Bonnie Brook Riverine & Riparian Restoration
Section 506 Great Lakes Fishery & Ecosystem Restoration

Appendix G - Correspondence, 404b1, FONSI

Chicago District, GL-ECO-CX

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

REPLY TO
ATTENTION OF

Planning Branch
Environmental Formulation Section

Kenneth Westlake, Chief
Environmental Review Branch
U.S. EPA ME-19J
77 West Jackson
Chicago, IL 60604

20 JAN 2012

Dear Mr. Westlake:

The Chicago District is preparing a National Environmental Policy Act (NEPA) document on impacts of an ecosystem restoration project in the City of Waukegan, Lake County, Illinois. As part of the scoping process the Chicago District would appreciate your comments. A map of the project area is enclosed.

The Bonnie Brook Project area is comprised of a section of the upper Waukegan River (also known locally as Yeoman Creek) located primarily in Bevier Park and within the Bonnie Brook Municipal Golf Course. This riparian restoration project will include the removal of non-native invasive plants, the restoration of fringe wetlands and native plant communities, and the construction of fish habitat. The project will also include a water retention area and fish bypasses for 6 weirs.

I am particularly interested in your comments regarding impacts to aquatic habitat and threatened or endangered species. Please comment within 30 days, marking your 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,

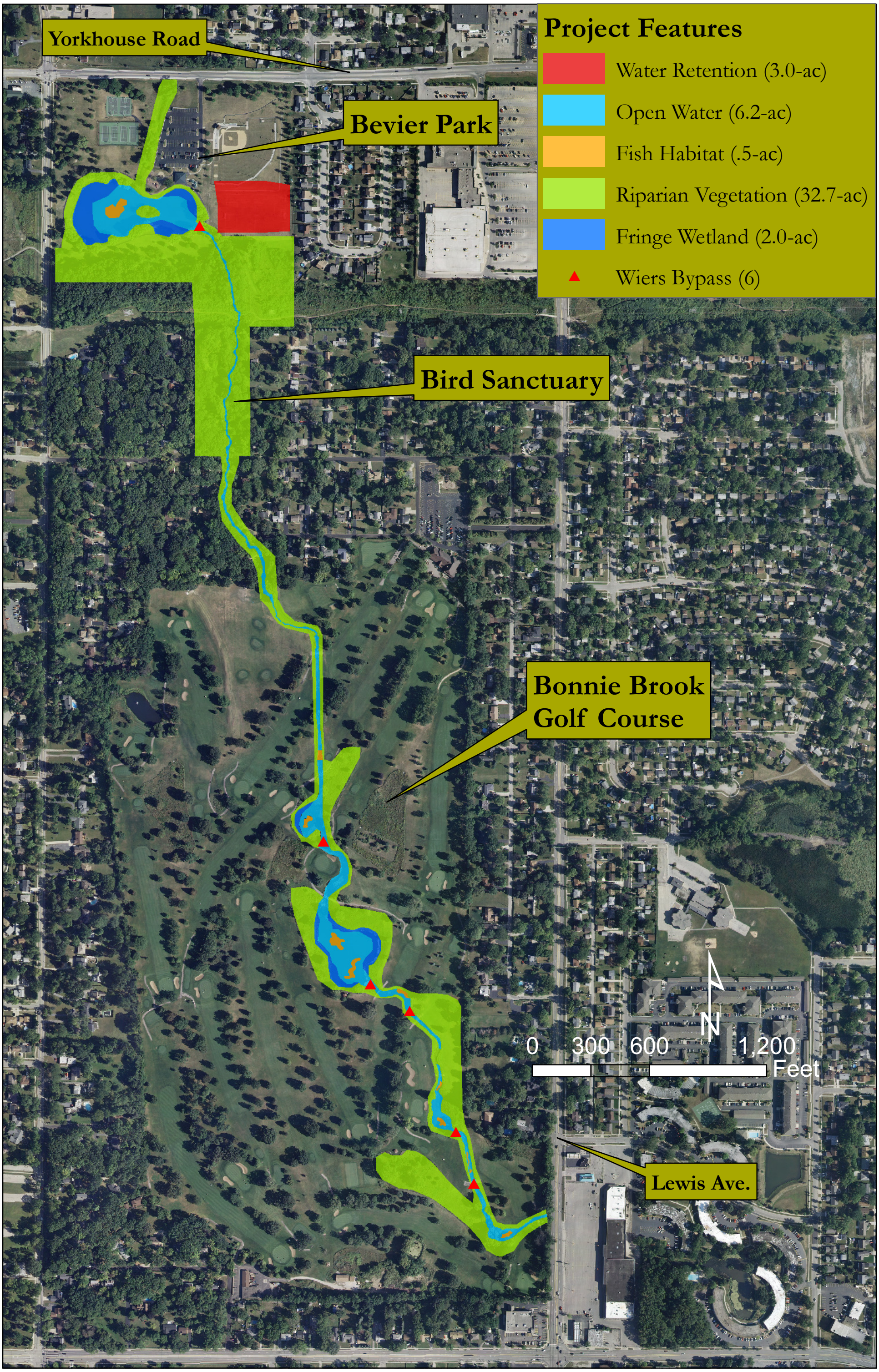
Susanne J. Davis, P. E.
Chief of Planning Branch

