

PERMANENT BARRIER I

LOCKPORT POOL

CHICAGO SANITARY AND SHIP CANAL

WILL COUNTY, ILLINOIS

ENVIRONMENTAL ASSESSMENT

JUNE 2013



**US Army Corps
of Engineers
Chicago District**

PERMANENT BARRIER I
LOCKPORT POOL
CHICAGO SANITARY AND SHIP CANAL
WILL COUNTY, ILLINOIS

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I. INTRODUCTION

This Environmental Assessment (EA) documents the need for and impacts associated with a proposed upgrade of the Aquatic Nuisance Species Dispersal Barriers Project (Project) in the Chicago Sanitary and Ship Canal (CSSC). The U.S. Army Corps of Engineers (Corps), Chicago District, operates the Project, which is comprised of three electrical barriers: Demonstration Barrier, Barrier IIA and Barrier IIB. The barriers consist of steel electrodes mounted across the bed of the canal and on-land power generation and distribution equipment. The on-land equipment sends a pulsing DC current through the electrodes, creating an electric field in the water that repels and stuns fish. The Demonstration Barrier has been operational since 2002 and was rehabilitated in 2008 but it was designed and built with materials that were not intended for long-term use due to its demonstration status. This EA evaluates the potential impacts of replacing the Demonstration Barrier with Permanent Barrier I. Permanent Barrier I would incorporate the lessons learned from the operation of the Demonstration Barrier, Barrier IIA, and Barrier IIB in its design to improve durability and effectiveness. It would be capable of generating higher voltages and work in concert with Barriers IIA and IIB to prevent the movements of fish upstream of the barrier Project area.

II. PURPOSE AND NEED FOR THE ACTION

The purpose of the Project is to deter the inter-basin establishment of Asian carp and other fish species from the Mississippi River to the Great Lakes Basin via the CSSC. The CSSC poses the greatest risk for the transfer of aquatic nuisance species between basins. The mechanical components that make up the dispersal barrier Project need to be maintained to properly function. Periodic shut downs of the individual barriers are required in order to perform necessary tasks such as replacement of parts, tune-ups, cleaning, etc., therefore multiple barriers are needed so at least one barrier can be active when other barriers are offline for maintenance. When the Downstream Barriers IIA and IIB are turned off, fish can swim up to the Demonstration Barrier. Unfortunately as part of the Corps' testing of the Demonstration Barrier, it was discovered that small Asian carp are capable of swimming through an electrical field of similar strength to the Demonstration Barrier (Holliman 2010). Permanent Barrier I is needed to address this deficiency and to improve the overall reliability of the Project.

III. AUTHORITY

The National Invasive Species Act of 1990, as amended in 1996, authorized the Corps to examine potential methods to create an aquatic nuisance species barrier in the CSSC and construct the Demonstration Barrier. The Corps received additional authorization in Section 3061(b) of the Water Resources Development Act of 2007 to construct and operate Barriers IIA and IIB, and to "upgrade and make permanent Barrier I" (i.e. replace Demonstration Barrier).

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Water Resources Development Act 2007 Sec. 3061. Chicago Sanitary and Ship Canal Dispersal Barriers Project, Illinois

(a) TREATMENT AS SINGLE PROJECT.—The Chicago Sanitary and Ship Canal Dispersal Barrier Project (in this section referred to as “Barrier I”), as in existence on the date of enactment of this Act and constructed as a demonstration project under section 1202(i)(3) of the Nonindigenous Aquatic Nuisance Prevention and Control Act of 1990 (16 U.S.C. 4722(i)(3)), and the project relating to the Chicago Sanitary and Ship Canal Dispersal Barrier, authorized by section 345 of the District of Columbia Appropriations Act, 2005 (Public Law 108–335; 118 Stat. 1352) (in this section referred to as “Barrier II”) shall be considered to constitute a single project.

(b) AUTHORIZATION.—

(1) IN GENERAL.—The Secretary, at Federal expense, shall—

- (A) upgrade and make permanent Barrier I;
- (B) construct Barrier II, notwithstanding the project cooperation agreement with the State of Illinois dated June 14, 2005;
- (C) operate and maintain Barrier I and Barrier II as a system to optimize effectiveness;
- (D) conduct, in consultation with appropriate Federal, State, local, and nongovernmental entities, a study of a range of options and technologies for reducing impacts of hazards that may reduce the efficacy of the Barriers; and
- (E) provide to each State a credit in an amount equal to the amount of funds contributed by the State toward Barrier II.

The Aquatic Nuisance Species Dispersal Barriers Project is 100 percent Federal and there are no non-Federal sponsors.

IV. PROJECT DESCRIPTION

This Project is located near Romeoville, IL in the CSSC and it is comprised of three electrical barriers: Demonstration Barrier, Barrier IIA and Barrier IIB. At the Project site, the Sanitary Ship Canal is about 150 yards west of the I&M Canal and about 500 yards east of the Des Plaines River and Isle a la Cache. The Project site lies in the N ½ of the SW ¼ of section 35, T37N R10E; as shown on the Romeoville 7.5’ USGS topographic quadrangle map. The Project area extends about 350 yards north of E 135th Street (Romeo Road) (figure EA-1).

The dispersal barriers Project, including the proposed Permanent Barrier I Project, poses certain safety risks to commercial vessels, recreational boaters, and people on or in portions of the CSSC in the vicinity of the barriers. Consequently, the Coast Guard's Ninth District Commander has concluded that a Safety Zone and Regulated Navigation Area are necessary to mitigate such risks. The Corps and its contractors would coordinate with the Coast Guard to ensure that safety standards are maintained during construction and throughout the Project life.

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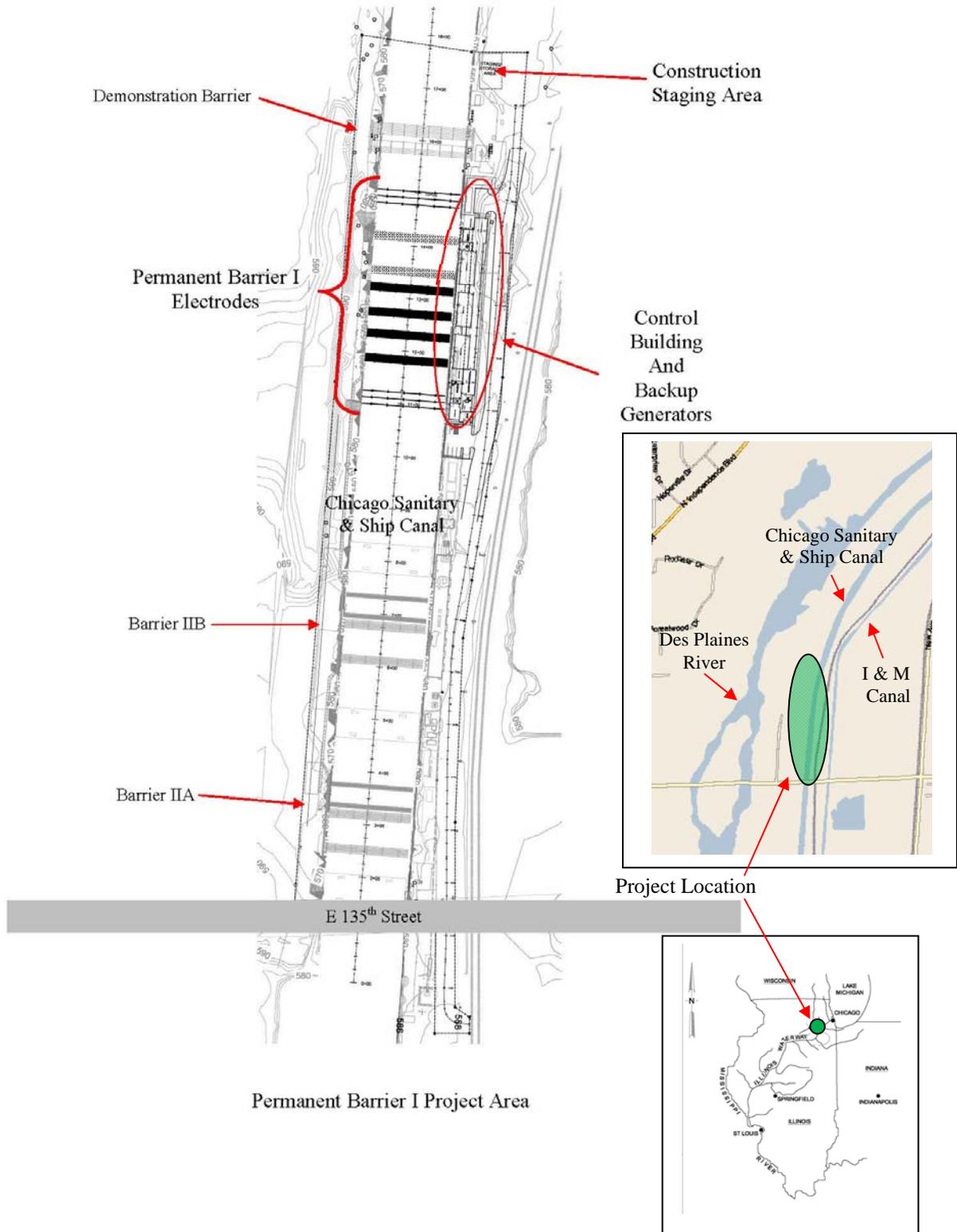


Figure EA-1. Project Map

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The barriers are formed of steel electrodes that are secured to the bottom of the CSSC. The electrodes are connected through boreholes to components inside a control building (figure EA-2). The electrodes and parasitic structures will both consist of 5" x 5" steel bars resting on 2'-8" high concrete blocks on the canal bottom. Each of the 6 sets of active electrodes and 2 parasitic arrays will span the width of the canal and will stand no more than 3'-1" off of the canal bottom. The parasitic arrays are situated on either side of the electrode field and are designed to reduce the amount of electricity that extends upstream and downstream beyond the area designed for fish deterrence. The low pool water depth in this location is 19'-0", leaving 15'-11" of clearance once the equipment is installed. The in-water structures will not be an impediment to navigation because the required navigation depth at the barriers is 9' from low pool, as required. Seven boreholes will be drilled diagonally through the surrounding bedrock to connect the electrodes to structures on the canal edge. Equipment in the control building generates a direct current pulse through the electrodes, creating an electric field in the water that discourages fish from crossing.

