig One Natural Resource Way Springfield, IL 62702	Illinois Dept. of Natural Resources Division of Resource Review ATTN: Robert Schanzle One Natural Resource Way Springfield, IL 62702
Illinois EPA Water Pollution Division ATTN: Bruce Yurdin 1021 North Grand Ave. East Springfield, IL 62794	Illinois Historic Preservation Agency ATTN: Anne Haaker 1 Old State Capitol Plaza Springfield, IL 62701

Illinois Dept. of Natural Resources Office of Water Resources ATTN: Dan Injerd 36 S. Wabash Ave., Room 1415 Chicago, IL 60603	21 APR 2008
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LOCAL AGENCIES

Chicago Dept. of Environment ATTN: Suzanne Malec-McKenna 30 N. La Salle St., Suite 2500 Chicago, IL 60602	Chicago Park District ATTN: Timothy Mitchell 541 N. Fairbanks Ct. Chicago, IL 60611
Chicago Dept. of Planning ATTN: Arnold Randall 121 N. La Salle St., Suite 1000 Chicago, IL 60602	Chicago Dept. of Water Management ATTN: Peter Mulvaney 1000 E. Ohio St. Chicago, IL 60611
Metropolitan Water Reclamation District of Greater Chicago ATTN: Richard Lanyon 110 E. Erie St. Chicago, IL 60611	

LIBRARIES

Chicago Public Library Harold Washington Center ATTN: Govt. Publications 400 S. State St. Chicago, IL 60605	Chicago Public Library Back of the Yards Branch ATTN: Govt. Publications 4650 S. Damen Ave. Chicago, IL 60609
Chicago Public Library Brighton Park Branch ATTN: Govt. Publications 4314 S. Archer Ave. Chicago, IL 60632	Chicago Public Library McKinley Park Branch ATTN: Govt. Publications 1915 W. 35 th St. Chicago, IL 60609
Chicago Public Library Richard J. Daley Branch ATTN: Govt. Publications 3400 S. Halsted St. Chicago, IL 60608	

INDIVIDUALS AND ORGANIZATIONS

Friends of the Chicago River ATTN: Margaret Frisbie 28 E. Jackson Blvd., Suite 1800 Chicago, IL 60604	Canal Corridor Association. Gaylord Building ATTN: Anna Koval 201 W. 10th St. Lockport, IL 60441
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Chicago Audubon Society North Park Village ATTN: Joe Lill 5801-C N. Pulaski Ave. Chicago, IL 60646	Chicago Historical Society ATTN: Gary Johnson 1601 N. Clark St. Chicago, IL 60614
Alliance for the Great Lakes 17 N. State St., Suite 1390 Chicago, IL 60602	Sierra Club 70 E. Lake St. Suite 1500 Chicago, IL 60601
Openlands Project ATTN: Gerald Adelmann 25 E. Washington Blvd., Suite 1650 Chicago, IL 60602	University of Illinois-Chicago ATTN: Karl Rockne 3077 Engineering Research Facility M/C 246, 842 W. Taylor St. Chicago, IL 60607
Back of the Yards Neighborhood Council ATTN: Pat Salmon 1751 C. 47 th St. 2 nd Floor Chicago, IL 60609	Bridgeport Homeowners Association ATTN: Arol Ausberger 3315 S. Throop St. Chicago, IL 60608
The Wetlands Initiative ATTN: Donald Hey 53 W. Jackson Blvd., Suite 1015 Chicago, IL 60604	South Loop Chamber of Commerce 3538 S. Halsted St. Chicago, IL 60609
Mr. Wes Bromberek B & W Truck Repair 3701 S. Iron St. Chicago, IL 60609	Mr. Henry Palmisano Henry's Bait Shop 3130 S. Canal St. Chicago, IL 60616
Mr. Jim McBride Shultze-Birch 1133 W. 33 rd St. Chicago, IL 60609	Mr. Tim Clary Chicago Community Bank 1110 W. 35 th St. Chicago, IL 60609
Mr. Bill Sharp CJA and Associates Inc. 321 N Clark St, Suite 1450 Chicago, IL 60601	Mr. Bob Cunningham Mid-West Cargo 1050 W. 39 th St. Chicago, IL 60609
Mr. Mie Rooney R4 Services 1031 W 35 th St. Chicago, IL 60609	

21 APR 2008

B3.3 NEPA Public Scoping Meeting

SUBJECT: Bubbly Creek Ecosystem Restoration Feasibility Study, NEPA
Public Scoping Meeting Minutes 15-May-2008

Date: May 15, 2008
Time: 6:30 p.m. - 8:00 p.m.
Location: Laborers' International Union of North America (Local 4)
3841 S. Halsted
Chicago, IL 60609
Attendees: See attachment A for sign-in sheet

The Chicago District, U.S. Army Corps of Engineers (USACE) and the City of Chicago has initiated a Feasibility Study to identify ecosystem restoration opportunities for Bubbly Creek (South Fork of South Branch of Chicago River) in Chicago, Cook County, Illinois. The objective of the Bubbly Creek Feasibility Study is to develop a plan to restore the aquatic and riparian ecosystems within the one and one-quarter mile channel corridor of Bubbly Creek. The study team is currently in the phase of identifying problems and opportunities within the study area and developing measures to be evaluated that will address these issues. The meeting was called to elicit public input used to help identify significant issues, deemphasize insignificant issues and plan to address those impacted in compliance with the National Environmental Policy Act, other environmental laws and executive orders. Notifications for the public meeting were sent out in advance. See attachment B for scoping letter, attachment C for distribution list, and attachment D for new release sent to area newspapers and radio stations. Below is a summary of the meeting and items discussed:

1. Introductions, general update/background for discussion:
 - a. 11th Ward Alderman Balcer introduction
 - b. Nelson Chueng (Department of Planning and Development) welcome / recognition of others and recap of the planning process to date
 - c. PowerPoint presentation by Ernie Wong, Site Design Group, Ltd., and David Bucaro, USACE, followed by public discussion
2. Numerous attendees agree that the younger generation in the community need to be educated about Bubbly Creek. There is a great potential for outreach programs at local schools:
 - a. Since this ecosystem restoration project could take several years to actualize, the next generation should be educated on the subject of Bubbly Creek now.
 - b. Project website could be a resource for educators, etc.
 - c. Involve the National Teachers Academy at 55 W. Cermak Rd. - perhaps hold a seminar or an educational program at this

- location. Utilize as a tool, posting advertisements on their bulletin boards, etc.
 - d. Many children don't know the potential of Bubbly Creek - organize programs / camps at the creek and other area waterways during summer
 - e. Educate children about hazardous materials floating in the creek, as well as its history and current environmental state.
3. "River as a resource": eliminate negative history, refresh attitudes of the younger Generation.
 4. A local manufacturer owner defined Bubbly Creek in three (3) sections and would like these distinct areas to be kept separate for future developments:
 - a. Canal Origins Park / Eleanor Park create open space zone at north end.
 - b. Growing residential at the mid-section
 - c. Core Industrial at far south end
 - Should be a place for habitat / biodiversity / protected area where access for pedestrians, dogs, etc. would be prohibited.
 - Creek traffic is acceptable.
 5. Potential for adding a Sidestream Elevated Pool Aeration (SEPA) Station:
 - a. This may be considered, but there is already a system on filtering larger floatables.
 - b. The sizes of objects that get filtered are limited by pumping needs at Racine Avenue Pumping Station (RAPS).
 6. Possibility for centrifugal pumps to be added to spin solids to the top at RAPS:
 - a. Skimmers for aquariums work with magnets that spin organics to the top and 'skims' the top surface.
 - b. USACE explained how MWRDGC currently operates RAPS by pulling water back after pumping events to collect floatables.
 - c. A member of the study team from MWRDGC explained that currently there are screens to catch the larger debris entering RAPS and if these screens were more tightly knit, water could not flow properly, conveyance would be reduced thus causing backups to the sewer system.
 7. A member of the Friends of the Chicago River suggested floating gardens / fish lunkers to kick-start habitat restoration.
 8. USACE explained how in-situ bioremediation and sediment digestion technology is cutting edge and being evaluated, but it may have

serious impacts like off-gassing and odor production that requires investigation:

- a. A University of Illinois at Chicago (UIC) instructor noted that disturbing the sediment requires detailed investigation, since stirring up all of the sediment within the Creek bed could be disastrous. Efforts to leave the sediment as-is should be emphasized.
9. UIC instructor noted that the current sediment composition has not changed for generations:
 - a. This is caused by high flow velocities flush upper sediment layers downstream when RAPS overflows.
 - b. Deeper sediment layers are consistently buried and not available for erosion by flows.
 10. The audience was interested in other projects that addressed sediments including recently completed portions of the Grand Calumet River:
 - a. That project was done as a part of a 1998 settlement of federal and state environmental claims to USX Corporation.
 - b. Grand Calumet River (GCR) Feasibility Study is being completed through a partnership between USACE and Indiana Department of Environmental Management (IDEM) to investigate various capping, removal, and disposal technologies:
http://www.lrc.usace.army.mil/projects/grand_cal_fs/main.htm
 11. USACE explained how several opportunities to create artificial flow in Bubbly Creek may be possible:
 - a. MWRDGC completed a multi-year demonstration project where flows were taken in at RAPS and pumped to the Stickney wastewater treatment plant (WWTP) during the summer months.
 12. USACE explained how the possibility of varying the terrain of the channel and sediments so that low flow / high flow areas could be created is being investigated:
 - a. This is referred to as "recontouring" the channel.
 13. One of the key challenges for this project is to create a workable solution for adjacent residents and businesses:
 - a. Project should not recommend slowly removing sediments that cause large environmental impact (i.e. rancid smells, unsightliness, hazardous materials)
 - b. Any solution must account for long-term impacts.
 14. Capture floatables during a normal / light rain event and send to Stickney WWTP:

- a. MWRDGC responded that most floatables are caught at RAPS, and those that make it through during an overflow are mostly sucked back into RAPS following an event or the few that remain are surface-water collected.
15. Early sediment studies looked at environmental constituents, not geotechnical properties:
- a. Geotechnical field sampling and analysis planned for later this summer.
16. Possible commercial applications for the sediment:
- a. Sell to Home Depot as a fertilizer?
 - b. Argument by UIC instructor: Sediment is not all organic waste. Although the sediment is constituted mostly of organic waste, toxins and heavy metals are also present limiting their beneficial use.
17. Familiarity with the project completed at General Electric property along the Mohawk River near Schenectady, NY:
- a. No one present was familiar with the project.
18. USACE explained how options to for capping sediments are being evaluated:
- a. Capping seems more viable than removal since the sediment would not have to be disturbed.
 - b. Would beaver activity or the bubbles be an issue with a membrane cap? (i.e. the beaver scratching and digging into the membrane, or the bubbles caused by aerobic activity eventually bursting open the membrane)
 - c. Bubbles are from anaerobic decomposition, and the amount of bubbles created by it is not at a high enough volume to cause problems. It will be distributed flatly where it would be collected in one area towards the side and then vented.
 - d. Membrane will then be capped off with clean sediments benthic organisms so there would be no way for the beaver to scratch the membrane.
 - e. UIC is currently evaluating two sites for sediment capping in the Chicago River:
 - Collateral Channel - 1 acre test site (finalizing design development)
 - Bubbly Creek at the turning basin - 4 acre test site (future site)

CELRC-PM-PL

SUBJECT: Bubbly Creek NEPA Public Scoping Meeting Minutes 15-May-2008

19. USACE briefed current and upcoming major feasibility activities:
- a. Geotechnical field investigations
 - b. Habitat field assessment and evaluation
 - c. Hydrologic and hydraulic modeling of channel / RAPS
 - d. Hazardous, Toxic, and Radioactive Waste (HTRW) evaluation
 - e. Cultural resources and historic preservation evaluation

Please direct questions regarding these meeting minutes to Mr. David F. Bucaro, P.E., U.S. Army Corps of Engineers, Planning Branch, Environmental Formulation Section, 111 N. Canal Street, Suite 600, Chicago, IL, 60606-7221, or by telephone at 312-846-5583.

/ORIGINAL SIGNED/

David F. Bucaro, P.E.
Lead Planner

Attachments (5)

- A - Meeting Attendees
- B - Scoping Letter
- C - Distribution List
- D - News Release

MEMORANDUM FOR RECORD

15-JUNE-2008

SUBJECT: Bubbly Creek Ecosystem Restoration Feasibility Study, NEPA
Public Scoping Meeting Attendees 15-May-2008

Date: May 15, 2008
Time: 6:30 p.m. - 8:00 p.m.
Location: Laborers' International Union of North America (Local 4)
3841 S. Halsted
Chicago, IL 60609

<i>Name</i>	<i>Organization</i>
James Balcer	Alderman, 11th Ward
Robert Bromberek	B & W Truck Repair
Wes Bromberek	B & W Truck Repair
Craig Chico	Back of the Yards Neighborhood Council
Tom Krveger	Bridgeport Village HOA
John La Monica	Butler Street Foundry
Leigh Peters	Chicago 'Department of Environment
Renante Marante	Chicago 'Department of Environment
Nelson Chung	Chicago 'Department of Planning
Cathy Hudik	Chicago Mayors Office
Bob Foster	Chicago Park District
John P. Daley	Commissioner, Cook County 11th District
Patrick Slattery	CTC
John Quail	Friends of the Chicago River
Paul Connolly	Liuna
Sam Dennison	MWRDGC
Oona Dennison	MWRDGC
Ed Brosius	MWRDGC
John Bose	ReorViridis
James McBride	Shultze-Birch
Hana Ishikawa	Site Design Group
Michelle Inouye	Site Design Group
Earnest Wong	Site Design Group
Dr. Karl Rockne	University of Illinois - Chicago
David Bucaro	USACE
Vanessa Villarreal	USACE
Lynne Whelan	USACE

B3. NEPA Draft Report Public Review

Hon. Daniel Lipinski
House of Representatives
2346 Rayburn Building
Washington, DC 20515
ATTN: Andrew Davis

Dear Mr. Lipinski:

The U.S. Army Corps of Engineers (USACE), Chicago District, released for public comment today the “Bubbly Creek, South Branch of the Chicago River, Illinois, Draft Integrated Feasibility Report and Environmental Assessment.”

A public meeting is scheduled for 6:00 to 7:30 pm, Thursday, April 30, 2015 at the Richard J. Daley (Bridgeport) Branch of the Chicago Public Library, located at 3400 S. Halsted Street, Chicago, Illinois. The purpose of the meeting is to provide the public with information about the project and seek input from the community on the recommended plan.

The draft feasibility report was completed in collaboration with our non-federal sponsor, City of Chicago, Department of Planning and Development, and in partnership with the U.S. Environmental Protection Agency, Illinois Environmental Protection Agency, Metropolitan Water Reclamation District of Greater Chicago (MWRDGC), Friends of the Chicago River and other local stakeholders.

The draft report describes a recommended ecosystem restoration project to be implemented along Bubbly Creek – a 1.25 mile long channel that extends from the turning basin off of the South Branch of the Chicago River south to MWRDGC's Racine Avenue Pumping Station. This report addresses the need to restore an ecosystem historically degraded by channelization and industrial activities.

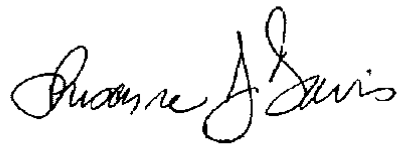
Features of the proposed project described in the draft report include restoration of approximately 40 acres, including 30.7 acres of substrate restoration, 9.3 acres of riparian restoration, one acre of emergent plant restoration, 3.3 acres of submergent plant restoration, and restoration of woody debris at 10 locations within the channel. With this restoration, resident and migratory birds, fish, aquatic macroinvertebrates, and other native wildlife are expected to benefit. Additionally, this project will benefit the McKinley Park, Bridgeport, and Pilsen communities and enhance the outdoor experience provided by Canal Origins Park adjacent to Bubbly Creek and the future

Eleanor Street Boat House, a non-motorized boat house planned along Bubbly Creek's bank.

The report is available online at www.lrc.usace.army.mil. USACE is accepting comments on the report through May 15, 2015. Comments may be submitted by e-mail to chicagodistrict.pao@usace.army.mil; or mailed to: U.S. Army Corps of Engineers, Chicago District, 231 S. LaSalle Street, Ste. 1500, Chicago, Illinois 60604, ATTN: Bubbly Creek Draft Report. Emailed comments must be received by May 15, 2015, and mailed comments must be postmarked by May 15, 2015.