Enclosure

Bullock PM-PL-E 1/19/12
Veraldi PM-PL-E 1/19/12
Fleming PM-PL-E 1/20/12
Buczak PM-PM KAB
for Davis PM-PL 1/20/12

Bonnie Brook Potential Features

U.S. Army Corps of Engineers
Chicago District



FEDERAL AGENCIES

Kenneth Westlake, Chief
Environmental Review Branch
U.S. EPA ME-19J
77 West Jackson
Chicago, IL 60604

U.S. Fish and Wildlife Service
1250 South Grove Ave.
Suite 103
Barrington, IL 60010
Attn: Louise Clemency

STATE AGENCIES (Illinois)

Office of Resource Review
Illinois DNR
One Natural Resource Way
Springfield, IL 62702-1271
ATTN: Todd Rettig

Illinois DNR – Realty/Planning
One Natural Resource Way
Springfield, IL 62702-1271
ATTN: Pat Malone

Illinois DNR/OWR
160 N. LaSalle St,
Suite S-700
Chicago, IL 60601
ATTN: Dan Injerd

Illinois EPA
Water Pollution Division
1001 N. Grand
Springfield, IL 62794
ATTN: Bruce Yurdin

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

TRIBAL DISTRIBUTION LIST

Kickapoo Tribe of Oklahoma
P.O. Box 70
McCloud, OK 74851

Kickapoo Of Kansas
1107 Goldfinch Rd.
Horton, KS 66434

Kickapoo Tribe of Texas
Box HC 1 9700
Eagle Pass, TX 78853

Miami Nation in Indiana
P.O. Box 41
Peru, IN 46970

Miami Tribe of Oklahoma
P.O. Box 1326
Miami, OK 74355
ATTN: George Strack

Citizen Potawatomi Nation
1901 S. Gordon Cooper Dr.
Shawnee, OK 74801

Forest County Potawatomi Exec. Council
P. O. Box 340
Crandon, WI 54520

Nottawaseppi Huron Potawatomi Tribal Office
2221 One-and-a-half Mile Rd.
Fulton, MI 49052

Hannahville Potawatomi Comm., Council
N 14911 Hannahville Road
Wilson, MI 49896-9728

Prairie Band Potawatomi Tribal Council
16281 Q RD
Mayetta, KS 66509

Pokagon Band of Band of Potawatomi Indians
P.O. Box 180
Dowagiac, MI 49047

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

FEB 07 2012

REPLY TO THE ATTENTION OF:

E-19J

Peter Bullock
U.S. Army Corps of Engineers – Chicago District
111 North Canal Street
6th Floor
Chicago, Illinois 60606

RE: Scoping Comments – Preparation of an Environmental Assessment: Upper Waukegan River (aka Yeoman Creek) Riparian Restoration within Bevier Park and Bonnie Brook Municipal Golf Course, Waukegan, Lake County, Illinois

Dear Mr. Bullock:

The U.S. Environmental Protection Agency is in receipt of U.S. Army Corps of Engineers (USACE) correspondence dated January 20, 2012. We understand that USACE will be preparing an Environmental Assessment (EA) in accordance with the National Environmental Policy Act (NEPA) for a proposed riparian restoration project within Bevier Park and the Bonnie Brook Municipal Golf Course in Waukegan, Illinois, and has invited EPA to submit comments regarding the proposed action. Based on the limited information provided, EPA offers the following comments for consideration when preparing the EA for the proposed action.

The January 20, 2012, letter identifies that USACE proposes to remove non-native invasive plants, restore fringe wetlands and native plant communities, construct fish habitat, and include a "water retention area" and fish bypasses for six weir structures. It is not clear, from USACE's correspondence, why these activities are being proposed.

Purpose and Need / Project Alternatives

EPA recommends that the forthcoming EA identify and substantiate the underlying problems with the stream and riparian ecosystems in their current, baseline state, that USACE proposes to solve with the proposed action. A purpose and need statement for the proposed action should be clear and concise for reviewers of the EA. After underlying problems have been identified and substantiated, the alternatives identified to solve the underlying problems should then be identified and explained. The no-action alternative and all action alternatives that would satisfy the substantiated purpose and need should be fully assessed in the EA. The EA should identify any alternatives considered but dismissed from further consideration (if applicable), and should provide elimination criteria and clear explanations for their early elimination.