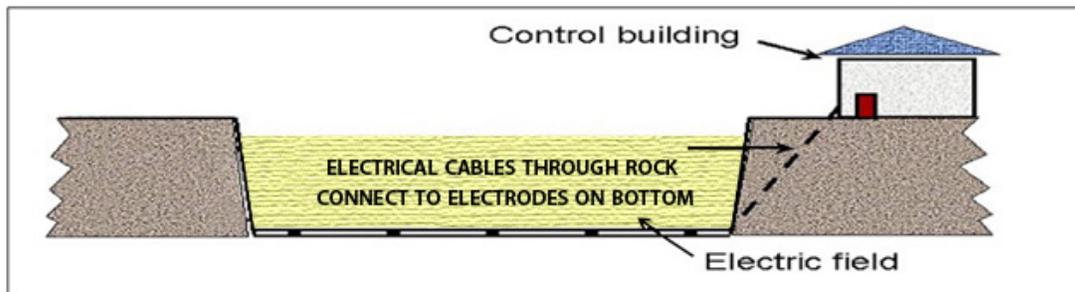


Figure EA-2. Cross section of the Electrical Barrier

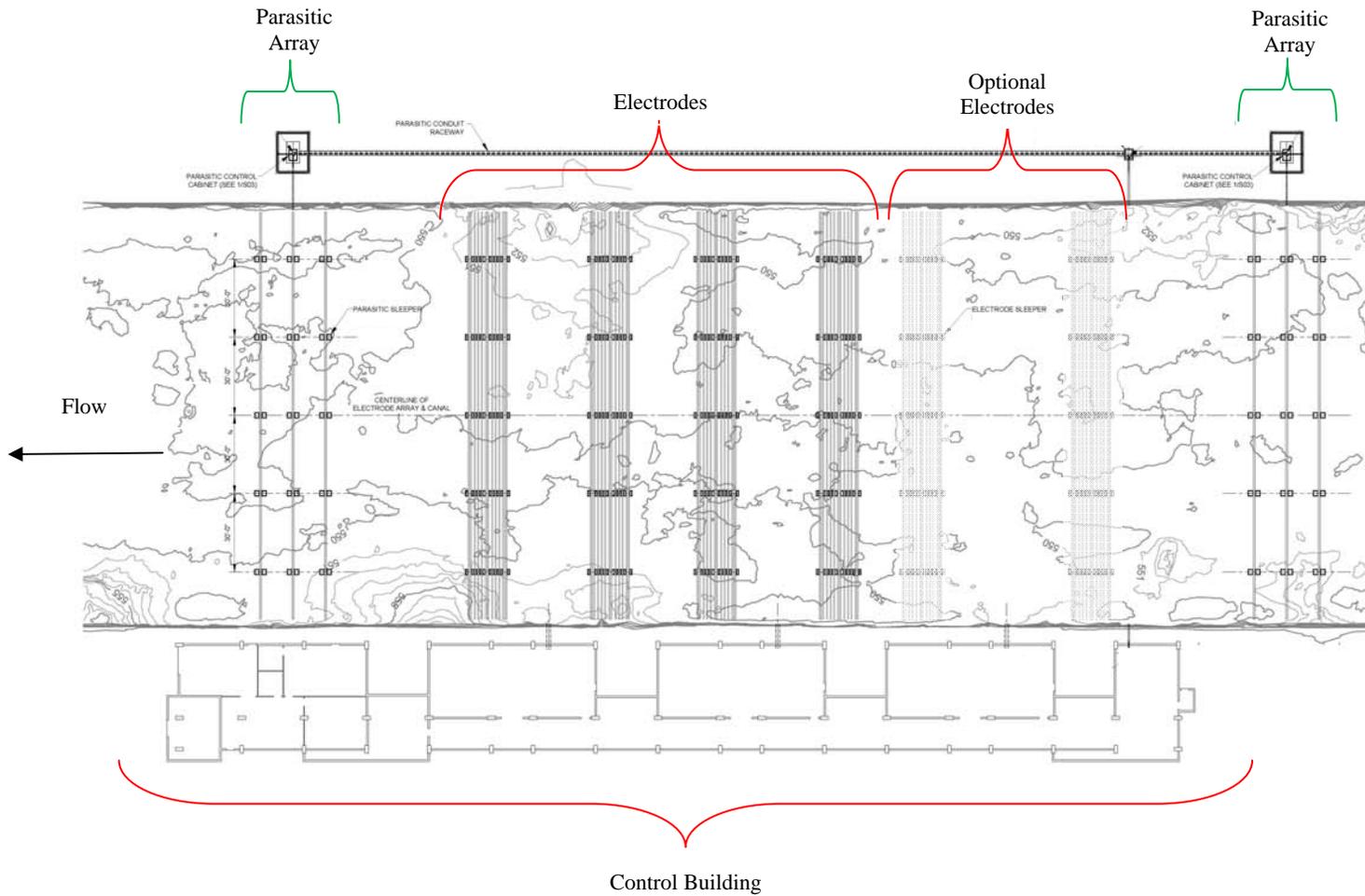
The construction of the Permanent Barrier I Project would be phased in three parts: Projects A, B, and C. These phases would be separated by approximately 1 year. The primary window for construction will be from April to November, but construction could occur at any time throughout the year depending on the weather. Project A would include the work associated with preparation to construct a permanent building: clearing and grubbing, site grading, construct permanent road with curb and gutters and vehicle guardrails, borehole drilling, installation on the west side of the canal of cast-in-place sidewalk with embedded electrical conduits, mast lighting, and appurtenant equipment.

Project B would include in-water installation of the electrodes and parasitic structures. The electrodes identified as optional on Figure EA-3 were originally proposed, but it was subsequently determined they aren't required for the barrier to function effectively. They will not be included in the initial construction of Permanent Barrier I; however, they may be installed at a later date if future studies indicate that they are needed.

Project C includes construction of the on-land control building, installation of electrical equipment, and connection of the electrodes to the building. The building and surrounding property will house transformers; DC power supplies; DC pulse generators; emergency backup generators; equipment cooling systems; lighting; computer control systems; lighting protection; fire suppression and fire alarm systems; and heating, ventilation, and air conditioning equipment (figure EA-3).

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ELECTRODE & PARASITIC SLEEPER LAYOUT



Figure EA-3. Plan View of the Permanent Barrier I Design Layout in the Chicago Sanitary & Ship Canal

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No sediment dredging or filling activities would be included in the proposed work. The bed material is limestone. Sediment or debris located in the electrode placement area may be pushed aside during installation, but significant sediment disturbance or accumulations in the area are not expected. The proposed barrier would not block the flow of water or the movement of vessels. Heavy construction vehicles would use 135th Street to reach the project site and then Des Plaines River Road to access the western bank and Old Romeo Road to access the eastern bank. Any impacts to traffic would be short-term and temporary. Construction staging would be land-based and cofferdams or other temporary dewatering measures are not required for construction activities.

V. ALTERNATIVES

A. No Action

Under the No Action alternative the three electrical barriers: Demonstration Barrier, Barrier IIA and Barrier IIB would continue to operate and be maintained. Each individual barrier in the barrier system will at times need to be shut down for maintenance. When the Barriers IIA and IIB are turned off, the barriers Project will remain vulnerable to the passage of small fish at the Demonstration Barrier. Other actions to prevent the transfer of aquatic nuisance species may occur in the Chicago Area Waterways System (CAWS) through the implementation of the measures identified in the Corps' Efficacy Study or the Great Lakes and Mississippi River Interbasin Study; however these studies do not authorize construction. The activities of the interagency Asian Carp Regional Coordination Committee and the Monitoring and Response Working Group (MRWG), including overharvest and periodic rotenone applications in the CAWS, would also continue.

B. Replacement of the Demonstration Barrier with Permanent Barrier I

This Alternative involves the construction of Permanent Barrier I as a replacement for the Demonstration Barrier. It would be capable of emitting higher voltages and work in concert with Barriers IIA and IIB to prevent the movements of fish past the Project area. The Corps determined the replacement of the Demonstration Barrier with Permanent Barrier I to be the Preferred Alternative.

VI. AFFECTED ENVIRONMENT

The Project reach/environment that the Preferred Alternative would affect is the Lockport Pool of the CSSC, River Miles 296-296.5. The following environment description is generalized for the portion of the Lockport pool and surrounding riparian zone.

A. Physical Resources

1. Climate. The climate of the Project area is typical of northeast Illinois and may be classified as humid continental, characterized by warm summers, cold winters, and daily, monthly, and yearly fluctuations in temperature and precipitation. National Weather Service data collected from the area around Chicago report average temperatures of 24.9° F in winter and 71° F in summer. Mean annual precipitation is 36.57 inches with the majority of the precipitation occurring April through October. Accumulated snowfall averages 46.2 inches for the study area. Wind speed averages 11 to 12 miles

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per hour. Early spring floods may occur when snow accumulations extend into a period of increasing temperature that results in melting. If this occurs when soils are already saturated, and given the amount of impervious surfaces within the study area, runoff increases dramatically. The start of the growing season as defined for agricultural purposes usually occurs from late April to early May, and the first frost typically occurs between late September and mid-October, with the frost free season ranging from 158 to 178 days.

2. Air Quality. The Chicago Metropolitan area, including the study area, is a non-attainment area for both ozone (and ozone precursors) and particulates (with a diameter less than 2.5 microns). Existing air quality data are available for Will County from the USEPA Air Data database. Although the trends overall show improvement over the last 10 years, individual measurements and monitoring stations still have measurements that exceed the national standards. The existing air quality should be considered marginal, but improving over time.

3. Geology. The Project is located on the Central Lowland Province that contains some bedrock outcroppings and moraines but is generally flat and moderately- to poorly-drained. The Project area is approximately 585 feet above sea level. Although little of the glacial soils are present on site, the glacial geology of the region plays a significant role in the hydrology that drives the local ecosystems. The bedrock on site is covered by overburden soils and fill material ranging in thickness from 0 to approximately 10 feet. Much of the natural material was directly deposited as glacial till and outwash from melting glaciers, which were subsequently altered by weathering, erosion and biological processes. The overburden on site consists of silty sandy clay with organic material and gravel. The uppermost bedrock located within the Project area is comprised of Silurian dolomite which varies in thickness from ~100 to 300 feet locally and is nominally 130 feet thick on site. Ordovician shale and shaley dolomite of the Maquoketa Group ranges from 80 to 250 feet thick locally and is nominally 180 feet thick on site, underling the upper dolomitic formations. Bedrock below the Maquoketa Group consists of a series of lower Paleozoic dolomites, limestones, sandstones and shales, overlying Precambrian crystalline rock.

There are four major aquifers in the Chicago area: glacial drift, shallow bedrock consisting of Silurian dolomites, and two deep bedrock aquifers, the Cambrian-Ordovician and the Mount Simon. The glacial drift aquifer is absent on the Permanent Barrier Site. The shallow bedrock aquifer directly underlies the overburden soils or glacial drift in the Chicago area.

4. Soils. The US Department of Agriculture Soil Survey of Will County, Illinois describes two soil series found on the study area; Orthents on the east bank and Romeo silt loam on the west bank of the CSSC. Orthents are characterized as disturbed soil material and Romeo silt loams are shallow alluvial soils found over bedrock. Rare dolomite prairies have been found on Romeo silt loams, however prairie grasses are not found in the Project area. Prime farmlands do not occur along or on the Project footprint.

5. Land Use. Pre-settlement land cover of the study area was primarily prairie, with pockets of rare dolomite prairie and wetland depressions. Land use along the CSSC is generally urban with extensive industrial development. Basin stakeholders include the City of Chicago and 31 suburban municipalities. Flow in the CSSC is dominated by treated wastewater from 5 million residents and an additional industrial load of approximately 4.5 million population equivalents. Land use has been converted from these natural types to industrialized and residential grounds with intermittent pockets

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of highly disturbed forest and wetland. Most of the land adjacent to the CSSC is owned by the Metropolitan Water Reclamation District of Greater Chicago (MWRDGC).

The land on the west side of the CSSC next to the Project is vacant land owned by MWRDGC. For approximately 250 feet from the edge of the canal this is disturbed, cleared land. Beyond that distance the land is more natural with significant tree cover. Approximately 700 feet west of the Project on the west side is a pedestrian and bike trail that is owned and maintained by the Forest Preserve District of Will County.

The Permanent Barrier I control building will be located on the east side of the canal between Barrier IIB and the Demonstration Barrier. A road is located immediately east of the planned building site and east of the road, approximately 150 feet from the Project, are two sets of railroad tracks owned and operated by BNSF Railway. The Illinois & Michigan (I&M) Canal is located approximately 100 feet east of the railroad tracks. Between the tracks and the canal is vacant land owned by CITGO. There is a CITGO refinery east of the I&M Canal.

There are three private residences located on the east side of the CSSC near the 135th Street bridge, immediately southeast of Barrier IIA and approximately 900 feet south of the Permanent Barrier I project. A Midwest Generation power plant is located south of the 135th Street bridge on the west side of the canal, approximately 1,500 feet southwest of the Project. Approximately 800 feet north of the project, Oxbow Carbon operates a fleeting area where coke materials from the CITGO refinery are loaded onto barges. There is also a petroleum pipeline operated and maintained by Enbridge Inc. that crosses over the CSSC in an aerial pipeline arch approximately 1,000 feet north of the Project and is underground in a general east-west direction in the immediate vicinity of the CSSC on either side of the arch. On the east side of the CSSC the pipeline is underground in an east-west direction for approximately 600 feet, and then turns south and continues underground in a general north-south direction past the Project. The pipeline is approximately 500 feet due west at its closest point to the Project.

There are both industrial and domestic wells utilizing ground water within the immediate area of the site.

6. General Hydrology. The CAWS consists of 78 miles of canals and modified streams. The CAWS consists of the Chicago River, its two main branches (North Branch and South Branch), as well as the Cal-Sag Channel, the CSSC, and the tributaries in an area extending from the metropolitan Chicago area to the Lockport vicinity. It also includes Lake Calumet. To facilitate a reversal of the flow of the Chicago River to divert water from Lake Michigan to the CAWS, the CSSC, the Calumet-Sag Channel and the North Shore Channel were constructed over 100 years ago. The diversion and the artificial waterways facilitated navigation and protected the drinking water intakes in Lake Michigan from Chicago wastes. The Little Calumet River North Leg, the Chicago River, the South Branch of the Chicago River and North Branch of the Chicago River downstream from its confluence with the North Shore Channel are natural rivers that have been modified through channelization and widened and deepened.

Chicago's wastewater system was developed with a combined sewer system that accepted both storm water and sanitary waste. After rainstorms, the capacity of the sewer system became overwhelmed on a regular basis and combined sewer overflows occurred. These combined sewer overflows are

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discharged into the CAWS and occasionally from the river into Lake Michigan through the Chicago Lock on the Chicago River, Wilmette Pumping Station on the North Shore Channel, or the Thomas J. O'Brien Lock and Controlling Works on the Calumet River. To address this problem, the MWRDGC developed the Tunnel and Reservoir Project (TARP), which included the construction of the Deep Tunnel project. The Deep Tunnel is a series of tunnels that lay 250 to 300 feet below the Chicago River and are located parallel to it. The first phase of the TARP or "Deep Tunnel" Project has been completed. During periods of heavy rainfall, the TARP directs combined sanitary waste and infiltrating rainwater into massive tunnels and collection reservoirs where it can be withdrawn for treatment after the rain subsides.

7. Water Quality. The CSSC is on the 2012 Final Draft Illinois 303(d) list of impaired waters. These waters include both natural and man-made waterways which serve as receiving waters for the tributary streams and water reclamation plant effluents, combined sewer overflows, and storm water runoff, and are therefore of marginal quality, and are unlikely to improve. The CSSC is classified by the Illinois Pollution Control Board as a "Secondary Contact and Indigenous Aquatic Life Use Waterways," which indicates a highly modified waterway, not suited for general use activities (e.g. swimming, water skiing). Water quality may be capable of supporting indigenous aquatic life, but limited by the physical configuration of the canal, characteristics and origin of the water, and the presence of contaminants in amounts that do not exceed the water quality standards. These Secondary Contact waters are all currently listed as impaired for supporting indigenous aquatic life and/or fish consumption. Since the construction of the canal system, poor water quality inhibited development of a diverse and abundant aquatic community. At the present, side-stream aeration stations, as well as improvements in wastewater treatment have significantly improved water quality in the canal system to where dissolved oxygen levels are no longer a limiting factor for the survival of tolerant fish species.