If you have questions regarding this project, please contact the project manager, Mike Padilla, at (312) 846-5427, or michael.c.padilla@usace.army.mil.

Sincerely,

A handwritten signature in black ink, reading "Susanne J. Davis". The signature is written in a cursive, flowing style.

Susanne J. Davis, P. E.
Chief, Planning Branch

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E: jkostel@wetlands-initiative.org

Bubbly Creek Distribution

Email Text:

In the attached letter, the U.S. Army Corps of Engineers Chicago District invites you to comment on the “Bubbly Creek, South Branch of the Chicago River, Illinois, Draft Integrated Feasibility Report and Environmental Assessment.” The project is located entirely within the City of Chicago. Features of the recommended project include restoration of approximately 40 acres of aquatic and riparian habitat. The project is expected to benefit resident and migratory birds, fish, aquatic macroinvertebrates, and other native wildlife, as well as the McKinley Park, Bridgeport, and Pilsen neighborhoods.

The Draft Report and supporting documentation are available at: www.lrc.usace.army.mil. Participation is encouraged and comments are welcome. The public comment period runs through May 15, 2015. Please see attached letter for additional details regarding ways to submit comments and the public meeting. Questions may be directed to the project manager Mr. Mike Padilla at 312/846-5427, or at michael.c.padilla@usace.army.mil.

Sincerely,

Johnna Potthoff

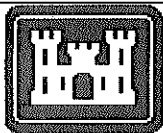
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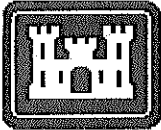
B3.5 Draft Report Public Meeting



**US Army Corps
of Engineers®**

Bubbly Creek
Public Meeting
April 30, 2015

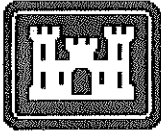
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Bubbly Creek
Public Meeting
April 30, 2015

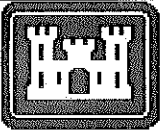
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Public Meeting
April 30, 2015

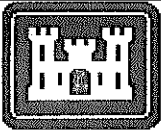
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Public Meeting
April 30, 2015

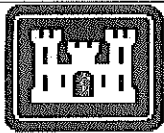
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Bubbly Creek
Public Meeting
April 30, 2015

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Bubbly Creek
Public Meeting
April 30, 2015

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B3. Agency Coordination Letters



REPLY TO
ATTENTION OF

DEPARTMENT OF THE ARMY
CHICAGO DISTRICT, U.S. ARMY CORPS OF ENGINEERS
111 NORTH CANAL STREET
CHICAGO IL 60606-7206

Planning Branch
Economic Formulation & Analysis Section

Illinois Hist. Pres. Agency
1 Old State Capitol Plaza
Springfield, IL 62701
ATTN: Anne Haaker

Dear Ms. Haaker:

March 17, 2010

The Chicago District is preparing a National Environmental Policy Act (NEPA) document on impacts of planned ecosystem restoration at Bubbly Creek in Chicago, Cook County, Illinois. As part of the scoping process the Chicago District would appreciate your comments.

A scoping letter was sent in April 2008 but somehow unfortunately one was not sent to your office., even though you were on our distribution list. The Chicago District regrets failing to have included your office in the original April 2008 scoping for the Bubbly Creek Project. Please accept our apology for any inconvenience or confusion this may have caused. Enclosed is a copy of the original scoping letter.

Please reply to the attention of Mr. Peter Bullock, U.S. Army Corps of Engineers, 111 North Canal Street, Suite 600, Chicago, Illinois 60606. Questions may be directed to Mr. Bullock at 312/846-5587, or at peter.y.bullock@usace.army.mil. Your assistance is appreciated.

Sincerely,

David F. Bucaro, P. E.
Chief, Economic Formulation & Analysis Section

Enclosure



Illinois Historic Preservation Agency

1 Old State Capitol Plaza • Springfield, Illinois 62701-1512 • www.illinois-history.gov

Cook County
Chicago

PLEASE REFER TO: IHPA LOG #027031910

(South Fork of South Branch of Chicago River) Bounded by Cermak Road, Pershing Road, Halsted Street and Ashland Avenue
Restoration, Bubbly Creek

March 29, 2010

David F. Bucaro, P.E.
U.S. Army Corps of Engineers, Chicago District
Economics & Plan Formulation Section
111 North Canal Street, Suite 600
Chicago, IL 60606-7206

Dear Mr. Bucaro:

We have reviewed the documentation submitted for the referenced project(s) in accordance with 36 CFR Part 800.4. Based upon the information provided, no historic properties are affected. We, therefore, have no objection to the undertaking proceeding as planned.

Please retain this letter in your files as evidence of compliance with section 106 of the National Historic Preservation Act of 1966, as amended. This clearance remains in effect for two (2) years from date of issuance. It does not pertain to any discovery during construction, nor is it a clearance for purposes of the Illinois Human Skeletal Remains Protection Act (20 ILCS 3440).

If you are an applicant, please submit a copy of this letter to the state or federal agency from which you obtain any permit, license, grant, or other assistance.

Sincerely,

Anne E. Haaker
Deputy State Historic
Preservation Officer

AEH



Illinois Department of Natural Resources

One Natural Resources Way Springfield, Illinois 62702-1271
www.dnr.illinois.gov

Mailing Address: 1 Old State Capitol Plaza, Springfield, IL 62701

JB Pritzker, Governor
Colleen Callahan, Director

FAX (217) 524-7525

Cook County
Chicago

Ecosystem Restoration, Bubbly Creek
(South Fork of South Branch of Chicago River) Bounded by Cermak Road, Pershing Road, Halsted Street
and Ashland Avenue, Turning Basin at the Confluence of Bubbly Creek and the South Branch of the
Chicago River (Ashland Ave.)
SHPO Log #027031910

December 13, 2019

Johnna Potthoff
U.S. Army Corps of Engineers, Chicago District
231 S. LaSalle St., Suite 1500
Chicago, IL 60604

Dear Ms. Potthoff:

We have reviewed the documentation provided for the above referenced project. The I & M Canal, a National Historic Landmark, was listed on the National Register of Historic Places on October 15, 1966. In our opinion, the project meets The Secretary of the Interior's "Standards for Rehabilitation and Guidelines for Rehabilitating Historic Buildings" and we concur in a finding of no adverse effect as defined in 36 CFR Part 800.5 (b).

If these plans should be modified, please notify our office. Please retain this letter as evidence of compliance with Section 106 of the National Historic Preservation Act of 1966, as amended.

If you have any questions, please call 217/782-4836.

Sincerely,

Robert F. Appleman
Deputy State Historic
Preservation Officer



DEPARTMENT OF THE ARMY
CHICAGO DISTRICT, U.S. ARMY CORPS OF ENGINEERS
111 NORTH CANAL STREET
CHICAGO IL 60606-7206

10 MAY 2012

REPLY TO
ATTENTION OF

Planning Branch
Environmental Formulation Section

Illinois Hist. Pres. Agency
1 Old State Capitol Plaza
Springfield, IL 62701
ATTN: Anne Haaker

Dear Ms. Haaker:

The U.S. Army Corps of Engineers, Chicago District is preparing a National Environmental Policy Act (NEPA) document on impacts of a proposed ecosystem restoration project along the South Fork of the South Branch of the Chicago River, colloquially referred to as "Bubbly Creek" within the City of Chicago, Cook County, Illinois. The Chicago District has previously consulted with your office on this project (IHPA#027031910, Bubbly Creek); however, the size and scope of the project has been expanded, and we feel an additional consultation is required.

Originally, the project included capping the Bubbly Creek sediment with materials that would also serve as habitat to fish and other organisms and potentially creating a few marshes along the creek bank. This portion of the project remains unchanged from what the Chicago District originally presented to the IHPA for the project and for which the IHPA concurred (letter dated March 29, 2010) that no historic properties were affected.

The project has now expanded to include the Turning Basin located at the confluence of Bubbly Creek and the South Branch of the Chicago River (Enclosure 1). The Chicago District is aware the Turning Basin is a contributing feature of Canal Origins Park and within the Illinois & Michigan Canal National Heritage Corridor. We have prepared two conceptual designs for restoring the ecosystem of a portion of the Turning Basin for your consideration. Each design is described below. Please review whether the impacts of these designs would be considered an adverse effect.

Design 1. Turning Basin-Marsh: This design would involve transforming a section of the Turning Basin into a marsh (Enclosure 2). The area designated as marsh would be filled to approximately six inches below the normal water's surface. The fill would serve as a sediment cap and substrate in which to plant native hydrophytic grasses. Once established, the tallest of marsh plant species would rise approximately three feet from the water's surface. The marsh would serve as habitat for a variety of organisms including but not limited to fish, turtles, insects, muskrats and resident and migratory birds.

Design 2. Turning Basin- Floating and Submerged Macrophyte Bed: This design involves capping the Turning Basin sediment and designing the cap to provide only the floating and submerged macrophyte habitat as depicted in Enclosure 2. There would be no wet prairie or marsh. The floating and submerged macrophytes, which include native pondweeds, eel grass and

spatterdock, would grow beneath the water's surface. However, the leaves of several species would lay flat on the water's surface. The macrophyte bed design would not alter the Turning Basin's current appearance of being open water and would provide habitat for a variety of organisms including but not limited to fish, insects and resident and migratory birds.

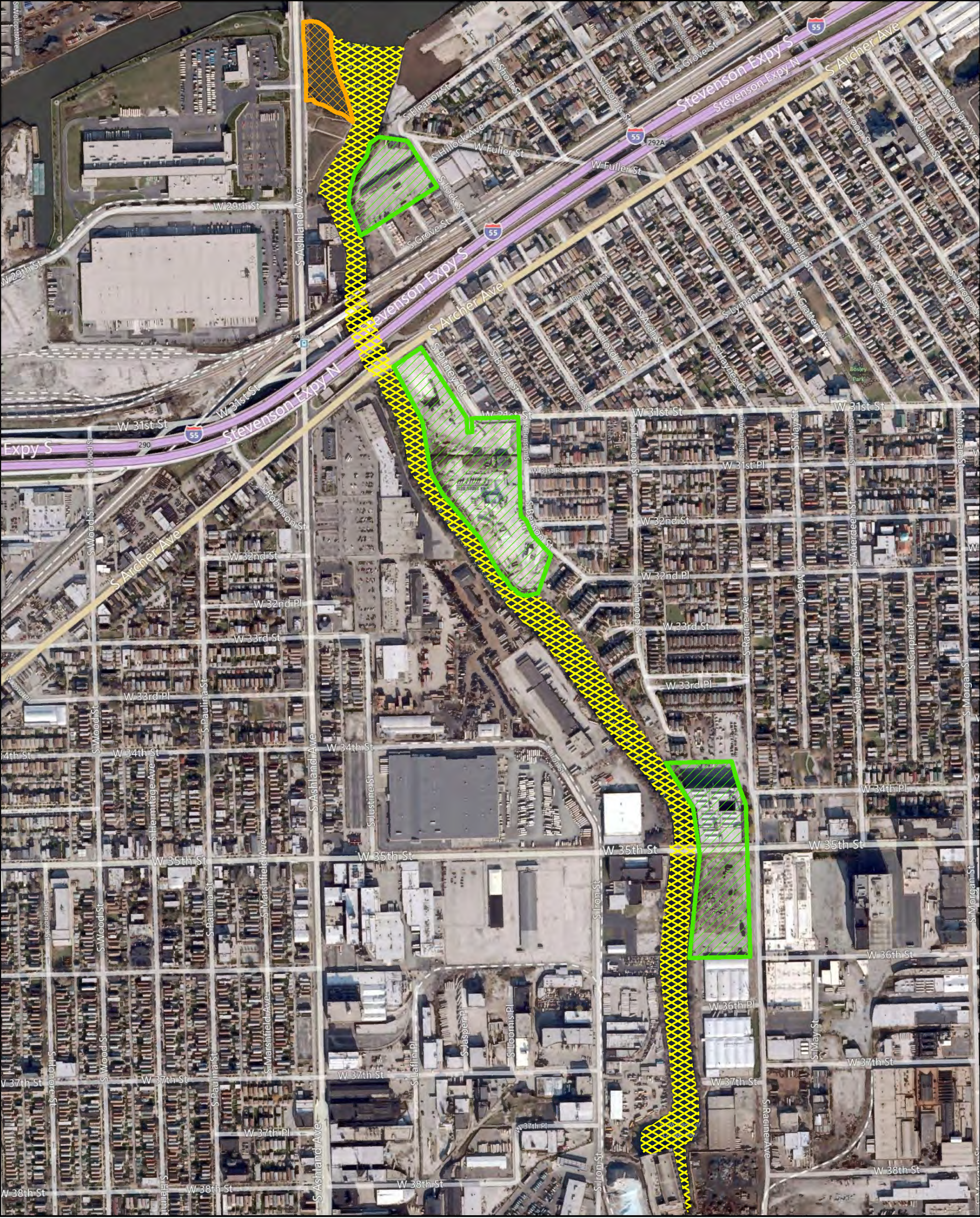
We look forward to your comments regarding these conceptual designs and would be happy to set up a conference call to discuss if desired.

Please mark your reply to the attention of Mr. Peter Bullock, U.S. Army Corps of Engineers, 111 North Canal Street, Suite 600, Chicago, Illinois 60606. You may also contact Mr. Bullock at (312) 846-5587, or at peter.y.bullock@usace.army.mil. Your assistance is appreciated.

Sincerely,





Susanne J. Davis, P.E.
Chief, Planning Branch

Enclosures




ENCLOSURE 1

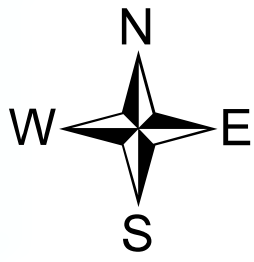
Legend

-  Location of Turning Basin Design
Either 1) Marsh OR 2) Floating and Submerged Macrophyte Bed
-  Potential properties where marshes may be created along the bank
-  Boulder/Cobble/Gravel Sediment Cap

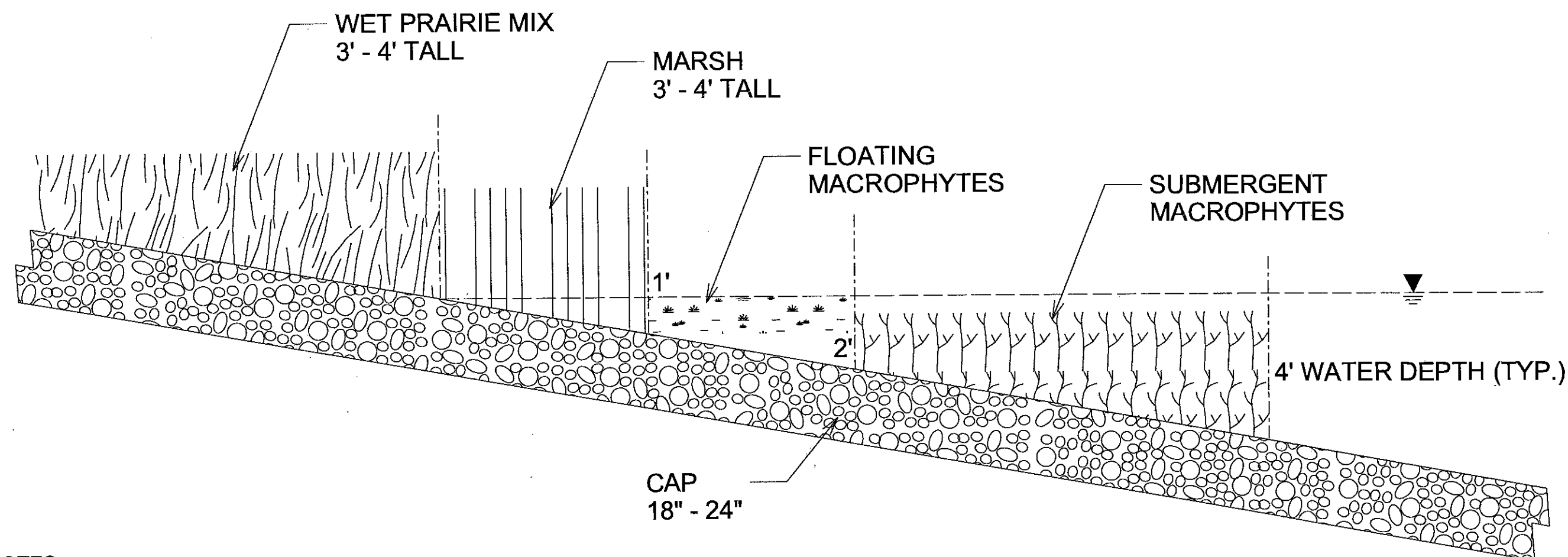
Location Map



Date: 5/10/2012



1 in = 561 feet



NOTES:

1. SUBMERGENT MACROPHYTES:
GENERALLY CONSIST OF SUB-WATER SURFACE PLANTS, PRIMARILY PONDWEEDS. THESE AREAS WOULD REMAIN IN OPEN WATER.
2. FLOATING MACROPHYTES:
GENERALLY CONSIST OF SUB-WATER SURFACE PLANTS, IN WHICH THEIR LEAVES WOULD BE FLOATING ON THE SURFACE. THESE SPECIES INCLUDE EEL GRASS PONDWEEDS AND WATER LILIES. WATER LILIES WOULD HAVE THE POTENTIAL TO COMPLETELY COVER THE WATER'S SURFACE, WHERE AS THE OTHER SPECIES DO NOT.