Waters / Wetlands / Aquatic Habitat

The figure provided for review, along with the project description, indicate that the project proposes work below the Ordinary High Water Mark (OHWM) of the upper Waukegan River and potentially to wetlands adjacent to the waterway. With regard to information currently provided, we recommend that the EA:

- Identify and label all study area resources, including wetlands, on EA aerial photographs and figures;
- Identify and discuss the baseline quality of the stream and adjacent wetlands;
- Identify and discuss the baseline quality of the existing fishery in the waterway;
- Identify the proposed work within/impacts to the onsite stream and wetlands;
- Present direct, indirect, and cumulative stream and wetland impacts information in a comparative format (such as a table), along with information on the existing in-stream weirs, their history, and their purpose;
- Discuss how the proposed project relates to water quality– this waterway had previously been on the list of impaired waterbodies under Section 303(d) of the Clean Water Act;
- Discuss how the proposed removal of non-native invasive plants (specify the species) will benefit the ecosystems;
- Discuss how USACE proposes to restore fringe wetlands and native plant communities, and how that will benefit the ecosystems;
- Discuss what is meant by "construction of fish habitat;"
- Discuss what is meant by including a "water retention area" and why it will be beneficial for water quality and/or the ecosystems, and whether or not the "water retention area" will outlet into onsite streams or wetlands;
- Discuss the purpose of the proposed "fish bypasses for 6 weirs" and how they may impact the existing fishery in the waterway.
- Include an evaluation, pursuant to Section 404(b)(1) of the Clean Water Act, for placing fill into Waters of the United States.

Threatened / Endangered Species

EPA recommends that, before plans are finalized, USACE coordinate with the U.S. Fish and Wildlife Service (USFWS) and the Illinois Department of Natural Resources (IDNR) to ensure any proposed work will not detrimentally affect any federally-endangered or threatened species or critical habitat or any state-endangered or threatened species or critical habitat.

Air Quality

The NEPA document should identify and discuss existing air quality at the project site and any air quality impacts to be expected with construction of the proposed project. The NEPA document should also document whether or not the project area is in non-attainment for any National Ambient Air Quality Standards (NAAQS).

Monitoring / Adaptive Management

EPA recommends that a Monitoring and Adaptive Management Plan be developed. The plan should include a description of proposed monitoring activities at the project location, include

quantifiable and measureable success criteria for the ecosystem restoration work, and should specify the length of the monitoring period(s).

Permits

EPA recommends that the EA include information on permits that will be required from the Illinois Environmental Protection Agency (IEPA), the IDNR, or from the county or municipality for work in waters or floodplains or for sediment and erosion control permits.

Agency Coordination

To document coordination efforts between agencies noted in this letter, including but not limited to the USFWS, IEPA, IDNR, and the State Historic Preservation Office (SHPO), EPA recommends that you provide all correspondence received from agencies as an appendix to the EA.

Thank you for the opportunity to review and comment upon this scoping document. In the future, the more information you provide to EPA at the scoping stage, the more substantive comments our agency can provide. We are available to discuss these comments with you in further detail if requested. We look forward to reviewing future NEPA documents prepared for this project. If you have any questions about this letter, please contact Ms. Liz Pelloso, PWS, of my staff at 312-886-7425 or via email at pelloso.elizabeth@epa.gov.

Sincerely,

Kenneth A. Westlake, Chief
NEPA Implementation Section
Office of Enforcement and Compliance Assurance

cc: Mike Murphy, USACE-Chicago District, Regulatory
Shawn Cirton, USFWS

Illinois Historic Preservation Agency

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

Lake County PLEASE REFER TO: IHPA LOG #010012512
Waukegan
Waukegan River (aka Yeoman Creek) between Yorkhouse Road and Lewis Avenue
Ecosystem restoration, Bonnie Brook Project

January 27, 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 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

Anne E. Haaker
Deputy State Historic
Preservation Officer

PRELIMINARY SECTION 404(B)(1) EVALUATION

Bonnie Brook Riverine and Riparian Restoration Section 506
Lake County, Illinois

April 2012

I. Project Description

a. Location

The Waukegan River watershed is located in Lake County, Illinois within the coastal zone of Lake Michigan. The watershed, for the most part, lays within the city limits of Waukegan, Illinois. The study area consists of a 1.4 mile reach in the head waters of the Waukegan River North Branch that ultimately flows into Lake Michigan. The stream begins in an open field of the Waukegan airport, flows through Bevier Park and Bonnie Brook golf course, and eventually drains into southern Lake Michigan. The project is generally bound by Yorkhouse Road to the north and Lewis Avenue to the southwest. Colloquial names for this stretch of stream are Yeoman Creek or Bonnie Brook. The site has been heavily impacted by anthropogenic activities due to increased urbanization of this northern suburb of Chicago; however, restoration of the site will aid in the preservation of riverine and riparian habitat.

b. General Description

The recommended plan includes the following measures:

- Restoration of wet prairie basins. Open water retention is probably the most common management practice for the control of stormwater runoff quantity and quality. The study area was investigated for opportunities to detain, retain or infiltrate stormwater within a more natural floodplain wetland setting. Hydraulic and hydrologic analysis was completed to optimize the size and configuration of these features. Optimization of these wetland parcels would be to provide subsurface hydrology, while receiving floodwaters from all events. This measure would include the planting of native wet prairie species that would provide habitat structure and forage for insects and birds.