B. Biological Resources

The CSSC is a created structure built to transport sewage through a heavily industrialized and urbanized area with poor water quality generally limiting the aquatic resources of the canal. For this reason, fisheries populations in the CSSC and the upper Illinois River declined over many years to a point where they were virtually nonexistent except for the most pollutant-tolerant of species. As a completely channelized structure, the CSSC only provides main channel and main channel border habitat with virtually no spawning habitat, and it significantly reduces the quality and quantity of habitat available for fish and wildlife resources.

1. Riverine Habitat. The CSSC was incised through the native dolomite limestone. As a result, aquatic habitat in the vicinity of the proposed sites is fairly homogeneous, consisting of vertical limestone walls that extend 27 feet from the water surface to the bottom and approximately 35 feet from the top of the bank to the canal bottom. These nearly perpendicular walls of the canal offer little or no littoral zone for aquatic species. The walls have crumbled down enough at various locations along the reach that may provide limited littoral habitat for present species. The bottom of the canal is essentially flat with virtually no fine substrates; however, rock or flagstone is present on the bottom of the canal where the vertical walls have been gouged away by barge traffic. There are also intermittent areas of woody debris and detritus that may be used as cover for certain benthic organisms.

2. Riparian Plant Communities. The Project is located on highly disturbed lands and is largely unvegetated, with small patches of volunteer plant communities. What vegetation is present is

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dominated by late boneset (*Eupatorium serotinum*) and tall goldenrod (*Solidago altissima*). Trees are largely absent, with occasional stems of white mulberry (*Morus alba*) and elderberry (*Sambucus canadensis*) sprouting between periods of soil disturbance.

3. Aquatic Communities. The present day Lockport Pool of the CSSC supported no aquatic life prior to its construction. Fish species that colonized the new canal came from nearby waters including the Des Plaines River, Lake Michigan and several small streams that flowed into the CSSC.

There were 27 species of fish collected in the Lockport Pool downstream of the dispersal barrier Project area in 2012 by the MRRWG. The most abundant fish species were gizzard shad (*Dorosoma cepedianum*), followed by emerald shiner (*Notropis atherinoides*), green sunfish (*Lepomis cyanellus*), bluntnose minnow (*Pimephales notatus*), and largemouth bass (*Micropterus salmoides*). A list of species captured can be found in table EA-1. None of these species rely upon the CSSC as a migration route.

Table EA-1. Fish Captured in Lockport Pool Below the Barrier Through MRRWG Fixed Site Sampling in 2012.

<u>Species</u>	<u>Number Captured</u>	<u>Species</u>	<u>Number Captured</u>	<u>Species</u>	<u>Number Captured</u>
gizzard shad	3,190	spotfin shiner	7	golden shiner	32
emerald shiner	382	channel catfish	5	mosquitofish	28
green sunfish	222	banded killifish	3	yellow bullhead	21
bluntnose minnow	134	smallmouth bass	3	threadfin shad	14
largemouth bass	88	brown bullhead	2	hybrid sunfish	7
oriental weatherfish	75	freshwater drum	2	white sucker	2
bluegill	70	goldfish	2	black bullhead	1
common carp	67	longnose gar	2	muskellunge	1
pumpkinseed	39	spottail shiner	2	northern pike	1

Though Asian carp are the focus of the barrier Project, the Illinois DNR characterized the abundance of bighead carp (*Hypophthalmichthys nobilis*) and silver carp (*H. molitrix*) as “rare” in Lockport pool below the Project area and in Brandon Road Pool, which is located immediately downstream of Lockport pool, based on the findings of MRRWG monitoring. At the end of 2012, the detectable population front of Asian carp in the Illinois Waterway (IWW) was located about 47 miles from Lake Michigan and had made little upstream movement from 2006-2012 for unknown reasons. Two factors that may influence the location of the detectable population front include the lack of riverine habitat CAWS (including the CSSC) and the lack of a sustained flood pulse which is known to trigger Asian carp movements.

However, multiple bighead carp have been captured in landlocked Chicago area urban fishing ponds above the barrier. It is likely that these fish were accidentally introduced during stocking for the Illinois DNR’s urban fishing program of catchable sized channel catfish in the 2002-2003 timeframe (Illinois DNR 2010). An individual bighead carp was captured in Lake Calumet in 2010 and eDNA for both silver and bighead carp have been collected above the barrier. The connection between these occurrences and the dispersal barriers Project is poorly understood. Because of this uncertainty, the Corps operates the Project as if Asian carp are continually challenging the dispersal barrier because

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both bighead and silver carp are capable of rapidly moving long distances, and because small populations of Asian carp could have eluded capture during monitoring.

Macroinvertebrate diversity is low in the CSSC according to the MWRDGC. In 1999, the MWRD collected two crayfish species, rusty crayfish (*Orconectes rusticus*) and virile crayfish (*O. virilis*), from the CSSC. The rusty crayfish is introduced from the Ohio River system via the release of unused live fishing bait. There are no other significant aquatic resources known to occur in the Project area.

4. Other Wildlife. Terrestrial wildlife communities on the study area have been degraded due to hydrologic and geomorphic alterations and fragmentation of habitats by industrialization. The site has very little vegetation and high human use. Migrating waterfowl occasionally use the CSSC in the Project area for feeding and resting. The steep walls of the canal and general human activity around the electrical barrier deter small mammals such as muskrat (*Ondatra zibethicus*), beaver (*Castor canadensis*), mink (*Mustela vison*), and raccoon (*Procyon lotor*) from using the Project area.

5. Natural Areas. Two components of the Des Plaines River preservation system are located within one mile of the Project area. The 95-acre Isle a la Cache County Forest Preserve is located west of the Project area and the Romeoville Prairie Nature Preserve is located on 314 acres northwest of the Project area. These preserves protect forest, prairie, and wetland habitats, and a portion of the Des Plaines River. The Centennial Bike Trail is also located west of the Project area. It parallels the Des Plaines River and the CSSC for 11 miles from Romeo Road (135th Street) to the north.

6. Threatened & Endangered Species. There are eight federally-listed and proposed to be listed species for Will County, Illinois (table EA-2).

Table EA-2. Federally-Listed and Proposed as Endangered Species
for Will County, Illinois

Species	Status
Eastern prairie fringed orchid (<i>Platanthaera leucophaea</i>)	Threatened
Sheepnose mussel (<i>Plethobasus cyphus</i>)	Endangered
Eastern massasauga (<i>Sistrurus catenatus</i>)	Candidate
Snuffbox (<i>Epioblasma triquetra</i>)	Endangered
Lakeside daisy (<i>Hymenopsis herbacea</i>)	Threatened
Leafy-prairie clover (<i>Dalea foliosa</i>)	Endangered
Mead's milkweed (<i>Asclepias meadii</i>)	Threatened
Hine's emerald dragonfly (<i>Somatochlora hineana</i>)	Endangered

The eastern prairie fringed orchid is listed as threatened and considered to potentially occur in Will County. It occupies mesic to wet prairies. It requires full sun for optimal growth and flowering. The substrate of the sites where this orchid occurs includes glacial soils, lake plain deposits, muck, or peat. There is no critical habitat designated for this species. This species should be searched for whenever wet prairie remnants are encountered.

The sheepnose mussel is listed as endangered and its range is within the Project area. The sheepnose mussel is primarily a larger stream species occurring mainly in shallow shoal habitats with moderate to swift currents over coarse sand and gravel but includes mud, cobble, and boulders as well. This

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includes larger rivers with deep runs, while those specimens found in streams occur mainly in stable flow refuges with little sediment turbidity.

The eastern massasauga snake is a candidate species for Will County. This species is currently going through the listing process and may be included in the list of threatened and endangered species in the near future. The eastern massasauga has a range from western New York and Southern Ontario to southern Iowa and a narrow band in northeastern Missouri. They live in wet areas but may also use adjacent uplands during part of the year. They are often found in wet prairies, marshes, and low areas along rivers and lakes.

The snuffbox mussel is listed as endangered for Will County. The snuffbox once had a wide distribution, occurring in 208 streams but has been reduced to 74 streams, mostly geographically isolated populations. They are found in small to medium sized creeks in areas of swift current. Some can be found in large rivers and in Lake Erie.

The lakeside daisy is listed as threatened and is known to occur in Will County. The lakeside daisy is found in rocky areas like dry dolomite prairies, gravel prairies, cliff ledges, and limestone quarries. It prefers well drained mesic to dry soils and full sun. The lakeside daisy grows in the Great Lakes states and the Canadian shore of Lake Huron.

The leafy prairie-clover is listed as endangered for Will County and is known to occur in prairie remnants along the Des Plaines River. It is found in thin mesic soils in dolomite prairies and rocky river banks. The leafy prairie clover has been threatened by development, grazing animals, and encroachment of trees and shrubs into grassland areas.

The range of Mead's milkweed includes the Project area. It is declining throughout its national range and is currently listed as threatened in Will County. Mead's milkweed is found in mesic to dry mesic conditions of upland prairies. It is currently known in 171 sites in Kansas, Missouri, Iowa, and Illinois.

The endangered Hine's emerald dragonfly is found only in certain areas in Illinois, Michigan, Missouri, and Wisconsin. Loss of habitat has been the largest threat to Hine's emerald dragonfly survival. The dragonfly depends on high quality wetlands and streams. Much of the wetland habitat that the Hine's emerald dragonfly depended on has been filled or drained. The dragonfly lives in spring-fed marshes and meadows with dolomite bedrock and high calcium carbonate. The female dragonfly will lay eggs into shallow water by repeatedly dipping the tip of her body into the water. From the egg will hatch the larval form of the dragonfly called the nymph. The dragonfly will stay in the nymph stage for 2 to 4 years, shedding its skin as it grows. The nymph will crawl out of the water onto nearby vegetation or rocks and shed its skin for the last time. Hine's emerald dragonflies will live as adults for 4 to 5 weeks.

There are 64 state-listed species for Will County, Illinois (Appendix EA-B).

D. Cultural, Archaeological & Social Resources

The CSSC is located entirely within the State of Illinois and provides economic benefits throughout the Midwest. The CSSC is part of the inland navigation system that links Lake Michigan with the Mississippi River and connects with the Atlantic Ocean via the Great Lake Region, St. Lawrence

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Seaway, and Inland Coastal Waterway. The City of Chicago has been dependent upon the CSSC for both economic growth and the elimination of wastewater. The Illinois Assembly authorized creation of sanitary districts in 1889 in an effort to address the sewage problem associated with the growth of Chicago. The incorporated Sanitary District of Chicago encompassed Chicago and five adjacent communities comprising 185 square miles. The initial phase of construction of the CSSC took place from 1892 to 1900, linking the Chicago and Des Plaines Rivers. At approximately 27 feet deep, with a varied bottom width of 110 to 160 feet and a top width of 162 to 290 feet, the canal provided navigation as well as diverting sanitary system sewage.

The Chicago Sanitary District commenced a second phase of construction in 1905 referred to as the Main Channel Extension. This phase was completed in 1908 and included a 10,700-foot extension of the CSSC from the windage basin north of Lockport to the head of navigation at the Des Plaines River south of Lockport. The extended canal was generally the same width (160 feet) and grade (1 to 20,000) as that of the canal completed in 1900. In addition, a new 22-foot-wide navigation lock, 120-foot-long concrete dam, and a large powerhouse (385 feet long, 70 feet-wide, and 48 feet-high) were built at Lockport. The aquatic nuisance species barrier Project area is 3.25 miles upstream of the Main Channel Extension.

In January 2013, the Corps, the MWRDGC, and the IHPA determined that the CSSC was eligible for listing to the National Register of Historic Places. Following a review of the *Phase I Architectural and Engineering Inventory of Properties Within the Chicago Sanitary and Ship Canal, Cook, Du Page, and Will Counties, Illinois* (draft dated July 2003), the Corps, the MWRDGC, and the IHPA concurred that 1) the CSSC was determined historically significance under criteria A and C of 36 CFR Part 60 as a landmark in wastewater control and treatment and one of the largest public works at the time which set new standards in construction in a rapidly developing urban area and 2) that the CSSC Historic District consists of three structures (Main Channel, Willow Springs Spillway, and the Lockport Controlling Works), one site (Butterfly Dam Remnant) and one district (Lockport Lock, Dam, and Power House Historic District). The Main Channel has seven contributing features consisting of the cut natural walls, laid-up stone walls, stone bridge abutments, commemorative tablet, original spoil piles, main channel extension, and original earthen walls. The Lockport Lock, Dam, and Power House Historic District has five contributing structures: the Sanitary District Lock, the New Lock, the Dam, the Power House, and the Control Station.

1. Social Setting. The Project area is located solely within Will County. Will County has a population of 677,560 and, according to the 2010 census, is one of the fastest growing counties in the U.S. The Will County median household income is \$76,453 and the median home value is \$236,300. This county has a number of suburban communities and a diverse industrial and commercial base.