3. MARSH:
GENERALLY CONSIST OF EMERGENT GRASSES THAT WOULD PROTRUDE 3'-4' FROM THE WATER'S SURFACE. THESE PLANTS WOULD FORM HUMMOCK PATCHES AND WOULD REDUCE THE OPEN WATER SPACE BY HALF.
4. WET PRAIRIE:
GENERALLY CONSIST OF GRASSES AND FORBS IN THE AREAS BUFFERING THE OPEN WATER FEATURES. PLANTS WOULD BE FROM 2'-4' TALL.



BUBBLY CREEK
CHICAGO, ILLINOIS
FEASIBILITY STUDY

PLANT COMMUNITY
CROSS SECTION

SCALE:
SCALE

DATE:
08-MAY-2012

DRAWING CODE:
FILENAME.DGN



Illinois Historic
Preservation Agency

FAX (217) 782-8161

1 Old State Capitol Plaza • Springfield, Illinois 62701-1512 • www.illinois-history.gov

Cook County
Chicago

Ecosystem Restoration, Bubbly Creek

(South Fork of South Branch of Chicago River) Bounded by Cermak Road, Pershing Road, Halsted Street and Ashland Avenue, Turning Basin at the Confluence of Bubbly Creek and the South Branch of the Chicago River (Ashland Ave.)

IHPA Log #027031910

July 6, 2012

Peter Bullock
Department of The Army
U.S. Army Corps of Engineers
Chicago District
111 North Canal Street, Suite 600
Chicago, IL 60606

Dear Mr. Bullock:

We have reviewed the two concepts presented as proposed for the I & M Canal Origins Park Turning Basin. As you are aware, the Turning Basin is a contributing element within the I & M Canal National Heritage Corridor. Therefore, any proposed new construction should not encroach upon the original fabric either physically or visually.

Two design concepts were submitted. The first is an extension of the marsh proposed for Bubbly Creek. This design, when mature will negatively alter the visual characteristics of the Turning Basin. The second plan, a Floating and Submerged Macrophyte Bed will have much less of an impact upon the character of the Canal Basin and we will have no objection to its installation. We also think that it will be a good visual transition between the marshy area of Bubbly Creek and the open water of the Basin.

If you would like to discuss this further, please do not hesitate to call me at 217/785-5027.

Sincerely,

Anne E. Haaker
Deputy State Historic
Preservation Officer



DEPARTMENT OF THE ARMY
U.S. ARMY CORPS OF ENGINEERS, CHICAGO DISTRICT
231 SOUTH LASALLE STREET SUITE 1500
CHICAGO, IL 60604

08 AUG 2019

Planning, Programs, &
Project Management Division
Planning Branch

Illinois Hist. Pres. Office
ATTN: Review and Compliance
1 Old State Capitol Plaza
Springfield, IL 62701

Dear Review and Compliance Section:

The U.S. Army Corps of Engineers (USACE), Chicago District is preparing a National Environmental Policy Act (NEPA) document on impacts of a proposed ecosystem restoration project along the South Fork of the South Branch of the Chicago River, colloquially referred to as "Bubbly Creek" within the City of Chicago, Cook County, Illinois (enclosure 1). The Chicago District has previously consulted with your office on this project (IHPA#027031910, Bubbly Creek). See attached letters dated March 29, 2010 and July 6, 2012 (enclosures 2 and 3). Per your agency's guidance provided in your July 6, 2012 letter, the floating and submerged macrophyte bed was selected for the restoration plantings of Bubbly Creek's turning basin (enclosure 4). USACE requests the Illinois Historic Preservation Office's clearance for this project granted in your March 29, 2010 letter be extended.

Please mark your reply to the attention of Ms. Johnna Potthoff, U.S. Army Corps of Engineers, 231 South LaSalle Street, Suite 1500, Chicago, Illinois 60604. You may also contact Ms. Potthoff at (312) 846-5446, or at Johnna.J.Potthoff@usace.army.mil. Your assistance is appreciated.

Sincerely,

Susanne J. Davis, P.E.
Chief, Planning Branch

Enclosures

1. Project area
2. March 29, 2010 Letter from Illinois Historic Preservation Agency
3. July 6, 2012 Letter from Illinois Historic Preservation Agency
4. Project map with features



DEPARTMENT OF THE ARMY
U.S. ARMY CORPS OF ENGINEERS, CHICAGO DISTRICT
231 SOUTH LASALLE STREET SUITE 1500
CHICAGO, IL 60604

September 27, 2019

Planning, Programs, &
Project Management Division
Planning Branch

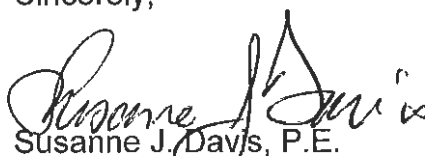
Illinois Hist. Pres. Office
ATTN: Review and Compliance
1 Old State Capitol Plaza
Springfield, IL 62701

Dear Review and Compliance Section:

The U.S. Army Corps of Engineers (USACE), Chicago District submitted a letter via first class mail on August 8, 2019 (enclosed) to your office. I am writing to follow up on the status of our request for the extension of clearance of the Bubbly Creek Ecosystem Restoration project granted in your March 29, 2010 letter (IHPA#027031910) (enclosed).

Please mark your reply to the attention of Ms. Johnna Potthoff, U.S. Army Corps of Engineers, 231 South LaSalle Street, Suite 1500, Chicago, Illinois 60604. You may also contact Ms. Potthoff at (312) 846-5446, or at Johnna.J.Potthoff@usace.army.mil. Your assistance is appreciated.

Sincerely,


Susanne J. Davis, P.E.
Chief, Planning Branch

Enclosures

1. August 8, 2019 Letter from Susanne J. Davis to the Review and Compliance Section with the following enclosures:
 - a. Project area
 - b. March 29, 2010 Letter from Illinois Historic Preservation Agency
 - c. July 6, 2012 Letter from Illinois Historic Preservation Agency
 - d. Project map with features



Audubon CHICAGO REGION

1718 Sherman Avenue
Suite 210
Evanston, IL 60201
Tel: 847-328-1250
Fax: 847-328-4146
www.audubon.org

July 31, 2013

Eugene Fleming
Chicago District, U. S. Army Corps of Engineers
231 S. LaSalle St., Suite 1500
Chicago, IL 60604

Dear Mr. Fleming:

This letter is to express Audubon Chicago Region's support of the fine habitat restoration work that is done by the Chicago District of the U. S. Army Corps of Engineers. The District has become a key conservation partner over the past ten years, and has been responsible for restoring thousands of acres of important wildlife habitat in addition to preserving healthy watersheds and restoring streams. We have partnered with the Corps on several fine projects and have admired the results of their work.

We specifically support the restoration of Bubbly Creek. In addition to the improvements to the river and its aquatic habitat, this project has two features that are of great importance to Audubon: migratory bird conservation and public engagement.

The location just a few miles from the lakefront and along the riparian corridor of the south branch of the Chicago River places Bubbly Creek at the junction of two of the region's highest priority features for neotropical migrants. The Chicago Lakefront has been designated an Illinois Important Bird Area by Audubon because it is one of the state's best sites for migratory birds. Birds migrating over the lake at night concentrate along the shore at daybreak and move inland to find habitat. The lakefront and the region's riparian corridors were also ranked priority 5 on a scale of 1 -5 for migratory landbirds in the report, *Defining Conservation Issues For Bird Migration Stopover Sites In The Chicago Wilderness Region* (Margaret A. Byrne, The Nature Conservancy, June 2008, Chicago Wilderness Trust Grant).

The migratory landbirds and waterfowl that will use the restoration will also bring a much-needed connection to nature to an underserved urban area. I'm sure you are aware that Bubbly Creek was named after the gases that were released by decomposing offal dumped in the creek by the great Chicago stockyard. The restoration of healthy nature in this particular spot would not only be well used by the surrounding community and provide great habitat for aquatic wildlife and neotropical migrants, but its restoration would be a powerful symbol of the 21st century transformation of Chicago to a clean, healthy, nature-friendly city.

Warm regards,

Judy Pollock
Director of Bird Conservation

REPLY TO
ATTENTION OF

March 26, 2014

Chief, Planning Branch

Via First Class Mail and
Via Electronic Mail w/o Attachments

Louise Clemency, Field Supervisor
U.S. Fish and Wildlife Service
Chicago Illinois Field Office
1250 S. Grove St., Suite 103
Barrington, Illinois 60010

Re: South Fork of the South Branch of the Chicago River, Illinois (Bubbly
Creek) ~~Ecos~~ Ecosystem Restoration Feasibility Study

Dear Ms. Clemency:

The Chicago District, U.S. Army Corps of Engineers (Chicago District) is seeking to engage the U.S. Fish and Wildlife Service (USFWS) in review of its draft feasibility report and preparation of a Fish and Wildlife Coordination Act (FWSA) Report pursuant to the U.S. Fish and Wildlife Coordination Act.

This ecosystem restoration project is located in the City of Chicago within the one and a quarter mile channel of the South Fork of the South Branch of the Chicago River. The project begins at Racine Avenue Pumping Station and extends to the confluence with the South Branch of the Chicago River. See attachment 1 for a map of the project area.

Prior to the 1830s, Bubbly Creek was formerly a prairie slough that drained five square miles of pristine aquatic and terrestrial habitat. As the area was industrialized, the creek was channeled to facilitate drainage, and in 1902, a federal navigation channel had been authorized in Bubbly Creek [See Rivers and Harbors Act of 1902, ch. 1079, 32 Stat. 331, 363]. USACE constructed the turning basin in 1903 and maintenance dredging was last performed by the Corps in 1919.

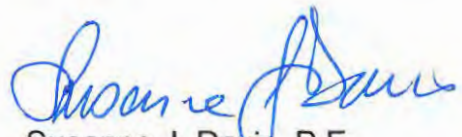
Prior to modern day waste management practices, sanitary sewage, industrial waste, and animal waste from the adjacent Union Stockyards were disposed in the creek for conveyance downstream. Currently, Bubbly Creek no longer provides a diversity of habitats, nor contains the existing habitat quality sufficient to support healthy plant and animal communities. The decomposing animal waste disposed in the creek produces methane and hydrogen sulfide gas. These bubbles float and

break at the water surface, for which the name "Bubbly Creek" is colloquially given.

This project would restore Bubbly Creek's habitat structure and function by placing appropriate substrate materials, sand overlain by gravel and rounded river rock, over the channel bottom; planting natives in the new substrate; removing invasives and planting natives along the creek banks. The draft plans for the project are found as attachment 2 and a CD containing the draft feasibility report and its appendices are found as attachment 3.

The Chicago District requests that USFWS provide a scope of work, cost estimate and schedule for the preparation of a FWCA Report. We are happy to meet with USFWS to brief them on the project and answer questions. Point of contact for this request is Ms. Johnna Potthoff, who can be reached at (312)846-5446 or at Johnna.J.Potthoff@usace.army.mil. The Chicago District looks forward to coordinating this review with you.

Sincerely,



Susanne J. Davis, P.E.
Chief, Planning Branch
Chicago District

Attachments:

1. Map of the Bubbly Creek Ecosystem Restoration Project
2. Plans for the Bubbly Creek Ecosystem Restoration Project
3. CD containing the draft feasibility report and its appendices



United States Department of the Interior

FISH AND WILDLIFE SERVICE
Chicago Ecological Services Field Office
1250 South Grove Avenue, Suite 103
Barrington, Illinois 60010
Phone: (847) 381-2253 Fax: (847) 381-2285



IN REPLY REFER TO:
FWS/AES-CIFO/03E13000-2014-CPA-0045

July 2, 2014

Col. Christopher T. Drew, District Engineer
US Army Corps of Engineers
Chicago District
231 S. LaSalle Street, Suite 1500
Chicago, IL 60604
Attention: Ms. Susanne J. Davis

Re: Fish and Wildlife Coordination Act Report for South Fork of the South Branch of the Chicago River, Illinois (Bubbly Creek) Ecosystem Restoration Feasibility Study

Dear Colonel Drew:

This letter constitutes a revised Fish and Wildlife Coordination Act Report for South Fork of the South Branch of the Chicago River, Illinois (Bubbly Creek) Ecosystem Restoration Feasibility Study. Minor revisions have been made to our June 23, 2014, report based on clarifications to the current plan provided in the July 1, 2014, letter me from from Susanne J. Davis, Chief, Planning Branch. The report has been prepared under the authority of and in accordance with provisions of the Fish and Wildlife Coordination Act (48 Stat.401, as amended; 16 U.S.C. 661 *et seq.*); the Endangered Species Act of 1973 (87 Stat. 884, as amended; 16 U.S.C. 703 *et seq.*); and in accordance with the U.S. Fish and Wildlife Service's Mitigation Policy. This report, when final, will constitute the report of the Secretary of Interior as required by Section 2(b) of the Fish and Wildlife Coordination Act (FWCA).

Descriptions of the project area and plan components are posted by the Corps at the following URL: <http://www.lrc.usace.army.mil/Missions/CivilWorksProjects/BubblyCreek.aspx> and in the Corps document "Bubbly Creek, South Branch of the Chicago River, Illinois Integrated Feasibility Report and Environmental Assessment."

To our knowledge, coordination with the Illinois Department of Natural Resources has not yet occurred, and so this report does not represent the report of the State on this project.

DESCRIPTION OF THE PROJECT AREA

The South Fork of the South Branch of the Chicago River is a 6,600-foot channel that begins near 38th Street at the Metropolitan Water Reclamation District of Greater Chicago (MWRDGC) Racine Avenue Pump Station (RAPS) and flows north to the South Branch of the Chicago River. The study area lies within the City of Chicago, Cook County, Illinois.

The creek's natural ecosystem has changed greatly in the past 150 years mainly because the adjacent Union Stockyard used the creek as an open sewer, depositing meat packing waste into the channel for over a hundred years. The organic material from the stockyards remaining at the bottom of the creek still generates bubbles that have earned the south fork the nickname of "Bubbly Creek" as mentioned in Upton Sinclair's 1906 expose of the meat packing industry, "The Jungle". In addition to the stockyard waste, the creek has been degraded by urban impervious water runoff, channel alterations, sewer water overflow, and an unnatural hydraulic regime. As a result, only species tolerant to habitat loss, anthropogenic disturbance and poor water quality are present. Slight improvements in water quality that have occurred are not enough for native plant and animal communities to reestablish. Critical structural habitat components are currently missing from the Bubbly Creek ecosystem.

Problems to be addressed by the proposed project include stream channelization, sediment degradation, lack of in-stream and riparian habitat and water quality issues. Ecosystem restoration measures to be considered in the feasibility phase include but were not limited to: 1) Selective Dredging; 2) Capping; 3) Creating channel base flow 4) Bypassing the RAPS overflow, and 5) No Federal Action.

PROJECT OBJECTIVES

Before the 1830's, the Bubbly Creek was a prairie slough that drained five square miles of a pristine aquatic and terrestrial habitat mosaic. Over a period of several decades, this ecosystem was severely altered by human activities. Currently, Bubbly Creek no longer provides a diversity of habitats, nor is the existing habitat quality sufficient to maintain structure and support healthy plant and animal communities. To date, there have been numerous studies and assessments describing and characterizing the Bubbly Creek study area. Based on these and additional information and modeling produced by the USACE, a set of Problems and Opportunities were developed by the study team, non-Federal Sponsors and supporting stakeholders. The purpose of this study and environmental assessment is to identify the most environmentally beneficial, cost effective and publicly supported habitat restoration project to restore migratory bird, fish and wildlife habitat lost by the alteration of the South Fork of the South Branch of the Chicago River.