- Restoration of Bonnie Brook stream channel. In general this measure includes the removal of stream channel impoundments, reversal of channel incision effects, and elimination of manmade structures that are causing stream hydraulic impairment and unnatural bank erosion. Tasks include the complete removal of 4 concrete weirs and the reduction in height of 2 concrete weirs. A barrel culvert may be modified if removal of concrete weirs causes the culvert to negatively impact the streams restored hydraulics. Additional tasks as part of this measure include the removal of all riprap and concrete chunks larger than 8" in diameter within the stream channel. Other foreign and manmade debris such as tires, tiles, concrete, plastic, glass, metal, bricks, and shingles would also be removed from the brook. Damage to stream channel morphology would also be addressed as part of this measure. To restore, small boulder and cobble riffles would be strategically placed within the stream channel to prevent

further unnatural bank erosion and channel incision. Overall, this measure will promote bank stability, substrate aggradations and sorting, natural sediment transport, critical hydraulic parameters for benthic invertebrates and fishes, and structural habitat for stream organisms.

- Restoration of riverine wetland habitat. This measure seeks to return the immediate riparian zone of Bonnie Brook to a wet meadow with interspersed marsh pockets. This area would be prepared first through grading to expose the former hydrology that was lost with the initial construction of the golf course. This area would then be heavily planted with live plugs of hydrophytic meadow and marsh species.

- Restoration of fringe wetland habitat. This measure seeks to restore primary habitat for Bevier Pond through reestablishing riparian, fringe, and submerged macrophytes. Riprap along the eastern side of the lake would be moved 25-feet off the shoreline to provide a submerged breakwater to be planted with emergent macrophytes, providing a more effective and naturalized shoreline protection. Root masses and/or whole trees removed during invasive species clearing would be placed within the pond to create habitat for avian and aquatic species. Fringe wetlands along the pond and surrounding riverine wetland habitat would be moderately planted with native floating pond weed (*Potamogeton natans*), yellow pond lily (*Nuphar advena*), and white water lily (*Nymphaea tuberose*).

- Approximately 18.3 acres of remnant savanna and open woodland would be restored. The majority of this measure includes selectively removing nonnative trees and shrubs. Woody species to be removed include common buckthorn (*Rhamnus cathartica*), white mulberry (*Morus alba*), exotic honeysuckle (*Lonicera* sp.), and common privet (*Ligustrum vulgare*). Once cleared of nonnative and invasive vegetation the area would be planted with native species of a local genotype. Spot herbiciding and prescribed burns would be conducted periodically to maintain nonnative/invasive species coverage of < 1% of the area.

- Restoration of 7.9 acres of prairie habitat that would provide a buffer zone to restored meadow and marsh communities, provide minor groundwater recharge, provide absorption and transpiration of rainfall and most importantly migratory bird habitat. Tasks include the removal of aggressive native and invasive species and planting of a diverse mix of native prairie species. Spot herbiciding and prescribed burns would be conducted periodically to maintain a nonnative/invasive species coverage of < 1% of the area.

c. Authority and Purpose

This study is authorized under Section 506 of the Water Resources Development Act (WRDA) of 2000. Authority is given to plan, design, and construct projects to restore the fishery, ecosystem, and beneficial uses of the Great Lakes. Projects are justified by ecosystem benefits alone, while considering affects to public health, safety, economic benefits, recreational or any combination of these.

The Waukegan Park District (WPD) has requested that the Chicago District, US Army Corps of Engineers (USACE) initiate a Feasibility Study (FS) under the Section 506 Great Lakes Fishery and Ecosystem Restoration authority to ascertain the feasibility of restoration features to restore the ecological integrity of the stream and associated riparian zone of the Waukegan River North Branch. This FS has evaluated the feasibility and environmental effects of manipulating flood waters in an effort to restore riverine hydraulics and habitat. The scope of this study addresses the issues of altered floodplain hydrology and stream hydraulics, native riparian plant community diversity and structure, invasive species, connectivity, wetland communities, and native species richness. This FS assessed and identified problems and opportunities, identified and evaluated measures, and recommends and designs the most cost effective feasible solution to the ecological problems that would be associated with disturbance of the site.