The IWW Navigation System is a connecting link between Lake Michigan and the Mississippi River. This waterway is one of the nation's busiest routes for commercial barge transportation. The Waterway includes the Chicago, Des Plaines, and Illinois Rivers, and the CSSC, the Calumet-Sag Channel, and the navigable portions of the Little Calumet and Calumet Rivers.

2. Recreation. The undeveloped nature of large portions of the Des Plaines River valley and the CSSC makes this area a popular destination for outdoor sports including bird watching, biking, fishing and boating. The Forest Preserve District of Will County manages part of the Centennial Trail, an asphalt bike trail that parallels the Des Plaines River and CSSC west of the Project area for 11 miles

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from Willow Springs Road to Romeo Road (135th Street). The Isle a la Cache Museum is also located west of the Project area and focuses on the 18th-century history of French voyageurs and native Potawatomi. The Museum features interactive exhibits of the Great Lakes fur trade of the 1700s and a replica of a Native American longhouse.

E. Hazardous, Toxic and Radioactive Wastes

1. Aerial Photography Review. Possible HTRW locations were investigated by examining the past and present land uses of the Project area. Topographic maps from 1892, 1923, 1954, 1962, and 1993 and aerial photographs from 1938-39, 1954 and 1961 were reviewed. Although the earliest photographs show some industrial development, the area closest to the Project area site, between the Des Plaines River and CSSC, remained undeveloped until relatively recently. Development present in the 1954 map and photo includes a refinery northeast of the Project site and homes east of the Project site. By 1961 the refinery has expanded south to Romeo Road. Barge facilities and other current industrial development in this area were not seen on the 1938-39, 1954, or 1961 historical photographs.

2. Database Review. Review of a database search provided by Environmental Data Resources identified HTRW sites within a mile of the Project site. Two Resource Conservation and Recovery Act corrective action sites were found within 0.5 mile of the Project site. Beatrice Foods Co. Hi-Temp Division, located at 135th Street and New Avenue, was assigned a medium corrective action priority in 1991 and 1993. However, this site is approximately 0.5 miles away from the proposed Permanent Barrier I project site with multiple land use barriers between them, including the railroad tracks, the I&M Canal, and the CITGO refinery. Therefore it is of minimal environmental concern with respect to the implementation of the Project. Cliffs Container Dorion Drum Co., located at 135th Street and the Des Plaines River, was assigned a high corrective action priority in 1993. This site is also listed in the Illinois Northeastern Illinois Planning Commission Solid Waste Landfill Inventory. As the site is separated from the Project site by multiple land use barriers, including the Des Plaines River, the site will have a minimal environmental impact on the Project site.

Union Oil Co. of California, located approximately 0.5 mile east of the Project site, is listed in the Surface Impoundment Inventory, maintained by the Illinois Waste Management and Research Center. The facility's Standard Industrial Classification code represents petroleum refining. The site is an industrial surface impoundment, in operation for at least 10 years. The purpose of the impoundment is indicated as treatment and the explanation given is settling; the impoundment was most likely a settling step in the facility's wastewater treatment process. The record indicates the surface area of the impoundment is 550 acres, and the impoundment held a bottom liner of chemically modified clay. Four monitoring wells are associated with the impoundment, although no additional information given on any sampling activities. The site is separated from the Project site by multiple land use barriers, including a railroad and the I&M Canal; the site will have a minimal environmental impact on the Project site.

3. Site Visit. The Project site area and adjacent area directly to the north and south have large mounds of material composed mostly of concrete, dirt, and vegetation. A small amount of debris was also observed in the mounds, including industrial debris, municipal debris, and one tire; the debris may possibly be due to dumping. The 1999 HTRW investigation observed slag at the proposed Permanent Barrier I site, and the slag was sampled and analyzed. The 1999 HTRW report concluded,

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The physical tests indicate that the material is inert, however it did contain polynuclear aromatic hydrocarbons (PAHs). The sample was also tested for TCLP metals and organics. The tests showed that the sample passed TCLP, which means that the material is not considered to be hazardous waste.

No HTRW investigation can wholly eliminate uncertainty regarding the potential for HTRW associated with a Project area. Performance of the HTRW investigation is intended to reduce, but not eliminate, uncertainty regarding the potential for HTRW in connection with a Project area.

VII. ENVIRONMENTAL IMPACTS OF THE PREFERRED ALTERNATIVE

A. Climate

The Preferred Alternative would not directly or indirectly affect the regional climate. The rationale behind no affects is that the Preferred Alternative is confined to a specific area, and there are no aspects of the Project that would affect climate.

B. Geology

The Preferred Alternative would not directly or indirectly affect the local or regional geology. The Preferred Alternative is contained and geological features would not be altered.

C. Soils

The Preferred Alternative would involve clearing and grubbing, site grading, construct permanent road throughout entire site with curb and gutters. The soils within the Project area are previously disturbed from prior construction activity and the Preferred Alternative would not adversely affect soils.

D. Land Use

The Preferred Alternative would increase electrical ground potentials in the soil and rock in the immediate vicinity of the fish barriers due to the addition of a new barrier. Increased ground potential could accelerate corrosion of buried conductive structures or create an electrical shock hazard for partially buried conductive structures that can be contacted by people.. Corrosion or shock potential at distances from the barrier are only likely for long metal items that span significant lengths, such as fences, pipelines, or railroad tracks. USACE is aware of the risks created by the existing barriers and anticipates similar risks with the Permanent Barrier I project, but with a larger impact in the immediate vicinity of the new barrier.

The fence that separates the barrier property from the forest preserve district trail currently has imperceptible readings for electricity. This isn't expected to change with Permanent Barrier I operational.

The traffic signal at the railroad crossing on Old Romeo Road (the road the barriers are on) has malfunctioned at times when Barriers IIA and IIB operate simultaneously. The Corps has worked closely with BNSF to prevent these problems in the future. Planned changes include both preventing

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overlap of pulses from the barriers and upgrades and operational changes to the signal. These changes should eliminate signal malfunctions due to the operation of any barriers, including Permanent Barrier I.

The fence on the edge of CITGO's property to the west of the Project is currently monitored by USACE and has no unsafe electrical readings. Monitoring will continue after the completion of Permanent Barrier I. If mitigation is needed, non-conductive fencing can be installed in place of the existing fence.

Any concerns for Midwest Generation and the private residences are minimal because the new barrier will be to the north of Barriers IIA and IIB.

USACE has previously tested the 135th Street bridge to determine if the existing barriers are in any way accelerating corrosion of the bridge. Accelerated corrosion hasn't been observed because the rebars in the concrete are not electrically connected. The rebars are epoxy coated. Additionally, an equal potential grounding platform is being constructed around the bridge piers to reduce voltage differences from one side of a pier to another. Given these conditions, the addition of Permanent Barrier I should have no significant impact on the bridge.

The Oxbow Carbon facility is the only active fleeting area in the vicinity of the Project. Projections based on the operations of the existing barriers indicate that the in-water electrical field generated by Permanent Barrier I will not lead to any significant or unsafe electricity in the water at the Oxbow dock. The Oxbow site is not likely to see any perceptible ground current impacts either.

USACE has been in close communication with Enbridge, Inc., the operator of the underground pipeline. At present, preliminary in-line inspection runs have shown no deleterious impact on the pipeline due to the existing electric barriers. USACE and Enbridge are working together to install five new test stations to monitor corrosion rate and potential along the pipeline. These test stations will be used to monitor conditions before and after Permanent Barrier I is activated.

In all instances, USACE will continue monitoring ground currents on a quarterly basis and before and after any significant operational changes. USACE will also continue working closely with adjacent landowners to diagnose and mitigate risks. Any risks identified through monitoring and research will be addressed through operational changes at the barriers and other mitigation measures as needed.

When the barriers produce the pulsed electric fields in the water, they also produce pulsed magnetic fields inside and outside the facilities on land and over the water. USACE has done targeted scientific investigations at the existing barriers to evaluate whether these fields pose any risks for human health and safety. To date these studies indicate that there are no publicly accessible areas on land or on water near the barriers where magnetic field strengths exceed public exposure standards. Since Permanent Barrier I will use a pulsed electric field similar to the existing barriers, no significant magnetic field impacts are expected from the Project.

There are no known impacts of the existing barriers on groundwater chemistry and biochemistry in nearby wells. It is therefore expected that Permanent Barrier I will not impact groundwater chemistry and biochemistry.

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E. Hydrology & Hydraulics

The Preferred Alternative would not directly or indirectly affect the current hydrology and hydraulics of the CSSC. The rationale behind the no affect determination is that hydraulic and hydrologic profiles would remain in the current condition since the operation of the canal would not change from its current status.

F. Air Quality

The Preferred Alternative would cause localized, temporary increases in exhaust emissions from equipment and vehicles during construction activities. These impacts would be limited through emissions controls during activities, in compliance with USACE, USEPA, Illinois EPA, and local laws and regulations. The action as proposed is compliant with the Clean Air Act, and will not result in significant or long-term adverse impacts to air quality.

G. Water Quality

The Preferred Alternative would have minor, short-term effects to the local water quality. No sediment dredging or filling activities would be included in the proposed work. The Preferred Alternative would not block the flow of water or the movement of vessels. The Project would not affect the Illinois pollution control board's classification of the CSSC as a "Secondary Contact and Indigenous Aquatic Life Use Waterway."

H. Riverine Habitat

The Preferred Alternative would not directly or indirectly affect the riverine habitat of the CSSC. The nearly perpendicular walls of the canal offer little or no littoral zone for aquatic species, and this would not change.

I. Riparian Plant Communities

The Preferred Alternative would not adversely affect the riparian plant communities of the Project area. The Project is located on highly disturbed lands that are already largely unvegetated.

J. Aquatic Communities

The Preferred Alternative would have a direct and acute affect on fish that encounter the electrical field in the Project area. This is consistent with the purpose of the action, to prevent the dispersal of fish into the Great Lakes, in particular silver carp and bighead carp.

The CSSC is a man-made system that was not intended to support aquatic communities. The fish and macroinvertebrate assemblage in the Project area are transient and somewhat tolerant of poor water quality, inadequate habitat, and poor fluvial function. The Preferred Alternative would not change the adverse affects that native fish and macroinvertebrate assemblages presently encounter at the Project area.

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K. Other Wildlife

It is anticipated that the Preferred Alternative would have no adverse or significant effects on other non-aquatic wildlife. Observations of birds at the Barriers Project have not shown an adverse impact to bird life. The steep walls of the canal, security fencing, and general human activity around the electrical barrier would continue to deter most terrestrial wildlife.

L. Natural Areas

The Isle a la Cache County Forest Preserve, the Romeoville Prairie Nature Preserve, and the Centennial Bike Trail would not be affected by the Project. Any construction traffic and staging areas for equipment and materials would not disrupt nature preserve lands.

M. Threatened & Endangered Species

The critical habitat descriptions for federally-listed species and the details of the Preferred Alternative were reviewed by the USFWS who concluded that the proposed action would have “no effect” on threatened & endangered species.

N. Archaeological & Historical Properties

By applying the criteria of effect, the Corps has made a determination of “No Adverse Effect” for the construction of Permanent Barrier I, as promulgated by the NHPA, as amended and 36 CFR Part 800: “Protection of Historic Properties.” The determination is based upon the District’s opinion that the proposed upgrade of the electric fish barrier will not change the appearance of the CSSC. Thus, the Project does not meet the adverse effect criteria of CFR Part 800.5(a)(1) and is consistent with the Secretary of the Interior’s Standards for the Treatment of Historic Properties (36 CFR Part 68) and applicable guidelines.

O. Social Setting

The Preferred Alternative would temporarily disrupt navigation on the CSSC. Navigation would be halted during construction so that cranes could lower and anchor electrodes and parasitic structures in the canal. The canal would be closed approximately 8 consecutive hours daily and open to traffic the remaining 16 hours. If work on an individual day allows, the canal would be closed for 4 hours, open for 1 or 2 hours, and then closed for another 4 hours. However, some work may not be able to be completed efficiently without a continuous 8-hour closure. These temporary closures would occur during daylight hours and be coordinated in advance with the USCG and broadcast to navigators via marine radio. They will be necessary for a total of approximately 45 days. These days will not necessarily be continuous and could occur in any season, although they are less likely to occur over the winter. Similar closure windows have been used numerous times previously for construction and maintenance work at the Project area. Since the CSSC will be open to navigation at times each day, this action is not expected to have significant impacts to business and industrial activity.

Once the Permanent Barrier I project is operational, navigation will have to be careful when traversing the electrified water. However, the existing electric barriers have been generating similar electric fields for years. Warning signs visible from on the CSSC are located upstream and downstream of the

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electric barriers and the U.S. Coast Guard enforces a Regulated Navigation Area (RNA) around the barriers. The RNA establishes vessel size, type, and operating requirements. For non-commercial vessels the key requirements are that vessels must be greater than twenty feet in length to transit the RNA; personal watercraft of any kind (*i.e.* jet skis, wave runners, kayaks, *etc.*) are not permitted to transit the RNA; all vessels are prohibited from loitering in the RNA, vessels may enter the RNA for the sole purpose of transiting to the other side and must maintain headway throughout the transit; all vessels and persons are prohibited from dredging, laying cable, dragging, fishing, conducting salvage operations, or any other activity, which could disturb the bottom of the RNA; all personnel on vessels transiting the RNA should remain inside the cabin, or as inboard as practicable; personnel that must be on open decks must wear a Coast Guard approved personal flotation device; and vessels may not moor or lay up on the right or left descending banks of the RNA. The Coast Guard also enforces a safety zone in the vicinity of the barriers. Vessels are prohibited from transiting the safety zone with non-potable water on board in any space except for water on board that will not be discharged on the other side of the safety zone. Vessels must notify and obtain permission from the Coast Guard prior to transiting the safety zone if they intend to discharge any non-potable water attained on one-side of the safety zone on the other side of the zone.