THREATENED AND ENDANGERED SPECIES

To facilitate compliance with Section 7 of the Endangered Species Act of 1973, as amended, Federal agencies are required to obtain from the Fish and Wildlife Service information concerning any species, listed or proposed to be listed, which may be present in the area of a proposed action. There are no Federally-listed threatened or endangered species known to occur

in the project area. The State threatened black-crown night-heron (*Nycticorax nycticorax*) is known to hunt along banks of Bubbly Creek; riparian habitat restoration would be neutral or beneficial for this species.

DISCUSSION OF SELECTED FEATURES/FUTURE WITH PROJECT

The U.S. Fish and Wildlife Service was not part of the project planning team and so was not involved in the comparative analysis of resulting future with-project and future without-project conditions for the project alternatives. We have reviewed the preferred alternative, the National Ecosystem Restoration (NER) Plan (Alternative 3). This alternative consists of seven (7) restoration measures as summarized below:

- *Substrate restoration* consisting of a sand and gravel layer over 34.83 acres within the channel and turning basin.
- *Riparian plant restoration* consisting of invasive species removal, soil amendments and native riparian plantings over 9.53 acres within the channel corridor.
- *Emergent plant restoration* consisting of substrate amendments and native emergent plantings over 1.03 acres within the channel.
- *Submergent plant restoration* consisting of substrate amendments and native submergent plantings over 7.58 acres within the channel and turning basin.
- *Woody debris restoration* consisting of anchoring trees, rootwads, trunks and large branches in areas that experience high velocities in approximately 10 locations within the channel.
- *Pebble and cobble restoration* consisting of filling existing wood cribs with pebble and cobble substrates over 0.25 acres within the channel.

This ecosystem restoration project will result in improved migration stopover habitat conditions for a variety of migratory bird species. The future without project condition would be the No Federal Action alternative, and would represent status quo continuation of the current impoverished habitat conditions.

FISH AND WILDLIFE RESOURCES AND RECOMMENDATIONS

During migration, birds are under physiological stress and mortality may be high, perhaps as high as 85 percent (Sillett and Holmes 2002). The natural areas of the Chicago region are a magnet for migratory landbirds, squeezed as they are by urban development, the lake to the east and treeless agricultural lands to the west and south. Recent studies have demonstrated that the river systems of Chicago are also important for migratory landbirds, including many migratory landbirds of conservation concern. The most recent version of the Partners in Flight Species Assessment database identifies no fewer than sixty-one migrant landbirds that are either of conservation concern, in steep decline, or in need of stewardship, that regularly migrate along the Chicago River. Waterfowl may also use Bubbly Creek during migration and throughout the winter.

Defining Conservation Issues for Bird Migration Stopover Sites in the Chicago Wilderness Region (Margaret A. Byrne, The Nature Conservancy, June 2008, Chicago Wilderness Trust

Grant Agreement TR0606), identified literature and used on-the-ground data and judgments from birders and bird experts throughout the region to determine characteristics of priority habitat. Riparian areas greater than 0.5 mile wide, greater than 0.5 mile long, and greater than 1 km from Lake Michigan, were identified as among the highest ranking habitats for migrant landbirds. The Chicago River fits this description. Rivers provide aquatic insects, which are a key source of sustenance for the millions of migrating birds that pass through the city each migration season.

We provide the following recommendations for consideration in designing riverbank habitat. We do not focus on restoration of the river's hydrology or aquatic habitat, although both of these clearly impact birds. Rather, our focus is on riverbank habitat, within the constraints of the altered physical and hydrologic environments of our urban and suburban streams.

Much of the shrub layer along the Chicago River is composed of non-native shrubs which, though non-native, provide key stopover habitat as resting and feeding stations. Including a healthy native shrub layer as a restoration goal will ensure that the river provides better habitat for migratory birds. The overall vision for good riverfront bird habitat is an area with a diverse suite of native shrubs, grasses, and wildflowers, with little bare ground and few invasive species. A diverse layer of herbaceous species also is important as a source of food and a diverse root structure for stabilizing soils.

Shrub species that fruit in the fall are important food sources for migrating birds. Springtime fruiting and flowering is less important, as insects are the primary food source during this time. Buckthorn and honeysuckle provide shelter but are poor insect sources. These invasive species should be removed and replaced with species that provide both food and shelter (see list in Table A).

Table A. Suggested Species for Riparian Migratory Bird Habitat Restoration

SHRUBS	
<i>Amelanchier arborea</i>	Juneberry
<i>Amorpha fruticosa</i>	Indigo bush
<i>Carpinus caroliniana</i>	Blue beech
<i>Carya ovata</i>	Shagbark hickory
<i>Cephalanthus occidentalis</i>	Buttonbush
<i>Cornus obliqua</i>	Blue-fruited dogwood
<i>Cornus stolonifera</i>	Red-osier Dogwood
<i>Corylus americana</i>	Hazelnut
<i>Crataegus mollis</i>	Downy Hawthorn
<i>Crataegus punctata</i>	Dotted Hawthorn
<i>Diervilla lonicera</i>	Dwarf honeysuckle
<i>Euonymus atropurpureus</i>	Wahoo
<i>Lindera benzoin</i>	Spicebush
<i>Lonicera prolifera</i>	Yellow honeysuckle

<i>Prunus americana</i>	American plum
<i>Prunus virginiana</i>	Chokecherry
<i>Ptelea trifoliata</i>	Wafer Ash
<i>Quercus bicolor</i>	Swamp white oak
<i>Rhus typhina</i>	Staghorn sumac
<i>Ribes americanum</i>	Wild black currant
<i>Ribes cynosbati</i>	Prickly gooseberry
<i>Rosa setigera</i>	Illinois rose
<i>Salix discolor</i>	Pussy willow
<i>Sambucus canadensis</i>	Elderberry
<i>Staphylea trifolia</i>	Bladdernut
<i>Viburnum acerifolium</i>	Maple-leaf viburnum
<i>Viburnum lentago</i>	Nannyberry
<i>Viburnum prunifolium</i>	Blackhaw viburnum
<i>Viburnum rafinesquianum</i>	Downy arrowwood
<i>Vitis riparia</i>	River grape
<i>Cornus stolonifera</i>	Red-osier dogwood
<i>Diervilla lonicera</i>	Dwarf honeysuckle
<i>Hamamelis virginiana</i>	Witch hazel
<i>Ostrya virginiana</i>	Hop hornbeam
<i>Physocarpus opulifolius</i>	Ninebark
<i>Malus ioensis</i>	Iowa Crab

FORBS	
<i>Aster novae-angliae</i>	New England aster
<i>Coreopsis tripteris</i>	Tall coreopsis
<i>Echinacea purpurea</i>	Broad-leaved purple coneflower
<i>Eupatorium perfoliatum</i>	Common boneset
<i>Heliopsis helianthoides</i>	False sunflower
<i>Monarda fistulosa</i>	Wild bergamot
<i>Penstemon digitalis</i>	Foxglove beard tongue
<i>Ratibida pinnata</i>	Yellow coneflower
<i>Rudbeckia hirta</i>	Black-eyed Susan
<i>Verbena hastata</i>	Blue vervain
<i>Zizia aurea</i>	Golden alexanders
<i>Carex pensylvanica</i>	Common oak sedge
<i>Campanula americana</i>	Tall bellflower
<i>Aquilegia canadensis</i>	Wild columbine
<i>Carex vulpinoidea</i>	Brown fox sedge
<i>Tradescantia ohiensis</i>	Common spiderwort
<i>Allium cernuum</i>	Nodding wild onion
<i>Acorus calamus</i>	Sweet flag

<i>Alisma subcordatum</i>	Common water plantain
<i>Iris virginica shrevei</i>	Blue flag
<i>Justicia americana</i>	Water willow
<i>Juncus effusus</i>	Common rush
<i>Pontederia cordata</i>	Pickrel weed
<i>Sagittaria latifolia</i>	Arrowhead
<i>Sparganium eurycarpum</i>	Common bur reed
<i>Helenium autumnale</i>	Sneezeweed
<i>Silphium perfoliatum</i>	Cup plant
<i>Eupatoriadelphus maculatus</i>	Spotted Joe Pye Weed
<i>Asclepias incarnata</i>	Swamp Milkweed
<i>Lobelia siphilitica</i>	Blue lobelia

GRASSES & SEDGES	
<i>Andropogon scoparius</i>	Little bluestem grass
<i>Bromus pubescens</i>	Woodland brome
<i>Bouteloua curtipendula</i>	Side-oats grama
<i>Elymus virginicus</i>	Virginia wild rye
<i>Elymus villosus</i>	Silky wild rye
<i>Elymus canadensis</i>	Canada wild rye
<i>Hystrix patula</i>	Bottlebrush grass
<i>Panicum virgatum</i>	Switch grass
<i>Scirpus acutus</i>	Hard-stemmed bulrush
<i>Scirpus fluviatilis</i>	River bulrush
<i>Scirpus pungens</i>	Chairmaker's rush
<i>Scirpus validus creber</i>	Soft-stemmed bulrush
<i>Calamagrosis canadensis</i>	Blue joint grass
<i>Carex scoparia</i>	Pointed broom sedge
<i>Carex tribuloides</i>	Awl-fruited sedge
<i>Carex aquatilis</i>	Water sedge
<i>Carex emoryi</i>	Riverbank sedge
<i>Carex lacustris</i>	Common lake sedge
<i>Carex hystericina</i>	Porcupine sedge
<i>Carex stricta</i>	Tussock sedge
<i>Carex stipata</i>	Common fox sedge
<i>Carex vulpinoides</i>	Fox sedge
<i>Glyceria striata</i>	Fowl manna grass
<i>Eleocharis palustris</i>	Marsh spike rush
<i>Leersia oryzoides</i>	Rice cut grass
<i>Scirpus atrovirens</i>	Dark green rush
<i>Scirpus cyperinus</i>	Wool grass
<i>Spartina pectinata</i>	Prairie cord grass

CONCLUSIONS AND RECOMMENDATIONS

The South Fork of the South Branch of the Chicago River (Bubbly Creek) Ecosystem Restoration offers a unique opportunity to restore and enhance an important fish and wildlife resource. In particular, the proposed riparian restoration, that includes planting with native shrubs, has the opportunity to provide significant benefit to migrating birds.

Therefore we recommend the preferred alternative (Alternative 3) which includes:

restoring substrates within 34.83 acres of both the channel and turning basin that restore habitat structure and growth medium for aquatic plants; restoring the riparian habitat along 9.53 acres of the channel; restoring submergent plant habitat within 7.58 acres of the channel and turning basin; restoring emergent plant habitat over 1.03 acres of the channel; restoring habitat complexity through the introduction of woody debris; and restoring 0.25 acres of coarse substrate habitat for lithophilic macroinvertebrates and spawning fishes.

We appreciate the opportunity to provide these comments and look forward to continued coordination on this project. If you have any questions, please contact me (847/381-2253, ext 11) or my staff contact Mr. Michael Redmer (847/381-2253 ext 16).

Sincerely,

A handwritten signature in black ink that reads "Louise Clemency". The signature is fluid and cursive, with a long horizontal stroke extending to the right.

Louise Clemency
Field Supervisor

REFERENCES

Sillett, T. S. and R. T. Holmes. 2002. Variation in survivorship of a migratory songbird throughout its annual cycle. *Journal Animal Ecology* 71:296-308.

From: [Cirton, Shawn](#)
To: [Potthoff, Johnna J CIV USARMY CELRC \(USA\)](#)
Cc: [Davis, Susanne J CIV USARMY CELRC \(USA\)](#); [Padilla, Michael C CIV CELRC CELRD \(USA\)](#); [Pimentel, Sylvia CIV USARMY CELRC \(USA\)](#); [Clemency, Louise](#); [Mike Redmer](#)
Subject: Re: [Non-DoD Source] Re: [EXTERNAL] Bubbly Creek - FWCA
Date: Tuesday, October 1, 2019 11:17:34 AM

Johnna,

Because the IDNR provided a letter stating they did not have any objections or comments, you can consider our letter Final.

Sincerely,

Shawn Cirton
Fish and Wildlife Biologist
U.S. Fish and Wildlife Service
Chicago Illinois Field Office
230 South Dearborn Street, Suite 2938
Chicago, IL 60604
(847)366-2345

On Tue, Oct 1, 2019 at 9:24 AM Potthoff, Johnna J CIV USARMY CELRC (USA) <Johnna.J.Potthoff@usace.army.mil> wrote:

Thank you for following up so soon! Appreciate it.

Yes, we did receive a comment during the from Illinois Department of Natural Resources. Please see attached.

Kind Regards,
Johnna

Johnna Potthoff
Planner
USACE, Chicago District
(312)846-5446

-----Original Message-----

From: Cirton, Shawn [mailto:shawn_cirton@fws.gov]
Sent: Tuesday, October 1, 2019 8:57 AM
To: Potthoff, Johnna J CIV USARMY CELRC (USA) <Johnna.J.Potthoff@usace.army.mil>
Cc: Davis, Susanne J CIV USARMY CELRC (USA) <Susanne.J.Davis@usace.army.mil>; Padilla, Michael C CIV CELRC CELRD (USA) <Michael.C.Padilla@usace.army.mil>; Pimentel, Sylvia CIV USARMY CELRC (USA) <Sylvia.Pimentel@usace.army.mil>
Subject: [Non-DoD Source] Re: [EXTERNAL] Bubbly Creek - FWCA

Johnna,

We usually don't finalize the FWCA report until we have coordinated with the State, or we know that they don't have any concerns/comments. Did the Corps receive any comments from IDNR for this project?

Shawn Cirton
Fish and Wildlife Biologist
U.S. Fish and Wildlife Service
Chicago Illinois Field Office
230 South Dearborn Street, Suite 2938
Chicago, IL 60604
(847)366-2345

On Mon, Sep 30, 2019 at 12:20 PM Potthoff, Johnna J CIV USARMY CELRC (USA)
<Johnna.J.Potthoff@usace.army.mil> wrote:

Shawn, Thank you for taking the time to discuss next steps for confirming whether additional coordination is required to finalize this letter or if this letter would constitute the final letter.

The project remains unchanged from the version that USFWS reviewed in 2014.

If you have any questions, please let me know. Thank you for coordinating with Michael Redmer.

Kind Regards,
Johnna

Johnna Potthoff
Planner
USACE, Chicago District
(312)846-5446



ILLINOIS ENVIRONMENTAL PROTECTION AGENCY

1021 NORTH GRAND AVENUE EAST, P.O. BOX 19276, SPRINGFIELD, ILLINOIS 62794-9276 • (217) 782-2829

PAT QUINN, GOVERNOR

LISA BONNETT, DIRECTOR

April 3, 2014

Colonel Frederic A. Drummond, Jr.
District Commander
Chicago District, U.S. Army Corps of Engineers
231 S. LaSalle Street, Suite 1500
Chicago, Illinois 60604

Re: Proposed Ecosystem Restoration Project at Bubbly Creek, South Branch of the Chicago River, Illinois

Dear Colonel Drummond:

Your staff has inquired as to whether Illinois Environmental Protection Agency (IEPA) could provide a "comfort letter" addressing the U.S. Army Corps of Engineers' (USACE) potential liability for an inadvertent release of hazardous wastes or hazardous waste constituents during the ecosystem restoration work the USACE is considering on the South Fork of the South Branch of the Chicago River (known as "Bubbly Creek"). This letter reflects IEPA's understanding of the USACE proposed restoration work in Bubbly Creek. Based on the proposed restoration plan, IEPA supports the proposed USACE ecosystem restoration project for Bubbly Creek.

Before the 1830s, Bubbly Creek was a wetland prairie slough that drained five square miles of a pristine aquatic and terrestrial habitat mosaic. Over a period of several decades, this ecosystem was severely altered by human activities. The creek was deepened and widened to facilitate drainage of waste from the adjacent meatpacking industry. Prior to the construction of wastewater treatment plants, untreated sewage was routed to the creek. In 1930, the Stickney Water Reclamation Plant (WRP) was constructed and dry weather flows that originally drained to Bubbly Creek were pumped via the Racine Avenue Pumping Station (RAPS) for treatment at Stickney WRP. Large rain events frequently filled the system to capacity forcing combined sewage overflow (CSO) to Bubbly Creek. As a result of subsequent improvements made to the Stickney WRP and the completion of the tunnel portion of the Tunnel and Reservoir Plan (TARP) in 2006, the frequency and volume of untreated CSO to Bubbly Creek has significantly decreased. With the TARP project scheduled to be fully operational with the McCook Reservoir brought online in 2017, it is predicted that future CSO discharge to Bubbly Creek will be further reduced by approximately 90%. As a result, water quality will significantly improve and conditions should allow for the sustainable restoration of Bubbly Creek.