Prior to European settlement, the Lake Michigan coastal zone, in which the Waukegan River North Branch flows, was one of the most diverse ecosystems in Lake County, Illinois. The unique landforms of ravine, bluff, and dune were left behind by glacial movements. First logging, and then the onset of agriculture removed much of the unique land cover and also altered geomorphology and topography. Also, extensive watershed development has caused increased surface runoff, which in turn causes unnatural erosion and impairs habitat. The Bevier Park and Bonnie Brook Golf Course are the primary focus for this study, which also includes several small parcels in order to achieve habitat connectivity.

d. Proposed Fill Material

1) General Characteristics

Fill material consists of: The cobble riffles, limestone flags, and boulders will be free from the presence of environmental contaminants and will contain less than 5% fines.

2) Quantity

To create instream habitat within the Bonnie Brook, approximately 300-cubic yards of glacial boulder, cobble and limestone flags would be required (each cobble riffle contains approximately 15-cubic yards of stone).

3) Source

Glacial stone material for the construction of the habitat will be clean, inert materials obtained from a commercial supplier.

e. Proposed Discharge Site

1) Location

The proposed fill activity would occur in the reach of Bonnie Brook extending from Bevier Park downstream to the Bonnie Brook Golf Course. The project study area location is within Zion, sections 5 and 8, Township 45 North, Range 12 East in Lake County, Illinois (USGS 1993).

2) Size, Type, and Habitat

The affected habitat would be 1.4 miles of first and second order stream.

3) Timing and Duration of Discharge

Construction of project features within Bonnie Brook may begin as early as Fall 2012 and may end as early as Fall 2017. Placement of the boulder/cobble riffles are expected to require 2 - 4 weeks construction duration.

f. Placement Method

Boulders and cobble will likely be brought to the project site by truck and will be placed into position using light weight machinery and finely adjusted by hand or with handheld tools.

II. Factual Determinations

a. Physical Substrate Determinations

1) Substrate Elevation and Slope

Landforms and topography were created by the erosional and depositional processes of glacial activity and flowing streams within the study area. Topography ranges from 699 to 667-feet above sea level. Bonnie Brook falls 32-feet from the point of entry into Bevier Park to its exit of the golf course at Lewis Avenue. The corresponding slope is .004-ft/ft (0.4%), or 23-feet per mile. This slope characterizes Bonnie Brook overall as a low gradient stream; however, there are segments of fall conducive for riffle and pool formation.

2) Sediment Type

The underlying regional bedrock is Silurian-age dolomite, most likely of the Niagaran Series (Willman 1971). This rock resulted from marine deposition when all of northeastern Illinois and much of the neighboring Great Lakes region was the floor of a tropical sea from about 440 to 410 million years ago. Exposure of this formation in the study area is absent.

Natural substrates for a stream of this nature include silts, muck, detritus, sand, gravel and small cobbles. Natural soils within the study area have been destroyed or altered for the most part. Areas of natural soils are currently present in undeveloped areas where soils have not been overly disturbed. The two dominant soils types restoration would occur upon are Oaukee and Ashkum.

Ashkum – These soils are typically found on nearly level and gently sloping Wisconsinan Age till plains in stream valleys and along upland swales. The soils formed in colluvial sediments consisting of eroded sediments from till and loess or shallow lacustrine materials less than 40-inches thick. Slope gradients commonly are less than 1% and range from 0 to 3%. These soils are poorly drained and the potential for surface runoff is low. Permeability is moderately slow.

Ozaukee – These soils are typically found on ground moraines. In this study area, slopes range from 2 to 6%. These soils formed in thin loess and in the underlying loamy dense till. These soils are moderate to well drained and the potential for surface runoff ranges from medium to very high. Permeability is slow.

3) Material Movement

There would be no significant movement of fill material after construction. Placement of boulder/cobble riffles will encourage sand/sediment accretion upstream of the riffles and direct water flow to the center of the restored stream channel. Stone selected for establishment of boulder/cobble riffles are sized to withstand flood stage hydraulics.

4) Physical Effects on Benthos

Existing benthos directly beneath where the boulder/cobble riffles would be placed would temporarily be covered, but the area is so small it would have insignificant effects on the macroinvertebrate population. Effects to the benthic invertebrate assemblage would be positive through the enhancement of riverine hydraulics, which would greatly increase species richness. These minor impacts are necessary to create improved conditions for benthic invertebrates. There are no significant adverse effects expected.

5) Other Effects

There would be no other significant substrate impacts.

6) Actions Taken to Minimize Impacts

No 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

The proposed fill activity would have no significant negative impacts to water chemistry, water clarity, color, odor, taste, dissolved gas levels, nutrients, or increased eutrophication as a result. Water quality of this area is generally poor and it was much better prior to anthropogenic development. Improvements in water clarity, color, dissolved oxygen levels, and levels of eutrophication may be noted in the long-term after placement of the boulder/cobble riffles.

2) Current Patterns and Circulation

The natural systems of the area have long disappeared (Euro-Americans altered the landscape beginning in the 1800s, to create more land suitable for agriculture). Surface and groundwater flow is no longer dominated by groundwater discharge, but by stormwater management systems.