The Coast Guard will likely review the RNA and safety zone for possible additions and revisions once the Project is completed. However, given the similarities between Permanent Barrier I and the existing barriers, it is unlikely any requirements will be removed and additional regulatory impacts on navigation, if any, will likely be minimal compared to current conditions.

P. Recreation

The Preferred Alternative would temporarily disrupt recreational navigation during construction. The USCG has also established both a safety zone and a Regulated Navigation Area (RNA) on the CSSC at the barriers Project area. The RNA final rule places navigational, environmental and operational restrictions on all vessels transiting the navigable waters located adjacent to and over the electrical dispersal fish barrier system. Some of the RNA rules that apply to recreational navigation include; vessels must be greater than twenty feet in length; vessels must not be a personal watercraft of any kind (*i.e.* jet skis, wave runners, kayak, *etc.*); all vessels are prohibited from loitering in the RNA; vessels may enter the RNA for the sole purpose of transiting to the other side and must maintain headway throughout the transit; all vessels and persons are prohibited from dredging, laying cable, dragging, fishing, conducting salvage operations, or any other activity, which could disturb the bottom of the RNA; all personnel on vessels transiting the RNA should remain inside the cabin, or as inboard as practicable. If personnel must be on open decks, they must wear a Coast Guard approved personal flotation device; and vessels may not moor or lay up on the right or left descending banks of the RNA.

Q. Hazardous, Toxic and Radioactive Wastes

The Preferred Alternative would not directly or indirectly disturb or uncover hazardous, toxic or radioactive wastes and has little potential for encountering HTRW or non-HTRW contamination.

R. Prime Farmlands

The Preferred Alternative would not directly or indirectly affect farmland or prime farmlands, since none occur in the affected area.

VIII. 17 POINTS OF ENVIRONMENTAL QUALITY

The 17 points are defined by Section 122 of Rivers, Harbors & Flood Control Act of 1970 (P.L. 91-611) from (ER 1105-2-240 of 13 July 1978). The 17 points include noise, displacement of people, aesthetic values, community cohesion, desirable community growth, tax revenues, property values, public facilities, public services, desirable regional growth, employment, business and industrial activity, displacement of farms, man-made resources, natural resources, air and water. Impacts to air and water are discussed on page EA 15, and a discussion on the other points is as follows:

- 1. Noise.** The Preferred Alternative would not have significant increases in noise levels.
- 2. Displacement of People.** The Preferred Alternative would not displace any local residents within the township of the Project area.
- 3. Aesthetic Values.** The Preferred Alternative would not significantly change the aesthetic values of the Project area.
- 4. Community Cohesion.** The Preferred Alternative would not disrupt community cohesion.
- 5. Desirable Community Growth.** The Preferred Alternative would not adversely affect community growth.
- 6. Desirable Regional Growth.** The Preferred Alternative would not adversely affect regional growth.
- 7. Tax Revenues.** The Preferred Alternative would not affect tax revenues.
- 8. Property Values.** The Preferred Alternative would not affect property values.
- 9. Public Facilities.** The Preferred Alternative would not adversely affect public facilities.
- 10. Public Services.** The Preferred Alternative would not adversely affect public services.
- 11. Employment.** The Preferred Alternative would not adversely affect employment. Short term employment gains would be realized with implementing the measures.
- 12. Business and Industrial Activity.** The Preferred Alternative would temporarily disrupt navigation on the CSSC. Navigation would be halted during construction so that cranes could lower and anchor electrodes and parasitic structures in the canal. The canal would be closed approximately 8 consecutive hours daily, and open to traffic the remaining 16 hours. If work on an individual day allows, the canal would be closed for 4 hours, open for 1 or 2 hours, and then closed for another 4 hours. However, some work may not be able to be completed efficiently without a continuous 8-hour closure. These temporary closures would occur during daylight hours and be coordinated in advance

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with the USCG and broadcast to navigators via marine radio. They will be necessary for a total of approximately 45 days. These days will not necessarily be continuous and could occur in any season, although they are less likely to occur over the winter. Similar closure windows have been used numerous times previously for construction and maintenance work at the Project area. Since the CSSC will be open to navigation at times each day, this action is not expected to have significant impacts to business and industrial activity.

Once the Permanent Barrier I project is operational, navigation will have to be careful when traversing the electrified water. However, the existing electric barriers have been generating similar electric fields for years. Warning signs visible from on the CSSC are located upstream and downstream of the electric barriers and the U.S. Coast Guard enforces a Regulated Navigation Area (RNA) around the barriers. The RNA establishes vessel size, type, and operating requirements to include: (1) vessels must be greater than twenty feet in length to transit the RNA; (2) personal watercraft of any kind (*i.e.* jet skis, wave runners, kayaks, *etc.*) are not permitted to transit the RNA; (3) all up-bound and down bound commercial tows that consist of barges carrying certain types of flammable liquid cargos must engage the services of a bow boat at all times until the entire tow is clear of the RNA; (4) vessels engaged in commercial service may not pass (meet or overtake) in the RNA; (5) commercial tows transiting the RNA must only be made up with wire rope to ensure electrical connectivity between all segments of the tow; (6) all vessels are prohibited from loitering in the RNA; (7) vessels may enter the RNA for the sole purpose of transiting to the other side and must maintain headway throughout the transit; (8) all vessels and persons are prohibited from dredging, laying cable, dragging, fishing, conducting salvage operations, or any other activity, which could disturb the bottom of the RNA; (9) all personnel on vessels transiting the RNA should remain inside the cabin, or as inboard as practicable and personnel that must be on open decks must wear a Coast Guard approved personal flotation device; (10) vessels may not moor or layup on the right or left descending banks of the RNA and, (11) towboats may not make or break tows if any portion of the towboat or tow is located in the RNA.

The Coast Guard also enforces a safety zone in the vicinity of the barriers. Vessels are prohibited from transiting the safety zone with non-potable water on board in any space except for water on board that will not be discharged on the other side of the safety zone. Vessels must notify and obtain permission from the Coast Guard prior to transiting the safety zone if they intend to discharge any non-potable water attained on one-side of the safety zone on the other side of the zone.

The Coast Guard will likely review the RNA and safety zone for possible additions and revisions once the Project is completed. However, given the similarities between Permanent Barrier I and the existing barriers, it is unlikely any requirements will be removed and additional regulatory impacts on navigation, if any, will likely be minimal compared to current conditions.

Neighboring business and industrial land uses could be impacted by greater electrical ground current. This is discussed in Section VII.D above.

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13. Displacement of Farms. The Preferred Alternative would not adversely affect farmland. There are no farms in the Project area.

14. Man-made Resources. The Preferred Alternative would not adversely affect man-made resources.

15. Natural Resources. The No Action Alternative could affect the Great Lakes basin by increasing the risk of allowing the dispersal of Asian carp. The Preferred Alternative would protect the Great Lakes basin from invasive fish species found in the Mississippi River basin.

IX. CUMULATIVE EFFECTS

A. Cumulative Impacts

The cumulative effect of implementing the construction of Permanent Barrier I is considered to be beneficial environmentally, socially and economically. The protection of the Great Lakes and its thousands of miles of confluent tributaries is the ultimate goal of this action. The most significant cumulative effect is preventing the dispersal of an aggressive invasive species to one of the largest freshwater ecosystems on the planet.

In this environmental assessment, cumulative effect issues and assessment goals are established, the temporal boundaries and affected environment are determined, and the reasonably foreseeable future actions are identified. Cumulative effects are assessed to determine if the sustainability of any of the resources is adversely affected with the goal of determining the incremental impact to key resources that would occur should the proposal be permitted.

Affected Environment

- The spatial boundary for the assessment has been broadened to consider effects beyond the footprint of the Project and to include far reaching influence this action would have on the Great Lakes ecosystem.

Temporal Boundaries Considered

- Past (1908-2012) - this is the time that the modification of the IWW System was complete providing an aquatic connection between the Great Lakes and Mississippi River basins.
- Present (2013) - when the decision is being made on the replacement of the Demonstration Barrier with Permanent Barrier I.
- Future (2014 to 2030) - the time frame used for potentially implementing a final plan to ecologically separate the Mississippi and Great Lakes basins.

Reasonably Foreseeable Actions

- Continued navigation in the IWW, CSSC and Calumet Sag Channel
- Continued operational shut downs for maintenance of the Project
- Continued improvements and upgrades of the barrier systems to improve their efficacy.
- Continued introduction of non-native species
- Continued application of environmental requirements such as those under the Clean Water Act (CWA) and water quality improvement
- Implementation of various programs and projects to deal with invasive species control

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B. Cumulative Effects on Physical Resources

The physical resources of the Project area (geology, soils, topography, land cover, hydrology) were altered from their natural condition with the creation of the CSSC. The implementation of the preferred alternative would have no bearing on the physical resources of the Project reach or the areas which it influences. Adverse effects stemming from the action upon physical resources are not incrementally apparent, thus cumulative, adverse effects are not anticipated.

C. Cumulative Effects on Ecological Resources

The ecological resources of the Project area (plants, fish, birds, prairies, streams, wetlands, etc) were altered from their natural condition with the creation of the CSSC and the increase in urbanization and commercial development in the region. The degradation of natural and native communities has allowed for invasive species to expand into areas once occupied by native species. The implementation of the preferred alternative would not restore ecological resources or degrade them, but would contribute to the protection of the present-day Great Lakes aquatic ecosystem. An incremental benefit to the ecology of the Great Lakes would be achieved by preventing the colonization of Asian carp. Cumulatively, adverse ecological effects are not anticipated through implementing the preferred alternative. In terms of the Great Lakes ecology, this aids in the effort to protect the Great Lakes, and cumulatively is a positive action.

D. Cumulative Effects on Archaeological & Cultural Resources

The implementation of the preferred alternative has no affect upon the CSSC listing to the National Register of Historic Places or other archaeological or cultural resources. Adverse effects stemming from the action upon archaeological or cultural resources are not incrementally apparent, thus cumulative, adverse effects are not anticipated.

E. Cumulative Effects on Aesthetic Values

Aesthetics are typically a matter of conjecture. Many agree that Asian carp overrunning the Mississippi and Illinois Rivers are a nuisance, and it can be assumed this would be the same case if these fish were to disperse into the Great Lakes and the confluent tributaries. The implementation of the preferred alternative would have no adverse effects on aesthetic values are not incrementally apparent, thus cumulative, adverse effects are not anticipated.

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Table EA 3. Cumulative Effects Summary

	1908 – Present (Past Actions)	No Action	Preferred Alternative
Air Quality	Adverse	No Effect	Minor Adverse
Noise	Adverse	No Effect	No Effect
Geology & Soils	Adverse	No Effect	No Effect
Hydrology & Hydraulics	Beneficial	No Effect	No Effect
Land Use	Beneficial	No Effect	No Effect
T & E Species	Adverse	Adverse	Beneficial
Wetlands	Adverse	No Effect	No Effect
Aquatic Resources	Adverse	Adverse	Beneficial
Terrestrial Resources	Adverse	No Effect	Minor Adverse
Recreation and Aesthetics	Adverse	Minor Adverse	Minor Adverse
Cultural Resources	Beneficial	No Effect	No Effect
Economic Resources	Beneficial	Adverse	Beneficial
Total Impacts	Adverse	Adverse ¹	Beneficial ²

¹The adverse effects are tied to Asian carp impacting Great Lakes resources

²The adverse effects are to the immediate area of the Barriers, and the beneficial effects are to the Great Lakes by preventing Asian carp dispersal.

F. Cumulative Effects Summary

Along with direct and indirect effects, cumulative effects of the alternative were assessed following the guidance provided by the President's Council on Environmental Quality. There have been numerous effects to resources from past and present actions, and reasonably foreseeable future actions can also be expected to produce both beneficial and adverse affects. In this context, the increments of effects from the proposed risk reduction measures are relatively minor in terms of adverse effects, but very important in terms of the long term viability of the Great Lakes ecosystem. Assessment of cumulative effects indicates that long-term sustainability of Great Lakes as a resource may be dependent on the preferred alternative. Based on the expectation of continued sustainability of all resources, cumulative effects are not considered significantly adverse.

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X. COMPLIANCE WITH ENVIRONMENTAL QUALITY STATUTES

This feasibility study complies with applicable environmental laws, regulations, and Executive Orders (EO) for the current stage of the study. Table EA-4 provides a summary of the compliance status for the primary environmental requirements associated with the study.