Currently, Bubbly Creek no longer provides a diversity of habitats, nor is the existing habitat quality sufficient to support healthy plant and animal communities. Today, the decomposing

animal waste disposed in the creek continuously produce methane and hydrogen sulfide gas. These bubbles float and break at the water surface, for which the name “Bubbly Creek” is colloquially given.

IEPA, in addition to a number of other stakeholders, has been involved in the USACE planning process and supports the ecosystem restoration of Bubbly Creek as presented in the draft feasibility report. In addition to our agency, U.S. Fish & Wildlife Service, U.S. Environmental Protection Agency, Illinois Department of Natural Resources, the City of Chicago, Metropolitan Water Reclamation District of Greater Chicago, the Chicago Park District, the Chicago Audubon Society, Canal Corridor Association, Openlands Project, Friends of the Chicago River, the Field Museum of Natural History, the John G. Shedd Aquarium, and The Wetlands Initiative are all critical and involved stakeholders.

Based on the proposed plan, the project would restore a swampy backwater habitat by placing clean substrates within 34.83 acres of both the channel and turning basin area to restore habitat structure and growth medium for aquatic plants; restore riparian habitat along 9.53 acres of the channel; restore submergent plant habitat within 7.58 acres of the channel and turning basin; restore emergent plant habitat over 1.03 acres of the channel; restore habitat complexity through the introduction of woody debris; and restore 0.25 acres of coarse substrate habitat for lithophilic macroinvertebrates and spawning fishes. This plan provides for the restoration of all ecosystem components necessary for a sustainable swampy backwater system. Current hydrology mimics that usually found in a natural backwater swamp: stagnant and stable for most of the year with occasional flood pulses (caused by CSO events), which are driven by natural weather events. Once the McCook Reservoir is brought online in 2017, the frequency and volume of CSO events will be greatly reduced, further reducing the risk associated with low dissolved oxygen, better mimicking a natural floodplain hydrologic regime, and creating sustainable conditions for the restoration project. The restoration of Bubbly Creek will markedly increase the ecological integrity of the surrounding area.

We note that in formulating restoration plans, upland areas of known contamination were avoided and only measures that minimize sediment disturbance were selected for further evaluation. Specifically, with respect to substrate restoration, the restoration plans include broadcast spreading of sand topped with a mixture of rounded river rock and sandy silt on the channel bottom; dredging and removal of existing sediments was avoided. For construction in the wet, downstream turbidity control and/or turbidity monitoring would be included as appropriate. In addition, the substrate material would be placed in thin lifts instead of being dropped from a scow or bucket to minimize resuspension. With respect to riparian restoration, selected locations along the banks with known underground storage tanks were avoided, and the removal of invasive species would be performed by hand-cutting and herbiciding to avoid existing soil disturbances. Leaf compost would be used as soil amendments to further minimize the disturbance of existing soils.

Currently, IEPA has no enforcement actions concerning the Bubbly Creek aquatic ecosystem restoration project under the Resource Conservation and Recovery Act, the Comprehensive Environmental Response, Compensation, and Liability Act, or the Clean Water Act.

This comfort letter is provided solely for informational purposes and relates only to IEPA's intent to exercise its response and enforcement authorities at Bubbly Creek, based upon information presently known to IEPA. This letter, however, is not a "no action assurance" or "covenant not to sue" and is not intended to limit or affect IEPA's authority under CERCLA or any other law or to provide a release from liability.

I hope you find this letter responsive to your request. IEPA is committed to facilitating the restoration of urban waterways like Bubbly Creek and is pleased to have the opportunity to support the USACE in this effort. If you have any questions, please call Scott Twait at (217) 785-3945.

Sincerely,

A handwritten signature in dark ink, appearing to read "Marcia T. Willhite". The signature is fluid and cursive, with the first name "Marcia" being more prominent.

Marcia T. Willhite
Chief
Bureau of Water

Bcc: Director's Office
Sanjay Sofat
Scott Twait
Heather Nifong



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 5
77 WEST JACKSON BOULEVARD
CHICAGO, IL 60604-3590



Kevin J. Jerbi
Deputy District Counsel
Chicago District, U.S. Army Corps of Engineers
231 S. LaSalle Street, Suite 1500
Chicago, Illinois 60604

Re: Proposed Aquatic Ecosystem Restoration Project at Bubbly Creek, South Branch of the Chicago River, Illinois

Dear Mr. Jerbi:

Thank you for your letter of March 4, 2014, to Robert Kaplan regarding your proposed ecosystem restoration work in the City of Chicago. Your letter asks the U.S. Environmental Protection Agency to provide a letter of support for the work the U.S. Army Corps of Engineers is considering on the South Fork of the South Branch of the Chicago River (known as "Bubbly Creek"). You requested that our letter also address ongoing enforcement actions concerning the Bubbly Creek project and provide any comfort regarding the ecosystem restoration project giving rise to potential liability pursuant to the Comprehensive Environmental Response, Compensation, and Liability Act of 1980, as amended (CERCLA).

Once the USACE submits a formal plan to EPA, we will conduct a review of the Bubbly Creek, South Branch of the Chicago River, Illinois, Ecosystem Restoration Project pursuant to the National Environmental Policy Act. Technical comments on the project will be provided by EPA technical reviewers once they have evaluated the formal plan. Based on the preliminary information EPA has received about the project, it is important to note that this project furthers our common mission under the Urban Waters Federal Partnership of helping urban and metropolitan areas, particularly those that are underserved or economically distressed, connect with their waterways and work to improve them.

EPA previously performed an assessment to determine whether or not Bubbly Creek could qualify for an action under CERCLA's removal authorities, but determined that it did not meet the threshold for action. EPA also performed a Preliminary Hazardous Ranking System Assessment (HRS) consistent with 40 C.F.R. Part 300, Appendix A, to evaluate whether potential releases of uncontrolled hazardous substances from the

Bubbly Creek site might present sufficient risk to be placed on the National Priorities List of sites eligible for fund-financed remedial action. See 40 C.F.R. 300.425(b)(1). Bubbly Creek scored an 11.15 and a score of 28.5 is the minimum necessary to be eligible for remedial action.

The National Contingency Plan provides only two criteria other than an HRS score for a site being listed on the NPL: the site is designated by a state as its highest priority (each state is allowed only one and Illinois has already designated a site), or the Agency for Toxic Substances and Disease Registry has issued a health advisory which EPA determines presents a significant threat to public health and EPA anticipates it will be more cost effective to use its remedial authority than to use removal authority. Because of these factors, EPA expects no CERCLA enforcement, cost recovery, investigations, or cleanup actions related to Bubbly Creek.

In addition, EPA has no current enforcement actions concerning the Bubbly Creek aquatic ecosystem restoration project under either the Resource Conservation and Recovery Act or the Clean Water Act.

This letter is provided solely for informational purposes and relates only to EPA's intent to exercise its response and enforcement authorities at Bubbly Creek, based upon information presently known to EPA. This letter, however, is not a "no action assurance" and is not intended to limit or affect EPA's authority under CERCLA or any other law or to provide a release from liability.

I hope you find this letter responsive to your request. EPA is committed to facilitating restoration of Bubbly Creek and is pleased to have the opportunity to support the Corps' and City of Chicago's restoration efforts in the Chicago River. If you have any questions, please call Richard Nagle, Assistant Regional Counsel, at (312) 353-8222.

Sincerely,



for Bertram Frey
Deputy Regional Counsel

Friends of the Chicago River

411 South Wells Street, Suite 800 • Chicago, Illinois 60607
tel 312.939.0490 • fax 312.939.0931 • www.chicagoriver.org

February 24, 2015

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Eugene Fleming
Chicago District, US Army Corps of Engineers
231 S. LaSalle St., Suite 1500
Chicago, IL 60604

Dear Mr. Fleming:

On behalf of Friends of the Chicago River's board of directors, staff, and 5,000 members, volunteers, and on line advocates I am writing to support the South Fork of the South Branch of the Chicago River Aquatic Ecosystem Restoration Project. This project will greatly benefit a long neglected 1 ¼ mile reach of the Chicago River, colloquially known as Bubbly Creek, which was transformed from a prairie slough alive with wildlife to the dumping grounds of the Union Stockyards and other nearby industries. That dumping left a disastrous environmental legacy not to mention the fact that for decades the river system was considered a structural component of the sewer system and it still receives sewage on a much reduced yet regular basis.

Despite that history, water quality has greatly improved and today the Chicago River is recovering and alive with 70 species of fish, over 60 species of birds not including migrants, and other wildlife including beavers, turtles, muskrats, and the occasional river otter. The U.S. Army Corps of Engineers' South Fork of the South Branch of the Chicago River Aquatic Ecosystem Restoration Project will continue to improve the river for people and the wildlife that depend on it.

In fact, the time is ripe for restoration projects like this as improved water quality conditions have enabled fish communities to respond with the appearance of more desirable species and abundance of fish. Yet in many cases they are still too low in number or sporadic in occurrence. One of the main reasons for that is so much of the river and its banks have been engineered to suit industry, navigation, and other purposes. This fact has been well documented through the Illinois Pollution Control Board proceedings regarding Aquatic Life Rulemaking R2008-009 (See Illinois Pollution Control Board Public Comment 284, "Chicago Area Waterways System Habitat Evaluation and Improvement Study: Habitat Improvement Report," by LimnoTech, January 2010.). And lack of habitat is, according to the Illinois Department of Natural Resources, likely a factor in limiting fish productivity, including popular sport species.

Addressing the impacts of combined sewer overflows, sediments, and the loss of aquatic habitat by restoring habitat functions, creating in-stream structure, and planting native plants while increasing the potential for recreation, will create new habitat and provide opportunities for an underserved community to share in the benefits of this critical natural resource. The South Fork is a location where already we see people fishing regularly and high school, college, and club teams rowing. There is a new boathouse planned which will promote access to the community. There are also beavers, herons, kingfishers, hawks, and a host of other bird species including migratory songbirds. A project of this magnitude will have a profound effect on them all.

Additionally other restoration projects such as the Friends/IDNR channel catfish project in the North Shore Channel and Little Calumet River; Friends' restoration projects at LaBagh Woods, Somme Woods, Kickapoo Woods, Blue Star Memorial Woods, and Whistler Woods; the City of Chicago's riverwalk habitat project; state efforts to remove dams; restoration by the Chicago Park District and Forest Preserves of Cook County not to mention the Army Corps' project at Horner Park will complement this effort and will result in improved environments elsewhere. It is time to invest in Bubbly Creek as well.

Thank you for your consideration.

Sincerely,

A handwritten signature in cursive script, appearing to read "Margaret", written in black ink.

Margaret Frisbie
Executive Director

B3. Tribal Coordination

Tribal Distribution List

Kickapoo Tribe of Oklahoma
P.O. Box 70
McCloud, OK 74851
Attn: Mr. Estavio Elzondo
Email: eelzondo@okkt.net

Little Traverse Bay Bands of Odawa Indians
7500 Odawa Circle
Harbor Springs, MI 49740
Attn: Mr. Wesley Andrews
Email: wandrews@ltbbodawa-nsn.gov

Menominee Indian Tribe of Wisconsin
P.O. Box 910
Keshena, WI 54135
Attn: Mr. David Grignon
Email: dgrignon@mitw.org

Kickapoo of Kansas
1107 Goldfinch Rd.
Horton, KS 66439
Attn: Mr. Lester Randall, Chairman
Email: ljr3131@hotmail.com

Kickapoo Traditional Tribe of Texas
HC 1 Box 9700
Eagle Pass, TX 78852-9752
Attn: Ms. Jennie Hernandez, Tribal Administrator
Email: jennie.hernandez@kttribe.org

Miami Tribe of Oklahoma
P.O. Box 1326
Miami, OK 74355
Attn: Ms. Diana Hunter
Email: dhunter@miamination.com

Citizen Potawatomi Nation
1899 S. Gordon Cooper Dr.
Shawnee, OK 74801
Attn: Ms. Kelli Mosteller
Email: kelli.mosteller@potawatomi.org

Forest County Potawatomi Community of Wisconsin
P.O. Box 340
Crandon, WI 54520
Attn: Mr. Harold Frank
Email: gus.frank@fcpotawatomi-nsn.gov

Nottawaseppi Huron Band of the Potawatomi
2221 One-and-a-half Mile Rd.
Fulton, MI 49052
Attn: Mr. Homer Mandoka, Chairperson
Email: mandokaHA@charter.net

Hannahville Indian Community
N 14911 Hannahville B1 Road
Wilson, MI 49896
Attn: Kenneth Meshigaud, Chairperson
Email: tyderyien@hannahville.org

Prairie Band Potawatomi Nation
16280 Q Rd.
Mayetta, KS 66509
Attn: Mr. Thomas Wabmum
Email: thomaswabmum@pbpnation.org

Pokagon Band of Potawatomi Indians
P.O. Box 180
Dowagiac, MI 49047
Attn: Mr. Marcus Winchester, Tribal Historic Preservation Officer
Email: marcus.winchester@pokagonband-nsn.gov



DEPARTMENT OF THE ARMY
CHICAGO DISTRICT, U.S. ARMY CORPS OF ENGINEERS
231 SOUTH LA SALLE STREET, SUITE 1500
CHICAGO IL 60604

February 28, 2020

Planning Branch

Chairman Ned Daniels
Forest County Potawatomi Community
5416 Everybody's Road
P.O. Box 340
Crandon, WI 54520

Dear Chairman Daniels:

The U.S. Army Corps of Engineers (USACE), Chicago District's purpose of sending this letter is to provide notification under Section 106 of the National Historic Preservation Act. USACE is conducting a feasibility study to evaluate ecosystem restoration opportunities for the 1.25 mile South Fork of the South Branch of the Chicago River, commonly referred to as "Bubbly Creek." Bubbly Creek is located within the City of Chicago, Cook County, Illinois (Enclosure 1).

Bubbly Creek and its tributaries were once a braided prairie slough that slowly drained approximately five square miles of marshland which provided aquatic and terrestrial habitats for many native species. The slough was deepened and widened into a drainage channel to facilitate waste disposal from the neighboring Union Stockyards which opened in 1865.

In addition to the stockyards, the City of Chicago constructed a combined sewer system, which collected a mixture of sanitary waste and stormwater runoff (called combined sewage). Initially, the untreated combined sewage was routed directly to area waterways including Bubbly Creek. In 1930, the Stickney Water Reclamation Plant (WRP) was constructed and dry weather flows that originally drained to Bubbly Creek were pumped for treatment at Stickney WRP. However, large rain events periodically filled the sewer system forcing combined sewer overflows (CSOs) to be diverted to Bubbly Creek. Many improvements to the sewer system and to managing CSOs have reduced the volume and frequency of CSOs to Bubbly Creek, creating an opportunity for restoration.

The existing channel bottom has been highly impacted by urban activities and no longer provides a diversity of habitats sufficient to support healthy plant and animal communities. Discharges and disposal of animal waste from the former stockyards, industries and CSOs resulted in sediments that do not support a diverse assemblage of aquatic species.

When formulating plans to restore the Bubbly Creek ecosystem, USACE examined measures and implementation methods to minimize disturbance of the channel bottom and riparian areas. A range of decision-making criteria was used to evaluate five distinct plans. The feasibility report

describes a plan that consists of five (5) restoration measures as summarized below (Enclosure 2):

- *Substrate restoration* consisting of placing sand and an armor layer composed of rounded river rock and quarried stone over 30.7 acres within the channel and turning basin.
- *Riparian plant restoration* consisting of invasive species removal, soil amendments and native riparian plantings over 9.3 acres within the channel corridor.
- *Emergent plant restoration* consisting of substrate amendments and native emergent plantings over 1.0 acre within the channel.
- *Submergent plant restoration* consisting of substrate amendments and native submergent plantings over 3.3 acres within the channel and turning basin.
- *Woody debris restoration* consisting of anchoring trees, rootwads, trunks and large branches in approximately 10 locations within the channel to further enhance habitat diversity and provide sheltering areas for aquatic species.