The hydrology of the area has been stressed due to urbanization. Relatively small modifications, such as those proposed in this project, will have significant benefits to water resources, ecosystems and the human community. Proposed construction of boulder/cobble riffles will improve the hydrology to have significant benefits to the human environment, water resources (quality and quantity) and ecosystem sustainability.

3) Normal Water Level Fluctuations

The proposed fill activity would have no significant impact on normal water level fluctuations upstream or downstream of Bonnie Brook.

4) Salinity Gradients

Not applicable to freshwater environments.

5) Actions Taken to Minimize Impacts

No special measures would be taken to minimize the temporary impacts on water circulation and fluctuation associated with the proposed activity.

c. Suspended Particulate/Turbidity Determinations

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

There would be minor increases in suspended particulates and turbidity levels in the immediate area of the proposed fill activity during construction, most likely of which are less than any given summer thunderstorm.

2) Effects on Chemical and Physical Properties of Water Column

There would be negligible effects to light penetration or dissolved oxygen levels during construction. There are no known toxic metals, organics, or pathogens in the construction area. The placement of clean fill will not introduce metal, organic, or pathogens to the project area. Aesthetics would be improved in the long-term after instream habitat heterogeneity is established in the channel.

3) Effects on Biota

Only beneficial effects on aquatic biota are expected to result from the restoration activities and minor increase in turbidity or suspended particulates associated with the proposed fill and sediment movement activity is most likely less than that of summer thunderstorm event.

4) Actions Taken to Minimize Impacts

Erosion control fabric and cover cropping the newly graded banks may be taken to minimize the temporary turbidity impacts associated with the proposed activity.

d. Contaminant Determination

The proposed fill material would not introduce any new contaminants into Bonnie Brook, or release any significant amounts of existing contaminants (if any are present) through bottom disturbance in the construction zone.

e. Aquatic Ecosystem and Organism Determinations

1) Effects on Plankton

Only beneficial affects to planktonic organisms are expected.

2) Effects on Benthos

Refer to section II.a.4)

3) Effects on Nekton

Fish eggs and larvae would not be smothered by the proposed fill activity since the anticipated construction activities will occur during non-reproductive or rearing seasons. Fish and other free-swimming organisms will tend to avoid the construction area; the construction area will be used again by those organisms soon after construction ends and overall species richness is expected to increase.

4) Effects on Aquatic Food Web

Beneficial improvements to the food web are expected, due to expected increases in macroinvertebrate richness and abundance.

5) Effects on Aquatic Sites

a) Sanctuaries and Refuges – none present; no significant impact
b) Wetlands – increase in hydrophytic vegetation
c) Mud Flats – none present; no significant impact
d) Vegetated Shallows – increase in submergent aquatic macrophytes
e) Coral Reefs – not applicable to freshwater environments
f) Riffle and Pool Complexes – would increase along the stream channel

6) Threatened and Endangered Species

Based on the nature and objectives of this project, to restore habitat, stream hydraulics and native vegetation communities indicative of Bonnie Brook, the US Army Corps of Engineers and the U.S. Fish and Wildlife Service has coordinated that the proposed ecological restoration project would not *affect* any Federal or State listed species. There is great potential for restoring habitat for listed species that may or might use if present, or are attracted to the areas after restoration activities are complete. A 5-year monitoring plan that was developed in

conjunction with the Feasibility Study and Integrated Environmental Assessment would take note if this were the case.

7) Other Wildlife

No other wildlife would be significantly impacted by the proposed activity.

8) Actions Taken to Minimize Impacts

General construction scheduling and sequencing would minimize impacts to reproducing macroinvertebrates and fishes.

f. Proposed Discharge Site Determinations

1) Mixing Zone Determination

A mixing zone is not applicable to this project as no violation of applicable water quality standards 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 Bonnie Brook and would comply with all applicable water quality standards.

3) Potential Effects on Human use Characteristics

No significant impacts to municipal and private water supplies, water-related recreation, aesthetics, recreational, or commercial fisheries are expected. No known National Parks, National and Historic Monuments, National Seashores, Wilderness Areas, Research Sites, and Similar Preserves are present. There are no significant adverse effects expected.

g. Cumulative Effects on the Aquatic Ecosystem

The proposed project would restore aquatic habitat structure and function. There are no significant adverse effects expected.

h. Secondary Effects on the Aquatic Ecosystem

No significant impacts on the Bonnie Brook ecosystem are expected as a result of the proposed activity.

III. Findings of Compliance with the 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 proposed 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.