Table EA-4. Compliance with Environmental Statutes and Regulations

Reference	Environmental Regulation	Compliance Status*
16 USC 1531, et seq.	Endangered Species Act, as amended	C
16 USC 460 (L),(12)	Federal Water Project Recreation Act, as amended	C
16 USC 4601-4, et seq.	Land and Water Conservation Fund Act, as amended	C
16 USC 470a, et seq.	National Historic Preservation Act (NHPA), as amended	C
16 USC 661	Fish and Wildlife Coordination Act, as amended	C
16 USC 703 et seq.	Migratory Bird Treaty Act of 1918, as amended	C
16 USC 469, et seq.	Archaeological and Historical Preservation Act as amended	C
25 USC 3001, et seq.	Native American Graves Protection and Repatriation Act	C
33 USC. 1251 et seq.	Clean Water Act, of 1977, as amended	C
42 USC 1962	Water Resources Planning Act of 1965	C
42 USC 1996	American Indian Religious Freedom Act of 1978	C
42 USC 201	Safe Drinking Water Act of 1986 as amended	C
42 USC 4321, et seq.	National Environmental Policy Act (NEPA), as amended	C
42 USC 4901, et seq.	Quiet Communities Act of 1978	C
42 USC 6901, et seq.	Resource Conservation and Recovery Act of 1976, as amended	C
42 USC 7401	Clean Air Act (CAA) of 1970 as amended	C
42 USC 9601	CERCLA of 1980	C
7 USC 4201, et seq.	Farmland Protection Policy Act	C
CEQ Memo Aug 11,1980	Prime or Unique Agricultural Lands NEPA	C
E.O. 11514	Protection and Enhancement of Environmental Quality	C
E.O. 11593	Protection and Enhancement of the Cultural Environment	C
E.O. 11988 (1977)	Floodplain Management	C
E.O. 11990 (1977)	Protection of Wetlands	C
E.O. 12088 (1978)	Federal Compliance with Pollution Control Standards	C
E.O. 12898 (1994)	Federal Actions to Address EJ in Minority and Low-Income Populations	C
E.O. 13007 (1996)	Indian Sacred Sites	C
E.O. 13045 (1997)	Protection of Children from Environmental Health Risks and Safety Risks	C
E.O. 13186	Responsibilities of Federal Agencies to Protect Migratory Birds	C
E.O. 13340	Great Lakes Designation of National Significance to Promote Protection	C
PL 79-525, 60 Stat 634	Rivers and Harbors Act of 1946	C

*pending agency and public review

Endangered Species Act of 1973, as amended. The proposed action has been coordinated with the U.S. Fish and Wildlife Service (USFWS). The Preferred Alternative would be in full compliance.

National Historic Preservation Act of 1966, as amended. By applying the criteria of effect, the Corps has made a determination of “No Adverse Effect” for the construction of Permanent Barrier I, as promulgated by the NHPA, as amended and 36 CFR Part 800: “Protection of Historic Properties.” The determination is based upon the District’s opinion that the proposed upgrade of the electric fish barrier will not change the appearance of the CSSC. Thus, the Project does not meet the adverse effect criteria of CFR Part 800.5(a)(1) and is consistent with the Secretary of the Interior’s Standards for the Treatment of Historic Properties (36 CFR Part 68) and applicable guidelines.

Federal Water Project Recreation Act. No increases or decreases in current public recreational opportunities would be realized if this Project were implemented. The Preferred Alternative would be in full compliance.

*Permanent Barrier I
Lockport Pool, CSSC
Will County, Illinois*

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Fish and Wildlife Coordination Act. Project plans have been coordinated with the USFWS. Coordination responses can be found in Appendix EA-A. This Preferred Alternative is in full compliance.

Wild and Scenic Rivers Act of 1968, as amended. The Project area is not listed on the National Rivers Inventory used to identify rivers or sections of rivers that may be designated by Congress to be component rivers in the National Wild and Scenic Rivers Systems. This Preferred Alternative is in full compliance.

EO 11988 (Floodplain Management). Implementation of the Preferred Alternative would avoid, to the extent possible, long- and short-term adverse impacts associated with the occupancy and modification of the base floodplain, and avoids direct and indirect support of development or growth (construction of structures and/or facilities, habitable or otherwise) in the base floodplain wherever there is a practicable alternative. Therefore, the Preferred Alternative is in full compliance.

EO 11990 (Protection of Wetlands). The Preferred Alternative would not impact wetlands.

Clean Water Act (Sections 401 and 404), as amended. No sediment dredging or filling activities are included in the proposed work. Sediment or debris located in the electrode placement area may be pushed aside during installation, but significant sediment accumulations in the area are not expected. The Corps has determined that Section 404 of the CWA does not apply to the proposed installation, since the Project will not include any direct return to waters of the United States and since there is no dredge or fill activity included in the Project. The Preferred Alternative would be in full compliance.

Clean Air Act, as amended. No aspect of the proposed Project has been identified that would result in violations to air quality standards. The outdoor atmosphere would not be exposed to contaminants/pollutants in such quantities and of such duration as may be or may tend to be injurious to human, plant, or property, or which unreasonably interferes with the comfortable enjoyment of life, property, or the conduct of business. If implemented, this Preferred Alternative would be in full compliance.

Farmland Protection Policy Act of 1981. The proposed Project would not result in the conversion of any prime, unique, or state or locally important farmland to nonagricultural uses. The Preferred Alternative would be in full compliance.

National Environmental Policy Act of 1969, as amended. The compilation of this EA and the signing of the Finding of No Significant Impact by the District Engineer would fulfill National Environmental Policy Act (NEPA) compliance.

EO 12898 (Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations). This EO requires the fair treatment and meaningful involvement of all people regardless of race, color, national origin, or income with respect to the development, implementation, and enforcement of environmental laws, regulations, and policies. Fair treatment means that no group of people, including a racial, ethnic, or a socioeconomic group should bear a disproportionate share of the negative environmental consequences resulting from industrial,

*Permanent Barrier I
Lockport Pool, CSSC
Will County, Illinois*

Environmental Assessment

municipal, and commercial operations or the execution of Federal, state, local, and tribal programs and policies. Meaningful involvement means that:

- potentially affected community residents have an appropriate opportunity to participate in decision making about a proposed activity that could affect their environment and/or health;
- the public's contribution can influence the regulatory agency's decision;
- the concerns of all participants will be considered in the decision making process; and
- the decision makers seek out and facilitate the involvement of those potentially affected.

The District has complied with the provisions of the EO through the coordination and the NEPA review process. No concerns regarding this EO surfaced during this process.

EO 13112 Invasive Species. This Project does not authorize or carry out any actions that are likely to promote invasive species proliferation. Implementation of the Preferred Alternative will help contain invasive species. This Preferred Alternative is in full compliance.

Migratory Bird Treaty Act of 1918, as amended. The Migratory Bird Treaty Act makes it illegal for people to "take" migratory birds, their eggs, feathers or nests. Take is defined to include by any means or in any manner, any attempt at hunting, pursuing, wounding, killing, possessing or transporting any migratory bird, nest, egg, or part thereof. No impacts to migratory birds are anticipated as a result of implementing preferred alternative.

XI. ENVIRONMENTAL IMPACTS OF THE NO ACTION ALTERNATIVE

No Action. Under the No Action alternative, periodic shut downs of the Barriers IIA and IIB for maintenance would increase the risk the small Asian carp would pass the Demonstration Barrier. Small fish would eventually grow to adults and could establish a breeding population on the upstream side of the barrier, leading to colonization of Lake Michigan and the rest of the Great Lakes. The presence of Asian carp in the Great Lakes could cause declines in abundances of native fish species because Asian carp would compete with native fish for food. The Great Lakes are home to federally- and/or state-listed threatened or endangered fish, mollusks, plants, mammals, insects, and reptiles. Other Great Lakes invasive species have been implicated in adverse effects upon up to 46 percent of the local federally-listed endangered plant and animal species. The introduction of Asian carp to the region could further harm these organisms and threaten their existence in the Great Lakes. An established Asian carp population also could threaten Great Lakes recreation, as silver carp are known for leaping out of the water at the sound of boat or jet-ski motors, causing physical harm to people and property.

XII. PROBABLE ADVERSE ENVIRONMENTAL EFFECTS WHICH CANNOT BE AVOIDED

Due to the machinery and construction required for the Project, there would be a temporary increase in noise and a slight decrease in the air and water quality during construction. Also, minor disturbance to some ground vegetation, including some grasses and shrubs, would occur so the equipment could access the banklines and maneuver to place electrodes and construct buildings. The potential for contamination of the river from gas, oil, or grease from heavy machinery is minor. Best management practices (BMPs) would be followed to protect water quality during and after construction.

A. Storm Water Discharges from Construction Site Activities

Best Management Practices will be used to protect water quality during and after construction of Permanent Barrier I. Storm Water Pollution Prevention Plans (SWPPPs) will be developed for each Project activity and will identify and describe the BMPs appropriate to each particular activity. Each SWPPP shall meet the conditions set forth in Illinois NPDES Permit No. ILR10 and include BMPs as protective as the requirements described in the Illinois Urban Manual (IUM). The IUM was originally developed by the Natural Resources Conservation Service and is now maintained and updated by the Association of Illinois Soil and Water Conservation Districts. The IUM includes technical specifications for stormwater BMPs, such as silt fence, erosion control blankets, and temporary seeding. Technical specifications for the entire array of BMPs recommended in the IUM are available at <http://www.aiswcd.org/IUM/>.

B. Diesel Emission Reductions

In order to reduce exposure to diesel exhaust, which has been identified as a possible occupational carcinogen, equipment meeting the most stringent EPA and CARB air standards has been selected for the Permanent Barrier I project. The Permanent Barrier I emergency generator meets the Best Available Technology standard and is certified by the USEPA (Tier 3) to conform to applicable Clean Air Act requirements. The engine will meet applicable EPA non-road mobile regulations and/or the EPA NSPS rule for stationary reciprocating compression ignition engines. The engine shall also meet applicable emission requirements specified by the National Emission Standards for Hazardous Air Pollutants and comply with the State Emission regulations at the time of installation/commissioning. Actual engine emissions values must be in compliance with applicable EPA emissions standards per ISO 8178 - D2 Emissions Cycle at specified kWh/bHP rating.

All heavy equipment used during construction is required to comply with all applicable state, Federal, and local air emissions standards.

XIII. RELATIONSHIP BETWEEN SHORT-TERM USE AND LONG-TERM PRODUCTIVITY

The CSSC is a vital component of the national transportation infrastructure. With timely and appropriate maintenance, the Project can deter the inter-basin transfer of Asian carp and other fish species from the Mississippi River to the Great Lakes Basin via the CSSC while preserving the existing uses of the system.

The Preferred Alternative will contribute to long-term ecological health by reducing the risk of Asian carp populations establishing in the Great Lakes.

XIV. ANY IRREVERSIBLE OR IRRETRIEVABLE COMMITMENTS OF RESOURCES IF THE PROPOSED ACTION SHOULD BE IMPLEMENTED

The fuel used by construction machinery and construction materials would be irretrievable commitments of resources associated with the preferred alternative. The electricity used to operate the Preferred Alternative would be lost and is considered irretrievable.

XV. RELATIONSHIP OF THE PROPOSED PROJECT TO LAND-USE PLANS

The proposed action is consistent with known land-use plans for this area.

XVI. CONCLUSIONS

A review of the proposed action indicates that there would be no significant adverse impacts on the environment, with any adverse effects being short-term and minor. The proposed action the construction of Permanent Barrier I as a replacement for the Demonstration Barrier would satisfy the Congressional directive in WRDA 2007 SEC. 3061(b)(1)(A).

XVII. COORDINATION

During the preparation of this EA, this action was coordinated with the USFWS, USCG, USEPA, USDA, MWRDGC, Illinois DNR, and the Illinois EPA. Appendix EA-A includes copies of the District's coordination letter and the responses received. The USFWS concurred with the District's determinations regarding federally-threatened and endangered species and the Illinois DNR concurred with the District's determination regarding aquatic species. The Draft EA was sent to individuals and organizations on the Distribution List in Appendix EA-D for public review and comment.

*Permanent Barrier I
Lockport Pool, CSSC
Will County, Illinois*

Environmental Assessment

XVIII. CITATIONS

Holliman, F.M. 2010. Operational protocols for electrical barriers on the Chicago Sanitary and Ship Canal: influence of electrical characteristics, water conductivity, behavior, and water velocity on risk for breach by nuisance invasive fishes. Smith-Root, Inc., Vancouver, Washington. Accessed on 15 February 2013 at

http://switchboard.nrdc.org/blogs/tcmr/Holliman_Final%20Draft%20Report_10_30_2010.pdf

Illinois DNR. 2010. Bighead carp in Illinois urban fishing ponds. Illinois Department of Natural Resources Division of Fisheries Aquatic Nuisance Species Program, Springfield, IL 8 pp. Accessed on 15 February 2013 at

<http://www.asiancarp.us/documents/BigheadCarpinIllinoisUrbanFishingPonds.pdf>

PERMANENT BARRIER I
LOCKPORT POOL
CHICAGO SANITARY AND SHIP CANAL
WILL COUNTY, ILLINOIS

ENVIRONMENTAL ASSESSMENT

APPENDIX EA-A
PERTINENT CORRESPONDENCE

*Permanent Barrier 1
Lockport Pool, CSSC
Will County, Illinois*

Environmental Assessment



REPLY TO
ATTENTION OF

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

February 7, 2013

Planning Branch
Environmental Formulation Section

SEE DISTRIBUTION LIST,

The Chicago District is preparing a National Environmental Policy Act (NEPA) document on the impacts from the proposed construction of Permanent Barrier 1, an upgrade of the Aquatic Nuisance Species Electric Dispersal Barriers, located near Romeoville, IL in the Chicago Sanitary and Ship Canal (CSSC). Currently there are three electrical barriers: Demonstration Barrier, Barrier IIA and Barrier IIB. The Demonstration Barrier has been operational since 2002 but due to its original demonstration status, it was designed and built with materials that were not intended for long-term use. In 2013, the District proposes replacing the Demonstration Barrier with the construction of Permanent Barrier 1 (see Enclosure 1).