Implementation methods that minimized disturbance of the project area were selected. Substrate restoration would include broadcast spreading of substrate in approximately four inch lifts over the channel bottom. Broadcast spreading is similar to placing material with a conveyor belt and minimizes disturbance along the channel bottom. For the riparian plantings, invasive plants would be removed from the bank areas. To minimize disturbance, the root mass of larger plants would be left intact and treated with herbicide to prevent resprouting. Loose debris in the planting areas would be removed and disposed and then topped with a six-inch layer of new soil mixed with wood chips. The soil/wood chip mixture would be worked into the top three inches of the existing soil. For the emergent and submergent plantings, organic leaf litter compost would be worked into the new substrate to further provide an adequate planting medium. Woody debris would be placed to minimize disturbance of the banks and channel bottom.

This plan would restore approximately 40 acres of channel and adjacent riparian areas into a backwater and swamp habitat. The project would increase the variety and number of aquatic insects, fish and bird species within Bubbly Creek. Restoring the substrate would improve the quality of in-water habitat for aquatic insects, the food source for fish, birds and certain mammals. Specifically, implementation of this plan would provide spawning habitat for Illinois State threatened and endangered wetland fishes such as the grass pickerel and banded killifish. The project would also create critical flyway habitat for globally-significant migratory waterfowl that is currently absent in many parts of the Chicago River system.

Project implementation was designed to minimize the disturbance of the existing study area. Given the history and extent of historic ground disturbance related to channelization, industrialization and other development in the area and types of restoration measures and selected implementation methods, it is unlikely that any intact archeological sites remain within the project area or will be discovered.

Please submit your comments regarding the plan by March 16, 2020 to the attention of the undersigned at Susanne.J.Davis@usace.army.mil. For more information, please refer to the 2015 Draft Integrated Feasibility Report and Environmental Assessment found at <https://www.lrc.usace.army.mil/Missions/Civil-Works-Projects/Bubbly-Creek/>. In the upcoming weeks, USACE will be sending a second letter with a link to a Final Integrated Feasibility Report and Environmental Assessment and Draft Chief's Report. Any questions regarding this

correspondence may be directed to Ms. Johnna Potthoff of my staff at (312) 846-5446 or Johnna.J.Potthoff@usace.army.mil.

Sincerely,

A handwritten signature in black ink, appearing to read "Susanne J. Davis".

Susanne J. Davis, P.E.
Chief, Planning Branch
USACE, Chicago District

CC: Raphael Wahwassuck
Enclosures (2)

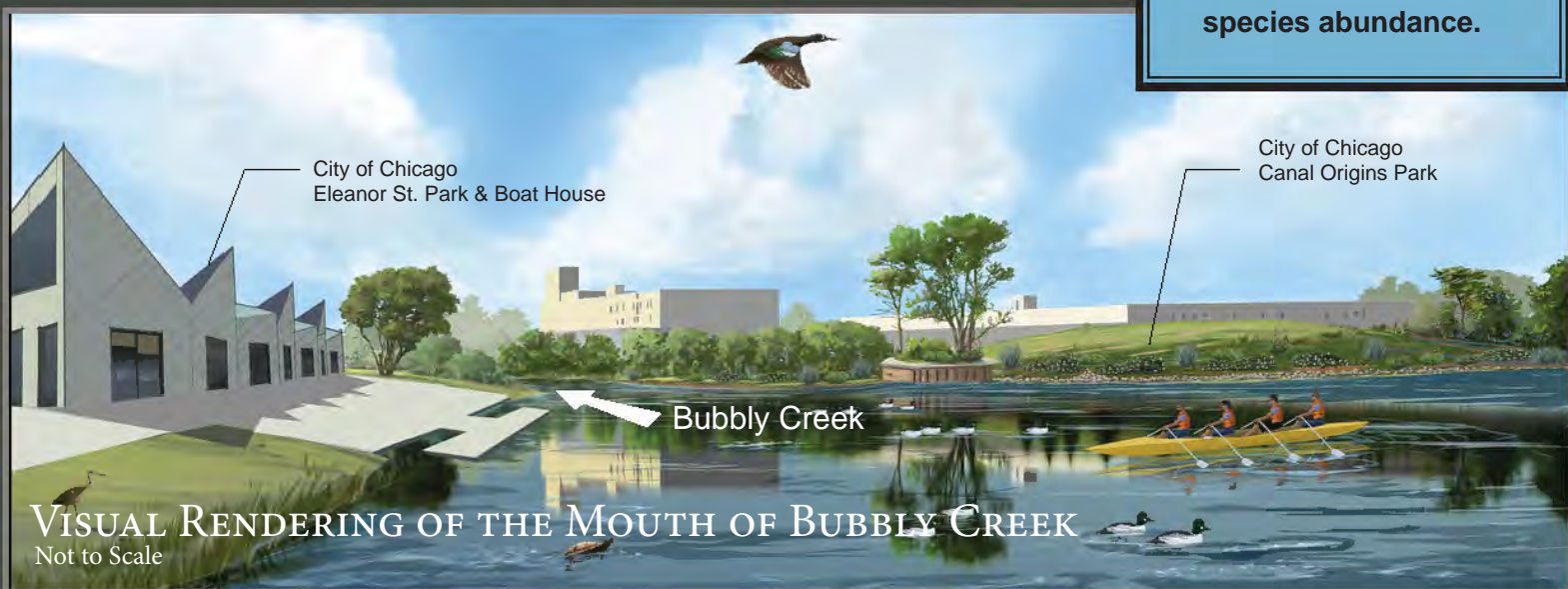


Enclosure 1. Bubbly Creek Project Area

Bubbly Creek Ecosystem Restoration Project



- Restores 40 acres of habitat within the Chicago River system, lessening the distance between degraded reaches of river.
- Chicago Audubon Society identified project as having great potential to provide critical migratory bird habitat/resting places.
- Increases in aquatic habitat would support an increase in fish species abundance.





Woody Debris



Emergent Plant Restoration



Riparian Plant Restoration

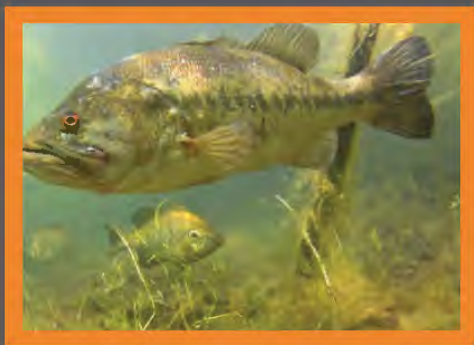


Substrate Restoration



Submergent Plant Restoration

40 ACRES OF RESTORED HABITAT FOR



Fish



Birds



From: [Potthoff, Johnna J CIV USARMY CELRC \(USA\)](#)
To: [Davis, Susanne J CIV USARMY CELRC \(USA\)](#); [Jerbi, Kevin J CIV USARMY CELRC \(USA\)](#); [Padilla, Michael C CIV CELRC CELRD \(USA\)](#)
Cc: [Herleth-King, Shawna S CIV USARMY CELRC \(USA\)](#)
Subject: TRIBE RESPONSE: U.S. Army Corps of Engineers - Bubbly Creek Ecological Restoration Project
Date: Friday, March 27, 2020 11:24:58 AM

-----Original Message-----

From: Reiner, Elizabeth A (Beth Adler) CIV USARMY CELRC (USA)
Sent: Friday, March 27, 2020 11:17 AM
To: Potthoff, Johnna J CIV USARMY CELRC (USA) <Johnna.J.Potthoff@usace.army.mil>
Cc: Abou-El-Seoud, Dena CIV USARMY CELRC (USA) <Dena.Abou-el-Seoud@usace.army.mil>
Subject: FW: U.S. Army Corps of Engineers - Bubbly Creek Ecological Restoration Project

I received this comment from the Forest County Potawatomi Community.
Beth Adler

-----Original Message-----

From: Michael LaRonge [<mailto:Michael.LaRonge@fcpotawatomi-nsn.gov>]
Sent: Thursday, March 26, 2020 6:45 PM
To: Reiner, Elizabeth A (Beth Adler) CIV USARMY CELRC (USA) <Elizabeth.A.Reiner@usace.army.mil>
Subject: [Non-DoD Source] RE: U.S. Army Corps of Engineers - Bubbly Creek Ecological Restoration Project

Re: USACE, 2015 Draft Integrated Feasibility Report and Environmental Assessment of the Bubbly Creek Habitat Restoration, City of Chicago, Cook County, Illinois.

Dear Ms. Adler,

Pursuant to consultation under Section 106 of the National Historic Preservation Act (1966 as amended), the Forest County Potawatomi Community, a Federally Recognized Native American Tribe, reserves the right to comment on Federal undertakings, as defined under the act.

This response is regarding the project mention above. The shoreline impact for riparian plantings encompasses a majority of the streambank along the corridor. These planting areas a mix of activities including invasive plant removal, soil amendmets, native replantings. Since proximity to waterways is an important factor for the presence of pre-contact American Indian habitation site the Tribal Historic Preservation Office requests the archaeological assessment of the APE.

Your interest in protecting cultural and historic properties is appreciated. If you have any questions or concerns, please contact me at the email or number listed below.

Respectfully,

Michael LaRonge
Tribal Historic Preservation Officer
Cultural Preservation Division
Forest County Potawatomi Community
8130 Mish ko Swen Drive
P.O. Box 340
Crandon, Wisconsin 54520
Phone: 715-478-7354
Email: Michael.LaRonge@FCPotawatomi-nsn.gov

-----Original Message-----

From: Reiner, Elizabeth A (Beth Adler) CIV USARMY CELRC (USA) <Elizabeth.A.Reiner@usace.army.mil>

Sent: Tuesday, March 24, 2020 4:00 PM

To: Michael LaRonge <Michael.LaRonge@fcpotawatomi-nsn.gov>

Cc: Davis, Susanne J CIV USARMY CELRC (USA) <Susanne.J.Davis@usace.army.mil>; Potthoff, Johnna J CIV USARMY CELRC (USA) <Johnna.J.Potthoff@usace.army.mil>; Reiner, Elizabeth A (Beth Adler) CIV USARMY CELRC (USA) <Elizabeth.A.Reiner@usace.army.mil>

Subject: U.S. Army Corps of Engineers - Bubbly Creek Ecological Restoration Project

Hi Michael,

Thank you for contacting me today regarding the Bubbly Creek Ecological Restoration Project in Chicago, IL. I am attaching a letter and a fact sheet regarding the project. If the tribe would like to make any comments you can provide them to me.

Just for your information, this letter and attachment were sent to you and the Tribal Chairman, Ned Daniels via USPS to P.O. Box 340, Crandon, WI. You should have received it at that address on March 2, 2020.

Respectfully,

Beth Adler

Planner

U.S. Army Corps of Engineers, Chicago District Elizabeth.A.Reiner@USACE.army.mil

Office: (312)846-5525

B4. Existing & Proposed Planting Lists

Existing Floristic Conditions: Includes Channel, Disturbed Banks and Canal Origins Park

Site:	Bubbly Creek – Existing Conditions
Locale:	Existing Conditions
Date:	July 17, 2013 1 hours
By:	CELRC-PM-PL-E
File:	c:\Moore\Word\Bubbly Creek\FQI's\5-FQI_BubblyCreek-OriginalConditions(Greg-17Jul13)
Notes:	July 17, 2013

FLORISTIC QUALITY DATA		Native	22	56.4%	Adventive	17	43.6%
22	NATIVE SPECIES	Tree	6	15.4%	Tree	2	5.1%
39	Total Species	Shrub	1	2.6%	Shrub	2	5.1%
2.5	NATIVE MEAN C	W-Vine	2	5.1%	W-Vine	0	0.0%
1.4	W/Adventives	H-Vine	1	2.6%	H-Vine	0	0.0%
11.7	NATIVE FQI	P-Forb	8	20.5%	P-Forb	6	15.4%
8.8	W/Adventives	B-Forb	1	2.6%	B-Forb	3	7.7%
0.3	NATIVE MEAN W	A-Forb	2	5.1%	A-Forb	3	7.7%
1.2	W/Adventives	P-Grass	0	0.0%	P-Grass	1	2.6%
AVG:	Faculative	A-Grass	0	0.0%	A-Grass	0	0.0%
		P-Sedge	1	2.6%	P-Sedge	0	0.0%
		A-Sedge	0	0.0%	A-Sedge	0	0.0%
		Cryptogam	0	0.0%			

ACRONYM	C	SCIENTIFIC NAME	W	WETNESS	PHYSIOGNOMY	COMMON NAME
ACENEG	0	<i>Acer negundo</i>	-2	FACW-	Nt Tree	BOX ELDER
ACERUB	7	<i>Acer rubrum</i>	0	FAC	Nt Tree	RED MAPLE
AILALT	0	<i>Ailanthus altissima</i>	5	UPL	Ad Tree	TREE OF HEAVEN
ALLPET	0	<i>Alliaria petiolata</i>	0	FAC	Ad B-Forb	GARLIC MUSTARD
AMARET	0	<i>Amaranthus retroflexus</i>	2	FACU+	Ad A-Forb	ROUGH AMARANTH
ARTVUL	0	<i>Artemisia vulgaris</i>	5	UPL	Ad P-Forb	MUGWORT
ASCSYR	0	<i>Asclepias syriaca</i>	5	UPL	Nt P-Forb	COMMON MILKWEED
CHEALB	0	<i>Chenopodium album</i>	1	FAC-	Ad A-Forb	LAMB'S QUARTERS
CIRARV	0	<i>Cirsium arvense</i>	5	UPL	Ad P-Forb	FIELD THISTLE
COMCOM	0	<i>Commelina communis</i>	0	FAC	Ad A-Forb	COMMON DAY FLOWER
CONARV	0	<i>Convolvulus arvensis</i>	5	UPL	Ad P-Forb	FIELD BINDWEED
CYPESC	0	<i>Cyperus esculentus</i>	-1	[FAC+]	Nt P-Sedge	FIELD NUT SEDGE
DIPLAC	0	<i>Dipsacus laciniatus</i>	5	UPL	Ad B-Forb	CUT-LEAVED TEASEL
EUPRUG	4	<i>Eupatorium rugosum</i>	5	UPL	Nt P-Forb	WHITE SNAKEROOT
EUPSEM	0	<i>Eupatorium serotinum</i>	-1	FAC+	Nt P-Forb	LATE BONESET
FRAPES	1	<i>Fraxinus pennsylvanica subintegerrima</i>	0	FAC	Nt Tree	GREEN ASH
GENAND	8	<i>Gentiana andrewsii</i>	-3	FACW	Nt P-Forb	BOTTLE GENTIAN
GLEHED	0	<i>Glechoma hederacea</i>	3	FACU	Ad P-Forb	CREeping CHARLIE
HELAUT	5	<i>Helenium autumnale</i>	-4	FACW+	Nt P-Forb	SNEEZEWEED
LEPCAM	0	<i>Lepidium campestre</i>	5	UPL	Ad B-Forb	FIELD CRESS
LOTCOR	0	<i>Lotus corniculatus</i>	1	FAC-	Ad P-Forb	BIRD'S FOOT TREFOIL
MORALB	0	<i>Morus alba</i>	0	FAC	Ad Tree	WHITE MULBERRY

ACRONYM	C	SCIENTIFIC NAME	W	WETNESS	PHYSIOGNOMY	COMMON NAME
OENBIE	0	<i>Oenothera biennis</i>	3	FACU	Nt B-Forb	COMMON EVENING PRIMROSE
PARQUI	2	<i>Parthenocissus quinquefolia</i>	1	FAC-	Nt W-Vine	VIRGINIA CREEPER
PHAARU	0	<i>Phalaris arundinacea</i>	-4	FACW+	Ad P-Grass	REED CANARY GRASS
POLCUS	0	<i>Polygonum cuspidatum</i>	3	FACU	Ad Shrub	JAPANESE KNOTWEED
POLHYR	2	<i>Polygonum hydropiper</i>	-3	FACW	Nt A-Forb	WATER PEPPER
POPDEL	2	<i>Populus deltoides</i>	-1	FAC+	Nt Tree	EASTERN COTTONWOOD
RHACAT	0	<i>Rhamnus cathartica</i>	3	FACU	Ad Shrub	COMMON BUCKTHORN
RHUTYP	1	<i>Rhus typhina</i>	5	UPL	Nt Tree	STAGHORN SUMAC
RUMCRI	0	<i>Rumex crispus</i>	-1	FAC+	Ad P-Forb	CURLY DOCK
SAMCAN	1	<i>Sambucus canadensis</i>	-2	FACW-	Nt Shrub	ELDERBERRY
SMILAS	5	<i>Smilax lasioneura</i>	5	[UPL]	Nt H-Vine	COMMON CARRION FLOWER
SOLAME	0	<i>Solanum americanum</i>	4	FACU-	Nt A-Forb	BLACK NIGHTSHADE
SOLGIG	4	<i>Solidago gigantea</i>	-3	FACW	Nt P-Forb	LATE GOLDENROD
SOLGRG	4	<i>Solidago graminifolia</i>	-2	FACW-	Nt P-Forb	COMMON GRASS-LEAVED GOLDENROD
ULMAME	3	<i>Ulmus americana</i>	-2	FACW-	Nt Tree	AMERICAN ELM
VERSTR	4	<i>Verbena stricta</i>	5	UPL	Nt P-Forb	HOARY VERVAIN
VITRIP	2	<i>Vitis riparia</i>	-2	FACW-	Nt W-Vine	RIVERBANK GRAPE