Date _____ _____

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

Finding of No Significant Impact

Bonnie Brook Riverine & Riparian Ecosystem Restoration (GLFER 506)

Background

The Waukegan River watershed is located in Lake County, Illinois within the coastal zone of Lake Michigan. The watershed, for the most part, lays within the city limits of Waukegan, Illinois. The study area consists of a 1.4 mile reach in the head waters of the Waukegan River North Branch that ultimately flows into Lake Michigan. The stream begins in an open field of the Waukegan airport, flows through Bevier Park and Bonnie Brook golf course, and eventually drains into southern Lake Michigan. The project is generally bound by Yorkhouse Road to the north and Lewis Avenue to the southwest. Colloquial names for this stretch of stream are Yeoman Creek or Bonnie Brook.

Historically, the study area portion of the Bonnie Brook subwatershed was dominated by several naturally occurring communities including wetlands, forests, woodlands, savannas and prairies. By the late 1800s, much of these communities, particularly prairies, savannas and wetlands, were converted to agricultural, urban or industrial use. Subsequently, there was a significant loss of biodiversity and adverse physical effects such as an increase in flooding events and a decrease in water quality. Furthermore, the remnant parcels of natural community types are under pressure from continued human activities. Human induced disturbances to the remaining natural areas include fire suppression, altered hydrology and hydraulics, physical alterations, introduction of invasive species and habitat fragmentation. While plant communities can be described in terms of dominant organisms, the quality and function of the habitat they provide is directly related to the level at which natural processes function. These include groundwater discharge, fire, or fluvial erosion and deposition. Habitat quality displays a negative relationship to the amount of human disturbance, in which the disturbance affects natural areas in direct or indirect ways.

The colonization and subsequent development of the land surrounding the Bonnie Brook has altered riparian function and structure and fluvial processes that maintain a dynamic yet diverse stream system. The stream is impacted by the numerous manmade obstructions including weirs, culverts and foreign debris. Compounding the affects of the manmade obstructions is the dominance of the riparian zone by buckthorn (*Rhamnus cathartica*) thickets and other invasive plant species. Thusly, the primary problems responsible for the streams' continued degradation are an increased volume of water discharged into the stream, the flashiness of this high volume, manmade infrastructure/debris and a vegetatively degraded riparian zone. All of these problems combined can have a devastating effect on the ability for a riverine system to provide critical habitat for native species.

Brief Summary of the EA & Preferred Plan

The environmental assessment identified the direct, indirect and cumulative effects of a set of measures that were part of three (3) alternatives plans including the No Action plan. The National Ecosystem Restoration (NER) preferred plan is Alternative 3.

The NER Preferred Plan

The National Ecosystem Restoration (NER) Plan is the recommended plan, which is Alternative 3. This alternative consists of six (measures): Stream Channel (D), Wet Prairie Basins (WB), Riverine Wetlands (RW), Fringe Wetlands (FR), Open Woodland (OW) and Prairie (P). All of these community

types would have been represented within the pre-settlement coastal zone Waukegan River watershed. The implementation of these features is generally described as follows and according to the measures descriptions in Section 3.1. A detailed set of plans & specifications would be created if approval of this Detailed Project Report (DPR) is granted.

Site Preparation – The first task would be to install safety fencing and other safety features in order to keep the public out of the site during heavy construction. Staging and disposal areas and access roads would be demarcated. All surficial infrastructure and ornaments would need to be removed and discarded or stockpiled and saved depending on the WPD's needs and desires.

Stream Morphology Repair – This work would consist of minor bank grading, weir/obstruction removal, large foreign debris removal and cobble riffle placement. The stretch of the Bonnie Brook that flows from Bevier Park through the private parcels would mainly be treated with foreign debris removal and placement of a few cobble riffles. The majority of the stream through this section is function and would see great benefits from the invasive species removal portion of the plan. The stream reach that traverses through the golf course would remove the barrel culvert bridge, 4 weirs and reduce the height and ramp two weirs. Along with bank recontouring and the placement of cobble riffles, the reestablishment of native vegetation within the stream corridor will greatly improve in stream hydraulics and habitat.

Wetland Contouring – Once the site's areas are ready for grading, the wetland geomorphic features would be created. This grading would establish the hydrologic regime according to the particular native plant community the contours delimit within the floodplain of the Bonnie Brook. All unsightly material that is not suitable for growing plants on or habitat would be disposed of properly.

Invasive Species Removal – All areas demarcated on Plate 07 would be treated for invasive species via physical removal and/or herbicide application. This task would be accomplished over the 5-years of construction to ensure maximum eradication potential.

Bevier Pond – It is expected for emergent vegetation to creep down into some of the pond slops to further stabilize the pond banks. Limestone flags would be used as mudpuppy habitat in areas along the bank where stabilization enforcement may be need. The mouth of the pond, where it connects to the stream, would have a cascading riffle for visual aesthetics during low flows and fish passage during high flows.

Native Plant Community Establishment – The finishing touch of the project would be to establish native plant communities over the 5-year construction period. These communities would be located according to the new hydrogeomorphology, soils and substrates established by the previous steps. The complete planting list may be viewed on Plate 08. Once in the 2nd year of restoration and the initial seeding complete, the site may be open back to the public since very few activities would be occurring, which are considered low impact. These include spot herbicide application and planting native plugs, which are very similar to home gardening activities.