The Electric Dispersal Barriers deter the inter-basin establishment of Asian carp and other aquatic nuisance species via the CSSC. The barriers are formed of steel electrodes that are secured to the bottom of the CSSC. The electrodes are connected to a raceway, consisting of electrical connections to a control building. Equipment in the control building generates a direct current pulse through the electrodes, creating an electric field in the water that discourages fish from crossing. Multiple barriers are needed to provide redundancy and so that at least one barrier can be active when another barrier, or barriers, is offline for maintenance. See Enclosure 2 for additional detail.

There are eight federally listed and proposed to be listed species for Will County, Illinois (Table 1). As this area is highly disturbed the proposed action would have no effect on the eastern massasauga, sheepsnose mussel, snuffbox, eastern prairie fringed orchid, lakeside daisy, leafy-prairie clover, or Mead's milkweed. Although the proposed action is not within the listed critical habitat zones for the endangered Hine's emerald dragonfly, critical habitat has been designated along the west side of the Des Plaines River. The proposed action may affect but is not likely to adversely affect the Hine's emerald dragonfly.

Permanent Barrier I
Lockport Pool, CSSC
Will County, Illinois

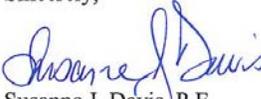
Environmental Assessment

Table 1. Federally listed and proposed to be listed species for Will County, Illinois.

Hine's emerald dragonfly (<i>Somatochlora hineana</i>)	Endangered
Eastern massasauga (<i>Sistrurus catenatus</i>)	Candidate
Sheepnose mussel (<i>Plethobasus cyphus</i>)	Proposed as Endangered
Snuffbox (<i>Epioblasma triquetra</i>)	Proposed as Endangered
Eastern prairie fringed orchid (<i>Platanthaera leucophaea</i>)	Threatened
Lakeside daisy (<i>Hymenopsis herbacea</i>)	Threatened
Leafy-prairie clover (<i>Dalea foliosa</i>)	Endangered
Mead's milkweed (<i>Asclepias meadii</i>)	Threatened

The Chicago District is coordinating under Section 7 of the Endangered Species Act and the Fish and Wildlife Coordination Act and would appreciate your comments or concurrence as part of the scoping process. I am particularly interested in your comments regarding impacts to aquatic habitat and threatened or endangered species. Please provide comments or concurrence by 22 February 2013. If you have any questions or wish to request additional information, please call Mr. Mark Cornish, telephone (309)794-5385, fax (309) 794-5171, email Mark.A.Cornish@usace.army.mil, or write to our address, U.S. Army Corps of Engineers, 111 North Canal Street, Suite 600, Chicago Illinois 60606; ATTN: Planning Branch (Gene Fleming).

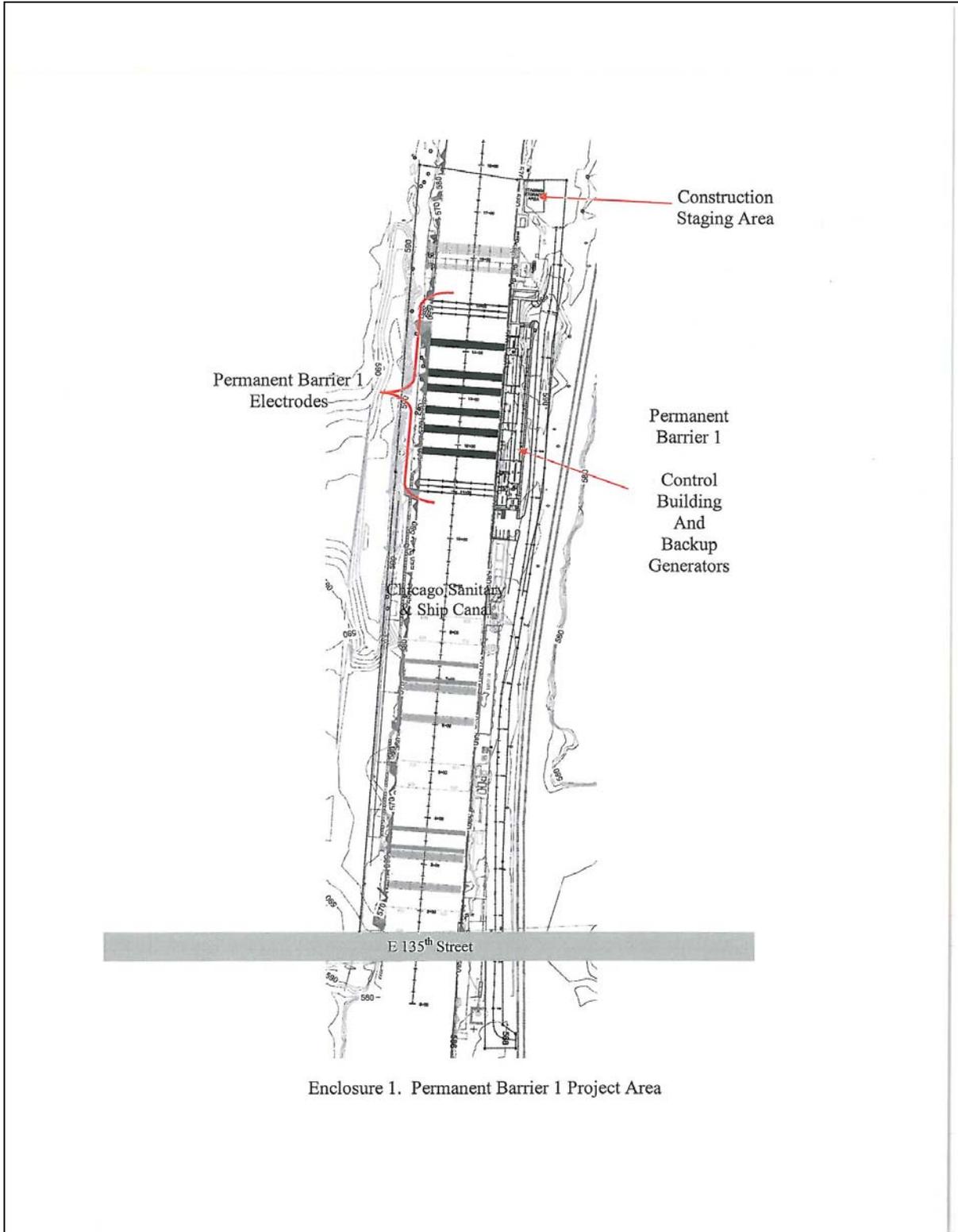
Sincerely,


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

Enclosures

*Permanent Barrier 1
Lockport Pool, CSSC
Will County, Illinois*

Environmental Assessment



Permanent Barrier I
Lockport Pool, CSSC
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Location

The Chicago Area Waterway System (CAWS) is the only known continuous connection between the Great Lakes and Mississippi River basins and poses the greatest potential risk for the transfer of aquatic nuisance species.



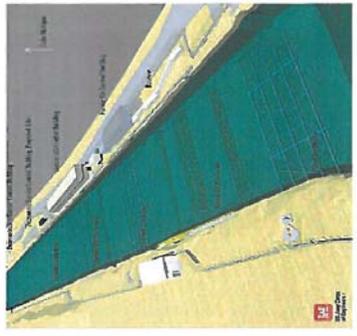
CHICAGO AREA WATERWAY SYSTEM

- 1. Winnetka Pumping Station
- 2. Chicago River
- 3. Chicago Basin
- 4. North Branch Basin
- 5. South Branch Basin
- 6. 22 Chicago Lock and Dam
- 7. Lockport Lock and Dam
- 8. Lockport Lock and Dam
- 9. Lockport Lock and Dam
- 10. Lockport Lock and Dam
- 11. Lockport Lock and Dam
- 12. Lockport Lock and Dam
- 13. Lockport Lock and Dam
- 14. Lockport Lock and Dam
- 15. Lockport Lock and Dam
- 16. Lockport Lock and Dam
- 17. Lockport Lock and Dam
- 18. Lockport Lock and Dam
- 19. Lockport Lock and Dam
- 20. Lockport Lock and Dam

About the U.S. Army Corps of Engineers

The USACE Chicago District mission is to provide valued, world class leadership, engineering services, and management capabilities to the diverse stakeholders and partners in the greater Chicago and metropolitan area and the nation.

The Chicago District is responsible for water resources development in the Chicago metropolitan area, an area of about 5,000 square miles with a population of about nine million. The district is involved in a variety of projects stemming from flood-risk management, coastal storm damage reduction, navigation, ecosystem restoration, emergency management and interagency and international support.



Barrier I is in design phase. Tentative location shown above.

For more information about the Chicago District, please visit www.itc.usace.army.mil or call the public affairs office at 312-846-5330.

www.facebook.com/usacechicago/
www.flickr.com/photos/usacechicago/
www.youtube.com/channel/UCgagoussace
www.usianc.army.us
 11/2012



The Electric Dispersal Barriers

The Electric Dispersal Barriers are located near Romeoville, Ill., in the Chicago Sanitary and Ship Canal (CSSC) within the CAWS. The CSSC is a man-made hydrologic connection between the Great Lakes and Mississippi River basins that was completed in the early 20th century to address sanitation and flooding. Construction of the CSSC allowed the reversal of the flow direction in the Chicago River and accommodated increased shipping.

Enclosure 2. Brochure on the Electrical Dispersal Barriers

Permanent Barrier 1
Lockport Pool, CSSC
Will County, Illinois

Environmental Assessment

The Electric Dispersal Barriers

Overview

The Electric Dispersal Barriers deter the inter-basin establishment of Asian carp and other aquatic nuisance species via the Chicago Sanitary and Ship Canal. The barriers, located approximately 25 miles from Lake Michigan and within a 1,300-foot section of the CSSC, are formed of steel electrodes that are secured to the bottom of the canal. The electrodes are connected to a roadway, consisting of a control building, which operates a DC pulse through the electrodes, creating an electric field in the water that discourages fish from crossing.



The Demonstration Barrier has been operational since 2002. Barrier IIA was placed into full-time operation in 2009, and Barrier IIB was placed into full-time operation in 2011. In 2013, USACE begins construction of permanent Barrier 1, authorized by Congress as an upgrade of the Demonstration Barrier. Permanent Electric Barrier 1 will be situated between Barrier IIB and the Demonstration Barrier.

Demonstration Barrier: Operates at 1 volt/inch, 5 hertz (cycles per second), 4 ms (pulse duration in milliseconds)
Barrier IIA: Operates at 2.3 volts/inch, 30 hertz, 2.5 ms
-Located 1,150 feet downstream of Barrier I
Barrier IIB: Operates at 2.3 volts/inch, 30 hertz, 2.5 ms

The Demonstration Barrier consists of 12 bundled steel cables (shown at left) to generate the electric field. One of the improvements incorporated into the design of Barriers IIA and IIB was to use 32 solid steel bars (shown at right) for each barrier for a total of 64 electrodes. The solid steel bars will corrode less over time, which reduces the frequency of replacement.



Effectiveness

To ensure the barriers' success, Congress directed USACE to study a range of factors that could potentially reduce their effectiveness. USACE is analyzing various technical, environmental and biological factors.

The first report USACE completed under this authority identified areas of potential bypass through adjacent waterways upstream of the electric barriers during construction of the Des Plaines River, which was completed in the fall of 2010, along with a stone berm in the Illinois and Michigan Canal, completed in the summer of 2010.



These project features reduce the likelihood of any Asian carp in the Des Plaines River potentially bypassing the electric barriers during a high-water event.

The Des Plaines River barricade, funded by the Great Lakes Restoration Initiative, extends approximately 13 miles from Romeoville, Ill. to Willow Springs, Ill. It consists of concrete barriers and a specially-fabricated wire mesh that allows water to flow through the fence but prevents the passage of juvenile and adult fish.

Other interim reports led to increasing the operating settings at Electric Barriers IIA and IIB that research indicated would immobilize very small fish, recommending the construction and installation of bar screens for two sluice gates at both the O'Brien and Chicago locks and studying low technologies such as bubbles, lights and sounds can inhibit Asian carp movement.

USACE also works closely with other agencies to monitor the CSSC to determine the effectiveness of the barriers, as well as the location and abundance of Asian carp in the waterway. Monitoring methods include netting, electrofishing, underwater cameras, tracking fish through implanted tags and collecting water samples for Asian carp environmental DNA.