Potential Floristic Conditions and Proposed Planting List: Aquatic Bed, Submergent Zone

Site:	Bubbly Creek – Proposed Conditions
Locale:	Submergent Zones
Date:	June 26, 2013 1 hours
By:	CELRC-PM-PL-E
File:	c:\Moore\Word\Bubbly Creek\FQI's\FQI_BubblyCreek-SubmergentZones.inv
Notes:	June 26, 2013

FLORISTIC QUALITY DATA		Native	8	100.0%	Adventive	0	0.0%
6	NATIVE SPECIES	Tree	0	0.0%	Tree	0	0.0%
6	Total Species	Shrub	0	0.0%	Shrub	0	0.0%
5.8	NATIVE MEAN C	W-Vine	0	0.0%	W-Vine	0	0.0%
5.8	W/Adventives	H-Vine	0	0.0%	H-Vine	0	0.0%
14.3	NATIVE FQI	P-Forb	8	100.0%	P-Forb	0	0.0%
14.3	W/Adventives	B-Forb	0	0.0%	B-Forb	0	0.0%
-5.0	NATIVE MEAN W	A-Forb	0	0.0%	A-Forb	0	0.0%
-5.0	W/Adventives	P-Grass	0	0.0%	P-Grass	0	0.0%
AVG:	Obl. Wetland	A-Grass	0	0.0%	A-Grass	0	0.0%
		P-Sedge	0	0.0%	P-Sedge	0	0.0%
		A-Sedge	0	0.0%	A-Sedge	0	0.0%
		Cryptogam	0	0.0%			

ACRONYM	C	SCIENTIFIC NAME	W	WETNESS	PHYSIOGNOMY	COMMON NAME
POTFOL	5	<i>Potamogeton foliosus</i>	-5	OBL	Nt P-Forb	LEAFY PONDWEED
POTNAT	8	<i>Potamogeton natans</i>	-5	OBL	Nt P-Forb	COMMON PONDWEED
POTNOD	7	<i>Potamogeton nodosus</i>	-5	OBL	Nt P-Forb	AMERICAN PONDWEED
POTPEC	5	<i>Potamogeton pectinatus</i>	-5	OBL	Nt P-Forb	COMB PONDWEED
CERDEM	3	<i>Ceratophyllum demersum</i>	-5	OBL	Nt P-Forb	COONTAIL
VALAME	7	<i>Vallisneria americana</i>	-5	OBL	Nt P-Forb	EEL GRASS

Potential Floristic Conditions and Proposed Plantings List: Shrub Swamp, Emergent Zone

Site:	Bubbly Creek
Locale:	Emergent Zones – Shrub Swamp
Date:	July 26, 2013 1 hours
By:	CELRC-PM-PL-E
File:	c:\Moore\Word\Bubbly Creek\FQI's\1-FQI_BubbleCreek-EmergentZones(ShrubSwamp)UseThis.inv
Notes:	26 July 2013

FLORISTIC QUALITY DATA		Native	22	100.0%	Adventive	0	0.0%
21	NATIVE SPECIES	Tree	0	0.0%	Tree	0	0.0%
21	Total Species	Shrub	2	9.5%	Shrub	0	0.0%
5.4	NATIVE MEAN C	W-Vine	0	0.0%	W-Vine	0	0.0%
5.4	W/Adventives	H-Vine	0	0.0%	H-Vine	0	0.0%
24.7	NATIVE FQI	P-Forb	15	66.7%	P-Forb	0	0.0%
24.7	W/Adventives	B-Forb	0	0.0%	B-Forb	0	0.0%
-5.0	NATIVE MEAN W	A-Forb	0	0.0%	A-Forb	0	0.0%
-5.0	W/Adventives	P-Grass	1	4.8%	P-Grass	0	0.0%
AVG:	Obl. Wetland	A-Grass	0	0.0%	A-Grass	0	0.0%
		P-Sedge	4	19.0%	P-Sedge	0	0.0%
		A-Sedge	0	0.0%	A-Sedge	0	0.0%
		Cryptogam	0	0.0%			

ACRONYM	C	SCIENTIFIC NAME	W WETNESS	PHYSIOGNOMY	COMMON NAME
ACOCAL	7	<i>Acorus americanus</i>	-5 OBL	Nt P-Forb	AMERICAN SWEET FLAG
ALISUB	4	<i>Alisma subcordatum</i>	-5 OBL	Nt P-Forb	COMMON WATER PLANTAIN
ASCINC	4	<i>Asclepias incarnata</i>	-5 OBL	Nt P-Forb	SWAMP MILKWEED
CALCAN	3	<i>Calamagrostis canadensis</i>	-5 OBL	Nt P-Grass	BLUE JOINT GRASS
CALTPA	5	<i>Caltha palustris</i>	-5 OBL	Nt P-Forb	MARSH MARIGOLD
CEPOCC	5	<i>Cephalanthus occidentalis</i>	-5 OBL	Nt Shrub	BUTTONBUSH
DECVER	8	<i>Decodon verticillatus</i>	-5 OBL	Nt Shrub	SWAMP LOOSESTRIFE
EUPPER	4	<i>Eupatorium perfoliatum</i>	-4 FACW+	Nt P-Forb	COMMON BONESET
HIBLAE	6	<i>Hibiscus laevis</i>	-5 OBL	Nt P-Forb	HALBERD-LEAVED ROSE MALLOW
IRIVIS	5	<i>Iris virginica shrevei</i>	-5 OBL	Nt P-Forb	BLUE FLAG
MIMRIN	6	<i>Mimulus ringens</i>	-5 OBL	Nt P-Forb	MONKEY FLOWER
NUPADV	7	<i>Nuphar advena</i>	-5 OBL	Nt P-Forb	YELLOW POND LILY
NYMTUB	7	<i>Nymphaea tuberosa</i>	-5 OBL	Nt P-Forb	WHITE WATER LILY
POLAMS	4	<i>Polygonum amphibium stipulaceum</i>	-5 OBL	Nt P-Forb	WATER KNOTWEED
PONCOR	10	<i>Pontederia cordata</i>	-5 OBL	Nt P-Forb	PICKEREL WEED
SAGLAT	4	<i>Sagittaria latifolia</i>	-5 OBL	Nt P-Forb	COMMON ARROWHEAD
SCIATR	4	<i>Scirpus atrovirens</i>	-5 OBL	Nt P-Sedge	DARK GREEN RUSH
SCIFLU	4	<i>Scirpus fluvialis</i>	-5 OBL	Nt P-Sedge	RIVER BULRUSH
SCIPUN	5	<i>Scirpus pungens</i>	-5 OBL	Nt P-Sedge	CHAIRMAKER'S RUSH
SCIVAC	5	<i>Scirpus validus creber</i>	-5 OBL	Nt P-Sedge	GREAT BULRUSH
SPAEUR	6	<i>Sparganium eurycarpum</i>	-5 OBL	Nt P-Forb	COMMON BUR REED

Potential Floristic Conditions and Proposed Planting List: Transitional Bank, Riparian Zone

Site:	Bubbly Creek
Locale:	Riparian Zone (Slopes)
Date:	June 25, 2013 1 hours
By:	CELRC-PM-PL-E
File:	c:\Moore\Word\Bubbly Creek\FQI's\FQI_BubblyCreek-RiparianAreas(Slopes).inv
Notes:	June 25, 2013

FLORISTIC QUALITY DATA		Native	50	100.0%	Adventive	0	0.0%
50	NATIVE SPECIES	Tree	0	0.0%	Tree	0	0.0%
50	Total Species	Shrub	3	6.0%	Shrub	0	0.0%
5.9	NATIVE MEAN C	W-Vine	0	0.0%	W-Vine	0	0.0%
5.9	W/Adventives	H-Vine	0	0.0%	H-Vine	0	0.0%
42.0	NATIVE FQI	P-Forb	36	72.0%	P-Forb	0	0.0%
42.0	W/Adventives	B-Forb	0	0.0%	B-Forb	0	0.0%
2.9	NATIVE MEAN W	A-Forb	2	4.0%	A-Forb	0	0.0%
2.9	W/Adventives	P-Grass	9	18.0%	P-Grass	0	0.0%
AVG:	Fac. Upland	A-Grass	0	0.0%	A-Grass	0	0.0%
		P-Sedge	0	0.0%	P-Sedge	0	0.0%
		A-Sedge	0	0.0%	A-Sedge	0	0.0%
		Cryptogam	0	0.0%			

ACRONYM	C	SCIENTIFIC NAME	W	WETNESS	PHYSIOGNOMY	COMMON NAME
AMOCAN	9	<i>Amorpha canescens</i>	5	UPL	Nt Shrub	LEAD PLANT
ANDGER	5	<i>Andropogon gerardii</i>	1	FAC-	Nt P-Grass	BIG BLUESTEM GRASS
ANDSCO	5	<i>Andropogon scoparius</i>	4	FACU-	Nt P-Grass	LITTLE BLUESTEM GRASS
ANECAN	4	<i>Anemone canadensis</i>	-3	FACW	Nt P-Forb	MEADOW ANEMONE
ASCTUB	7	<i>Asclepias tuberosa</i>	5	UPL	Nt P-Forb	BUTTERFLY WEED
ASTAZU	8	<i>Aster azureus</i>	5	UPL	Nt P-Forb	SKY-BLUE ASTER
ASTERI	5	<i>Aster ericoides</i>	4	FACU-	Nt P-Forb	HEATH ASTER
ASTLAE	9	<i>Aster laevis</i>	5	UPL	Nt P-Forb	SMOOTH BLUE ASTER
ASTNOV	4	<i>Aster novae-angliae</i>	-3	FACW	Nt P-Forb	NEW ENGLAND ASTER
BAPLEA	8	<i>Baptisia leucantha</i>	2	FACU+	Nt P-Forb	WHITE WILD INDIGO
BOUCUR	8	<i>Bouteloua curtipendula</i>	5	UPL	Nt P-Grass	SIDE-OATS GRAMA
CASFAS	5	<i>Cassia fasciculata</i>	4	FACU-	Nt A-Forb	PARTRIDGE PEA
CEAAME	6	<i>Ceanothus americanus</i>	5	UPL	Nt Shrub	NEW JERSEY TEA
DESILE	6	<i>Desmodium illinoense</i>	5	UPL	Nt P-Forb	ILLINOIS TICK TREFOIL
ELYSAN	4	<i>Elymus canadensis</i>	1	FAC-	Nt P-Grass	CANADA WILD RYE
ERYUUC	9	<i>Eryngium yuccifolium</i>	-1	FAC+	Nt P-Forb	RATTLESNAKE MASTER
HELAUT	5	<i>Helenium autumnale</i>	-4	FACW+	Nt P-Forb	SNEEZEWEED
HELMOL	9	<i>Helianthus mollis</i>	5	UPL	Nt P-Forb	DOWNY SUNFLOWER
HELRIG	8	<i>Helianthus rigidus</i>	5	UPL	Nt P-Forb	PRAIRIE SUNFLOWER

ACRONYM	C	SCIENTIFIC NAME	W	WETNESS	PHYSIOGNOMY	COMMON NAME
HELHEL	5	<i>Heliopsis helianthoides</i>	5	UPL	Nt P-Forb	FALSE SUNFLOWER
HEURIC	8	<i>Heuchera richardsonii</i>	1	FAC-	Nt P-Forb	PRAIRIE ALUM ROOT
KOECRI	7	<i>Koeleria cristata</i>	5	UPL	Nt P-Grass	JUNE GRASS
KUHEUC	6	<i>Kuhnia eupatorioides corymbulosa</i>	5	UPL	Nt P-Forb	FALSE BONESET
LESCAP	4	<i>Lespedeza capitata</i>	3	FACU	Nt P-Forb	ROUND-HEADED BUSH CLOVER
LIAASP	6	<i>Liatris aspera</i>	5	UPL	Nt P-Forb	ROUGH BLAZING STAR
LIASPI	6	<i>Liatris spicata</i>	0	FAC	Nt P-Forb	MARSH BLAZING STAR
MONFIS	4	<i>Monarda fistulosa</i>	3	FACU	Nt P-Forb	WILD BERGAMOT
PANVIR	5	<i>Panicum virgatum</i>	-1	FAC+	Nt P-Grass	SWITCH GRASS
PARINT	8	<i>Parthenium integrifolium</i>	5	UPL	Nt P-Forb	WILD QUININE
PENDIG	4	<i>Penstemon digitalis</i>	1	FAC-	Nt P-Forb	FOXGLOVE BEARD TONGUE
PETPUR	9	<i>Petalostemum purpureum</i>	5	UPL	Nt P-Forb	PURPLE PRAIRIE CLOVER
POTARU	9	<i>Potentilla arguta</i>	4	FACU-	Nt P-Forb	PRAIRIE CINQUEFOIL
RATPIN	4	<i>Ratibida pinnata</i>	5	UPL	Nt P-Forb	YELLOW CONEFLOWER
ROSBLA	5	<i>Rosa blanda</i>	3	FACU	Nt Shrub	EARLY WILD ROSE
RUDHIR	1	<i>Rudbeckia hirta</i>	3	FACU	Nt P-Forb	BLACK-EYED SUSAN
RUDSUB	9	<i>Rudbeckia subtomentosa</i>	2	FACU+	Nt P-Forb	SWEET BLACK-EYED SUSAN
RUDTRI	3	<i>Rudbeckia triloba</i>	1	FAC-	Nt A-Forb	BROWN-EYED SUSAN
SILINI	5	<i>Silphium integrifolium</i>	5	UPL	Nt P-Forb	ROSIW WEED
SILLAC	5	<i>Silphium laciniatum</i>	5	UPL	Nt P-Forb	COMPASS PLANT
SILTER	5	<i>Silphium terebinthinaceum</i>	3	FACU	Nt P-Forb	PRAIRIE DOCK
SOLNEM	4	<i>Solidago nemoralis</i>	5	UPL	Nt P-Forb	OLD-FIELD GOLDENROD
SOLRIG	4	<i>Solidago rigida</i>	4	FACU-	Nt P-Forb	STIFF GOLDENROD
SOLSPE	7	<i>Solidago speciosa</i>	5	UPL	Nt P-Forb	SHOWY GOLDENROD
SORNUT	5	<i>Sorghastrum nutans</i>	2	FACU+	Nt P-Grass	INDIAN GRASS
SPOHET	10	<i>Sporobolus heterolepis</i>	4	FACU-	Nt P-Grass	PRAIRIE DROPSEED
STISPA	7	<i>Stipa spartea</i>	5	UPL	Nt P-Grass	PORCUPINE GRASS
THADAD	5	<i>Thalictrum dasycarpum</i>	-2	FACW-	Nt P-Forb	PURPLE MEADOW RUE
TRAOHI	2	<i>Tradescantia ohiensis</i>	2	FACU+	Nt P-Forb	COMMON SPIDERWORT
VERSTR	4	<i>Verbena stricta</i>	5	UPL	Nt P-Forb	HOARY VERVAIN
ZIZAUR	7	<i>Zizia aurea</i>	-1	FAC+	Nt P-Forb	GOLDEN ALEXANDERS

B5. Ecosystem Model

Memorandum

From: Scott Bell, PE
Doug Bradley, CFS
To: Jennifer Wasik (MWRDGC)
Date: July 16, 2014
Project: CAWS Habitat Improvement Study
CC:
SUBJECT: Documentation of Revised CAWS Habitat Index

Background

Between 2008 and 2010, LimnoTech conducted a study of aquatic habitat in the Chicago Area Waterway System (CAWS). The Chicago Area Waterway System Habitat Evaluation and Improvement Study (the Study) was conducted under contract to the Metropolitan Water Reclamation District of Greater Chicago (MWRDGC). One of the major objectives of the Study was to use a multi-metric habitat index to evaluate physical habitat conditions in the CAWS. After reviewing several available habitat indices for non-wadeable waters, LimnoTech concluded that none of the available indices reviewed were appropriate for use in the CAWS and that development of a new, system-specific habitat index was necessary. As a result, LimnoTech developed a CAWS-specific habitat index and described the index and the development methodology in detail in a report to MWRDGC (LimnoTech, 2010).