Recreational Features – Components of recreation are not proposed under this project. The WPD has coordinated their recreational feature plans for Bevier Park, the Bird Sanctuary and the Bonnie Brook Golf Course. None of these features would affect expected ecosystem benefits and provide open space opportunity for these types of natural features to be incorporated into public lands.

Discussion of Environmental Compliance

The preferred plan presented is in compliance with appropriate statutes and executive orders including the Endangered Species Act of 1973 as amended; the Fish and Wildlife Coordination Act of 1934 as amended; Executive Order 12898 (Environmental Justice); Executive Order 11990 (Protection of Wetlands); Executive Order 11988 (Floodplain Management); and the Rivers and Harbors Act of 1899, as amended; the Clean Air Act of 1970 as amended and the National Environmental Policy Act of 1969 as amended.

Environmental Justice EO12898

To the greatest extent practicable and permitted by law, and consistent with the principles set forth in the report on the National Performance Review, each Federal agency shall make achieving environmental justice part of its mission by identifying and addressing, as appropriate, disproportionately high and adverse human health or environmental effects of its programs, policies, and activities on minority populations and low-income populations in the United States and its territories and possessions, the District of Columbia, the Commonwealth of Puerto Rico, and the Commonwealth of the Mariana Islands. The preferred plan would not have any adverse effects to any human being.

Clean Air Act

Due to the small scale, short duration and relatively unpolluted nature of the restoration project, it is assumed that the project is below the de minimis level of PM 100 tons per year. As a reference, other USACE projects that are much grander in scale and earthwork have GCA well below the PM 100 tons per year.

Section 401 & 404 of the Clean Water Act

A Section 404 analysis was completed for the preferred plan and is located in Appendix G. Features addressed by the 404 includes the fill materials for cobble and gravel riffles. No adverse effects were determined.

Section 401 Water Quality Certification for the cobble riffles would be applied for once a set of 100% construction drawings is complete. There is no reason to expect this permit would not be received since the materials being used are inert and clean, and the feature itself would improve water quality via aquatic macrophyte and bacterial functions.

USFWS Coordination

Coordination with the USFWS commenced with a project scoping letter dated 20 January 2012. This environmental assessment identified the preferred ecological restoration plan was determined to have "no effects" on Federally endangered species or their habitats. It is anticipated that upon review of this document, the USFWS would preclude the need for further consultation on the Bonnie Brook Section 506 restoration project as required under Section 7 of the Endangered Species Act of 1973, as amended. The intent of the Preferred Plan is to aid in the overall restoration of the Lake Michigan coastal ecosystem, inclusive of threatened and endangered species. Coordination is documented in Appendix G.

State of Illinois Historic Preservation Act

Pursuant to Section 106 of the National Historic Preservation Act (16 U.S.C. § 4701) and 36 C.F.R. Part 800, the staff of the Illinois State Historic Preservation Officer (Illinois SHPO) has conducted an analysis of the materials dated 20 January 2012. Based upon the documentation available, the staff of the Illinois SHPO has not identified any historic buildings, structures, districts, or objects listed in or eligible for inclusion in the National Register of Historic Places within the probable area of potential effects. Thusly, the SHPO has no objection to the work being performed under the Preferred Plan. All areas affected by ground disturbance under this project have already been previously disturbed; thusly an archaeological survey is unnecessary. This is in congruence with the SHPO letter dated 27 January 2012, which is located in Appendix G.

Public Interest

An Environmental Assessment (EA) was prepared for the project and sent to Federal, State and local agencies along with the general public for review. A 30-day Public Review period was held from __ April 2012 to __ May 2012 for the Environmental Assessment. Significant comments from the Federal, State or local agencies or the public were not received.

Conclusion

In accordance with the National Environmental Policy Act of 1969 and Section 122 of the River and Harbor and Flood Control Act of 1970, the U.S. Army Corps of Engineers (USACE) has assessed the environmental impacts associated with this project. The purpose of this EA is to evaluate the impacts that would be associated with the restoration of the southern 40-acres of the Northerly Island. The proposed project has been determined to be in full compliance with the appropriate statutes, executive orders and USACE regulations.

The assessment process indicates that this project would not cause significant effects on the quality of the human environment. The assessment process indicates that this project would have only beneficial impacts upon the ecological, biological, social, cultural, or physical resources of this area, and would provide environmental benefits to the Lake Michigan coastal zone and the Great Lakes as a whole. The findings indicate that that the proposed action is not a major Federal action significantly affecting the quality of the human environment. Therefore, I have determined that an Environmental Impact Statement (EIS) is not required.

Frederic A. Drummond Jr. Date: _____
Colonel, U.S. Army
District Commander