Subsequent to publication of that report, LimnoTech discovered that, in the process of attributing fish data to different fish metrics, some fish species had been categorized as both top carnivores and insectivores. This resulted in a double-counting of some fish species. Although the error was relatively minor (the fish species in question represented a relatively small fraction of overall fish counted during data collection), it was necessary to recalculate the statistical regression that formed the basis for the CAWS habitat index. This recalculation resulted in different regression coefficients, but did not alter the variables included in the habitat index, their relative importance or any of the conclusions of the study. The revised CAWS habitat index was reported to MWRDGC via e-mail at the time of revision, but no formal documentation was developed. To meet the current and future needs of MWRDGC and others interested in using the index, LimnoTech is pleased to provide this memo as formal documentation of the revised CAWS habitat index.

Basis for the CAWS Habitat Index

The objectives for a CAWS-specific habitat index were to:

- Provide a tool for characterization of reaches within the CAWS for purposes of comparing the range of habitat quality within the CAWS and for prioritizing locations for potential habitat improvement measures.
- Provide a tool for characterizing habitat changes in reaches over time.
- Represent the habitat attributes that are most important to aquatic biota in the CAWS, based on system-specific data.

Review of the technical literature on measures of aquatic habitat quality indicated that different approaches exist for developing habitat indices and a single, universally accepted standard method has not been identified. As described in the original study report (LimnoTech, 2010), LimnoTech chose to use multiple linear regression, after applying analytical procedures to reduce the original field of 241 potential habitat variables to a manageable number for the regression. The multiple linear regression of habitat variables and key fish metrics identified six (6) habitat variables that represent the most statistically important measured habitat variables to fish in the CAWS:

- Maximum depth of channel
- Off-channel bays
- Percent of vertical wall banks in reach
- Percent of riprap banks in reach
- Manmade structures in reach
- Percent macrophyte cover in reach

Together, these habitat variables explain 49% of the fish data variability in the CAWS. However, in developing the CAWS habitat index, LimnoTech recognized that there may be other important habitat variables that can be used to characterize physical habitat in the system. Using only variables from the regression analysis might omit variables that are important, but not as relatively important as those in the regression. For example, overhanging riparian vegetation was not included in the final habitat regression because it was highly correlated with vertical walled banks commonly found across the CAWS. This does not mean that it is not an important habitat variable. The bank pocket area variable was included in the regression analysis, but did not appear in the selected regression. This does not mean that these small bank refuges are unimportant to fish. In addition, substrate quality is known to be important to aquatic life, but no substrate variables were identified as statistically important in the regression analysis. LimnoTech decided that, rather than using only the variables identified in the regression, a better approach would be to use the regression analysis to inform the habitat index by pointing to important variables and by helping understand the relative importance of those variables. This allowed for the application of professional judgment, informed by knowledge of the system, the data, and aquatic ecology in general. As a result of subsequent analysis, the following habitat variables were included in the index:

- Maximum depth of channel
- Overhanging vegetation
- Banks pocket areas
- Large substrate in deep water
- Large substrate in shallow water
- Organic sludge

The methodology used to determine coefficients for these variables is described in the Study report (LimnoTech, 2010). Because the revised index is the focus of this memo, the original index will not be reprinted, to avoid possible confusion.

Revised CAWS Habitat Index

As stated above, subsequent to publication of the original CAWS habitat index, LimnoTech discovered that an error had been made in attributing fish data to fish metrics, resulting in a double-counting of some fish species. The error was relatively minor, but necessitated recalculation of the statistical regression that formed the basis for the CAWS habitat index. This recalculation resulted in a new regression equation and, by extension, a revised habitat index. The revised, raw (not data range normalized) CAWS habitat index equation is:

$$\begin{aligned} \text{CHI}(\text{raw}) = & 14.7 - 0.47 \times \text{MAX_DEP} + 1.4 \times \ln(\text{OFF_CH_BAY} + 1) - 2.51 \times \\ & \arcsin((\text{BNK_WALL})^{0.5}) - 1.42 \times (\ln(\text{BNK_RIPRAP} + 1)) - 6.54 \times \\ & \ln(\text{MAN_MADE_STRUC} + 1) + 0.178 \times \text{MCRPH_CHAN} + 0.1 \times \text{PER_COV_ALT} + 0.05 \\ & \times \text{BANK_POC_AREA} + 0.005 \times \text{BIG_S} + 0.005 \times \text{BIG_D} - 0.08 \times \text{CAWS_ORGS LG} \end{aligned}$$

Where:

CHI(raw) = raw CAWS Habitat Index

MAX_DEP = the maximum channel depth in reach (ft)

OFF_CH_BAY = the number of areas in the reach that function as off-channel bays, providing refuge for fish

BNK_WALL = the percentage of bank, by length, occupied by vertical walls (% by length, including both banks, expressed as a decimal)

BNK_RIPRAP = the percentage of riprap banks in reach, by length (% by length, including both banks, expressed as a percent)

MAN_MADE_STRUC = the number of manmade structures (dolphins, piers, docks) in the reach providing potential cover for fish

MCRPH_CHAN = the percentage macrophyte cover in the reach (% macrophyte coverage measured within representative 6-meter square field plots (minimum one per bank) within each station or reach)

PER_COV_ALT = the percent overhanging vegetation (% plan view area of reach covered by overhanging vegetation)

BANK_POC_AREA = the number of bank pocket areas (the number of concave, semi-sheltered portions of the bank with an overall face area (height x width) of at least one square meter, but less than five square meters, and a depth greater than a few inches)

BIG_S = large substrate (gravel, cobbles, boulders) in the shallow part of the channel (% of bed surface area coverage)

BIG_D = large substrate (gravel, cobbles, boulders) in the deep part of the channel (% of bed surface area coverage)

CAWS_ORGS LG = organic sludge in sediment (% of bed surface area coverage)

The equation above is referred to as the “raw” CAWS habitat index, since it yields a range of values from -22.38 to 22.29. To provide a more intuitive range of values, a “normalized” CAWS habitat index should be calculated using the following equation:

$$\text{CHI}(\text{norm}) = [(\text{CHI}(\text{raw}) + 22.38) / 44.67] \times 100$$



This equation will yield the index score on 100 point scale. These equations supersede the equations presented in the 2010 report (LimnoTech, 2010) and should be used for habitat evaluation in the CAWS.

References

LimnoTech. *Chicago Area Waterway System Habitat Evaluation and Improvement Study Habitat Evaluation Report*. January 4, 2010.



B6. Plates

BUBBLY CREEK, SOUTH BRANCH OF THE CHICAGO RIVER, ILLINOIS ECOSYSTEM RESTORATION FEASIBILITY STUDY

APPENDIX B - PLATES

March 2020

Executive Summary

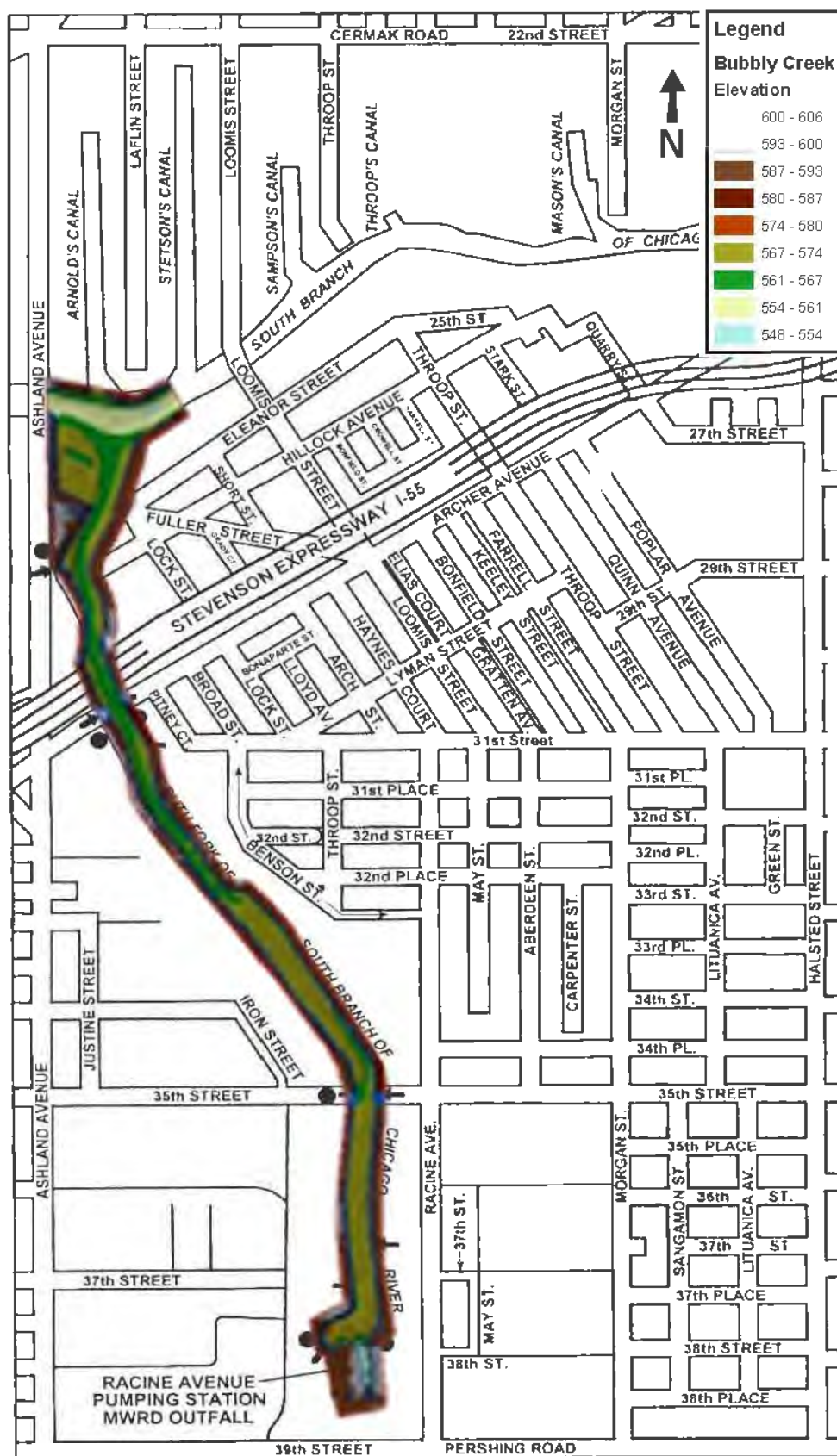
This section includes diagrams and figures including a figure of water quality monitoring and combined sewer overflow locations; a TIN overlay for Bubbly Creek; a flowchart that provides a conceptual plan evaluation process of baseline and future *without* project condition analysis; and a flowchart that provides a conceptual plan evaluation process of future *with* project condition analysis.

List of Plates

Plate A: TIN Overlay of Bubbly Creek Area

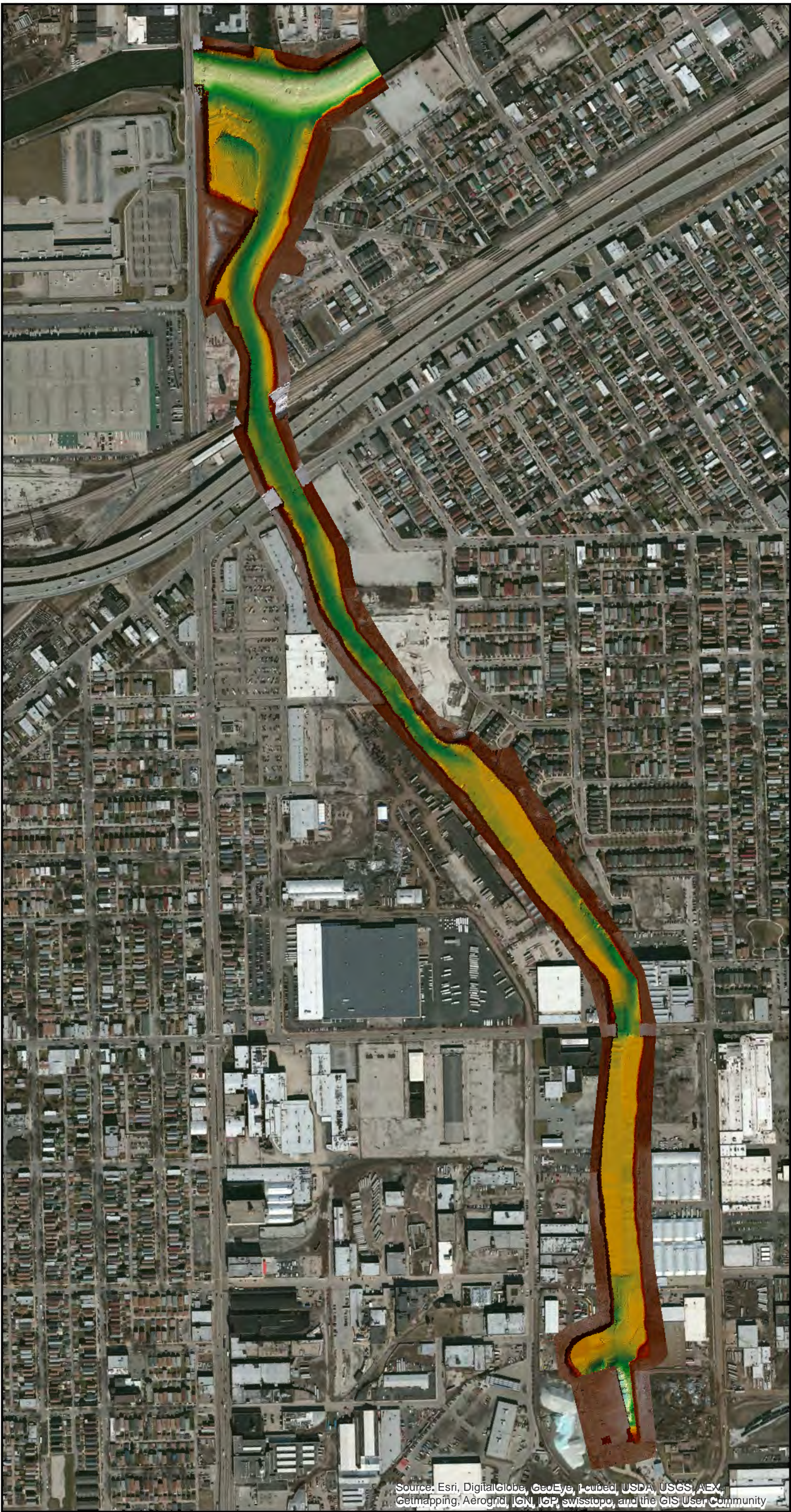
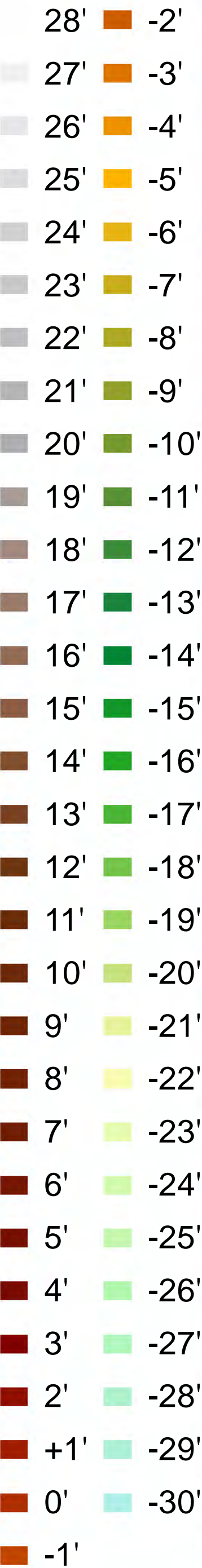
Plate B

TIN Overlay of Bubbly Creek Area



Bubbly Creek TIN

Legend



Normal water elevation = 577 ft NAVD88
Numbers with '-' are below the water's surface and '+' are above the water's surface.