U.S. Army Corps of Engineers

Quick Facts

Authorization
In 1996, the National Invasive Species Act authorized USACE to construct a demonstration electric dispersal barrier on the CSSC. USACE received additional authorization, including Section 3061 of the Water Resources Development Act of 2007, to construct Barriers IIA and IIB.

Uniqueness
This technology has been used in other places, but typically in smaller, shallower waterways. The CSSC barriers are in waters generally 20 to 25 feet deep and approximately 160 feet wide. To our knowledge, our barriers are the largest of their kind in the world and the only on a highly-trafficked, commercially-navigable waterway.

The barriers do not block the flow of water or the movement of vessels. Therefore, the canal can continue to serve intended purposes for treated wastewater and stormwater management and navigation.

Operations
Upon construction completion, each barrier undergoes ongoing comprehensive safety and operational testing.

The barrier electric field can be characterized by the equipment parameters of frequency, length (duration) and amplitude (voltage) of the DC pulses. Effective operation is dependent on a proper combination of these parameters.

Multiple barriers are needed to provide redundancy. The barriers are complex electrical and mechanical systems and must periodically be powered down for maintenance. More than one barrier is needed so that at least one barrier can be active when another barrier, or barriers, is offline for maintenance.

Parasitic structures secured to the bottom of the CSSC, made of structural steel shapes and woven-wire rope, limit the extent of the electric fields generated by the dispersal barriers to the areas designed for fish deterrence.

The Fish Barrier Total Control System is an automated, computer system that can run the barriers remotely in the event of power loss.

Effectiveness
Past and ongoing field testing of the efficacy of the barriers gives high confidence in the effectiveness.

Since 2003, USACE has been participating in telemetry studies that use transmitters to track tagged fish in the vicinity of the barriers.



Enclosure 2. Tri-Fold Brochure on the Electrical Dispersal Barriers (Cont.)

*Permanent Barrier I
Lockport Pool, CSSC
Will County, Illinois*

Environmental Assessment

DISTRIBUTION LIST

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MWRDGC
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MORRIS, IL 60450

ARLAN JUHL, DIRECTOR
OFFICE OF WATER RESOURCES
IL DEPT OF NATURAL RESOURCES
ONE NATURAL RESOURCES WAY
SPRINGFIELD IL 62702-1271

*Permanent Barrier 1
Lockport Pool, CSSC
Will County, Illinois*

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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/2013-I-0007

February 13, 2013

Ms. Susanne J. Davis
Department of the Army
Chicago District, U.S. Army Corps of Engineers
111 North Canal Street, Suite 600
Chicago, Illinois 60606

Attention: Planning Branch

Dear Ms. Davis:

This responds to your letter dated February 7, 2013, requesting comments and concurrence with your determinations regarding the potential effects of the proposed construction of Permanent Barrier 1, an upgrade of the Aquatic Nuisance Species Electric Dispersal Barriers, to species listed as threatened or endangered under the Endangered Species Act. In your letter you note that the project is in proximity to listed critical habitat for the Hine's emerald dragonfly (*Somatochlora hineana*), and you determined that the proposed construction may affect but is not likely to adversely affect the Hine's emerald dragonfly. In addition, you have made a no effect determination for eight other Federally listed species including the eastern massasauga (*Sistrurus catenatus*), eastern prairie fringed orchid (*Platanthera leucophaea*), lakeside daisy (*Hymenoxys acaulis*), leafy prairie clover (*Dalea foliosa*), Mead's milkweed (*Asclepias meadii*), and the sheepnose (*Plethobasus cyphus*) and snuffbox (*Epioblasma triquetra*) mussels. This proposed project is located near Romeoville, Will County, Illinois in the Chicago Sanitary and Ship Canal.

We have reviewed the information regarding this project that you have submitted. Based on our review, we would not anticipate impacts from this project to any of the listed species. Though designated critical habitat for the Hine's emerald dragonfly does occur in the vicinity of the project, as you note, the proposed construction occurs outside the critical habitat for the endangered dragonfly. Therefore, "no effect" would also be an appropriate determination for that species.

This letter provides comment under the authority of, and in accordance with, the provisions of the National Environmental Policy Act of 1969 (83 Stat. 852, as amended P.L. 91-190, 42 U.S.C. 4321 *et seq.*), the Endangered Species Act of 1973 (82 Stat. 884, as amended; 16 U.S.C. 1531 *et seq.*), the Fish and Wildlife Coordination Act of 1956 (48 Stat. 401, as amended; 16 U.S.C. 661

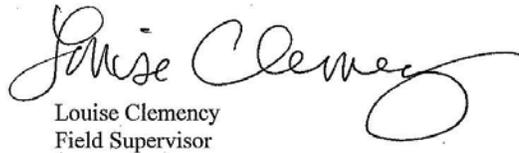
*Permanent Barrier I
Lockport Pool, CSSC
Will County, Illinois*

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et seq.), and the Migratory Bird Treaty Act (40 Stat. 775, as amended; 16 U.S.C. 703 *et seq.*).

If you have any questions, please contact Ms. Cathy Pollack at 847-381-2253, ex. 28.

Sincerely,



Louise Clemency
Field Supervisor

*Permanent Barrier 1
Lockport Pool, CSSC
Will County, Illinois*

Environmental Assessment



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

FEB 26 2013

REPLY TO THE ATTENTION OF:

E-19J

Susanne J. Davis, P.E.
Chief of Planning Branch
Department of the Army
U.S. Army Corps of Engineers - Chicago District
111 North Canal Street
Chicago, Illinois 60606

Re: USEPA Response to Study Planning Process – Proposed Construction of Permanent Barrier 1, an Upgrade of the Aquatic Nuisance Species (ANS) Electric Dispersal Barriers, Romeoville, Illinois

Dear Ms. Davis:

The U.S. Environmental Protection Agency (EPA) has reviewed the U.S. Army Corps of Engineers' (USACE) request for information dated February 7, 2013, concerning the above-mentioned project. Our comments in this letter are provided in accordance with our responsibilities under the National Environmental Policy Act (NEPA), the Council on Environmental Quality's NEPA Implementing Regulations (40 CFR 1500-1508), and Section 309 of the Clean Air Act.

As Asian carp have migrated northward up the Mississippi and Illinois Rivers, the threat posed by the possibility of ANS gaining access to Lake Michigan and the rest of the Great Lakes is clear. The Demonstration Barrier was built in 2002 to deter the inter-basin transfer of Asian carp and other ANS via the Chicago Sanitary and Ship Canal (CAWS) to the Great Lakes. The Demonstration Barrier, however, was not built with long-term use in mind, and USACE is planning to replace the Demonstration Barrier with the construction of Permanent Barrier 1. The proposed project is one part of a series of studies, reports, and actions USACE is conducting to examine a range of options to further reduce the possibility of ANS transfer.

Based on the information provided in the scoping request, EPA offers the following comments to aid in the development of future NEPA documentation.

Project Design:

- Given that the bottom of the CAWS is bedrock, we do not anticipate an accumulation of sediment and nor any disturbance of sediment as a result of this project. If this assumption is incorrect, future NEPA documentation should discuss the results of sediment testing to determine the nature of sediment accumulated at the construction site as well as USACE plans to deal with contaminated sediment, if any.

*Permanent Barrier I
Lockport Pool, CSSC
Will County, Illinois*

Environmental Assessment

- EPA anticipates the NEPA documentation will include a discussion of required permits to implement the project. Please provide information regarding the status of relevant permit applications.
- Please include information pertaining to construction access and how work will be done (i.e., construction staging from the river bank vs. in-stream river work). If cofferdams or other temporary dewatering measures are proposed, those measures, and the lengths of time they will be installed, should be discussed.
- Please include information specifying expected effects (both positive and negative) on water quality in the CAWS.

Threatened and Endangered (T&E) Species:

- We understand USACE is coordinating on an ongoing basis with U.S. Fish and Wildlife Service (USFWS) for Asian carp monitoring and rapid response activities. EPA anticipates the NEPA documentation will discuss coordination with the USFWS and the Illinois Department of Natural Resources regarding T&E species and suitable habitat, if any, that could be affected (both positively and negatively) by the proposed project.

We appreciate the opportunity to comment early in the process. Please send one copy of the draft EA when it is available. If we can be of service to the USACE during the preparation of appropriate NEPA documents, please do not hesitate to contact me at (312) 886-2910 or via email at westlake.kenneth@epa.gov or Kathleen Kowal of my staff at (312) 353-5206 or via email at kowal.kathleen@epa.gov.

Sincerely,



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

cc: Mark Cornish, USACE
Cathy Pollack, USFWS

*Permanent Barrier 1
Lockport Pool, CSSC
Will County, Illinois*

Environmental Assessment

Cornish, Mark A MVR

From: Miller, Rob [Rob.Miller@Illinois.gov]
Sent: Thursday, February 14, 2013 4:16 PM
To: Cornish, Mark A MVR
Cc: Sallee, Dan; Kirk, Dan; Rogus, Joe; Bruce, Debbie
Subject: NEPA for Electric Barrier Construction

Mark:

This email reply concerning the construction of Permanent Barrier 1 is at the request of a mailing I received from P.E. Susanne J. Davis.

Upon review of the information which was contained in this mailing, I feel confident that the proposed scope of work will have no impact to any of the listed aquatic organisms in Table 1 (two mussel species). As Ms. Davis states in her cover letter, the area in question is "highly disturbed" and the construction of the Permanent Barrier should have no impact on either of those mussel species. I cannot, however, speak to any potential impacts to the terrestrial species. Those concerns would be better addressed by either our wildlife and/or natural heritage biologist.

Thank you for the opportunity to comment.

Rob Miller
District 9 Fisheries Biologist
13608 Fox Road
Yorkville, Illinois 60560
630.553.6680
rob.miller@illinois.gov

*Permanent Barrier I
Lockport Pool, CSSC
Will County, Illinois*

Environmental Assessment

CONVERSATION RECORD		TIME 12:40	DATE 26 February 2013				
TYPE <input type="checkbox"/> VISIT <input type="checkbox"/> CONFERENCE <input checked="" type="checkbox"/> TELEPHONE		ROUTINE <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="width: 50%;">NAME/SYMBOL</th> <th style="width: 50%;">INI</th> </tr> </thead> <tbody> <tr> <td> </td> <td> </td> </tr> </tbody> </table>		NAME/SYMBOL	INI		
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<input checked="" type="checkbox"/> INCOMING	<input type="checkbox"/> OUTGOING						
NAME OF PERSON(S) CONTACTED OR IN CONTACT WITH YOU Lt. Michael Collet	ORGANIZATION (Office, dept., bureau, etc.) Ninth District U.S. Coast Guard, Cleveland, OH	TELEPHONE NO: 216-902-6051					
SUBJECT Permanent Barrier I Coordination							
SUMMARY Lt. Michael Collet reported that he had reviewed the Corps of Engineers' coordination letter for the proposed Permanent Barrier I project dated 7 February 2013. He stated that the USCG 9 th District had no comments at this time. The USCG will review the forthcoming Environmental Assesemnt and may provide comments pertaining to navigation in the barriers project area of Chicago Sanitary and Ship Canal near Romeoville, IL.							
ACTION REQUIRED Send Draft Environmental Assesement to the Attention of Lt. Collet.							
NAME OF PERSON DOCUMENTING CONVERSATION Mark A. Cornish	SIGNATURE 	DATE 2/27/2013					
ACTION TAKEN Lt. Collet was added to the EA Distribution List							

*Permanent Barrier I
Lockport Pool, CSSC
Will County, Illinois*

Environmental Assessment

Cornish, Mark A MVR

From: Fleming, Eugene J LRC
Sent: Thursday, January 24, 2013 8:53 AM
To: Cornish, Mark A MVR
Cc: Davis, Susanne J LRC; Bullock, Peter Y LRC
Subject: FW: Here's a fish barrier question for you (UNCLASSIFIED)

Classification: UNCLASSIFIED
Caveats: NONE

Mark,

A response from Anne Haaker, Deputy State Historic Preservation Officer for Illinois on the Barrier. Coordination is done per Pete

Gene

Gene Fleming
Chief, Environmental Formulation and Analysis Section
US Army Corps of Engineers, Chicago District
111 N. Canal
Chicago, IL 60606
Phone (312) 846 5585
BB (312) 509 2336
Fax (312) 886 2891

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

From: Bullock, Peter Y LRC
Sent: Wednesday, January 23, 2013 9:48 AM
To: Fleming, Eugene J LRC
Cc: Davis, Susanne J LRC
Subject: FW: Here's a fish barrier question for you (UNCLASSIFIED)

Classification: UNCLASSIFIED
Caveats: NONE

A response from IHPA regarding upgrades to the barrier.

Peter Y. Bullock
Archaeologist
USACE
CELRC-PM-PL-E
312-846-5587
FAX 312-886-2891

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

From: Haaker, Anne [<mailto:Anne.Haaker@Illinois.gov>]
Sent: Wednesday, January 23, 2013 9:46 AM
To: Bullock, Peter Y LRC
Subject: RE: Here's a fish barrier question for you (UNCLASSIFIED)

If the project cannot affect historic resources then it is not an undertaking pursuant to part 800. So, no, it does not have to come down here. Thanks.

*Permanent Barrier I
Lockport Pool, CSSC
Will County, Illinois*

Environmental Assessment

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

From: Bullock, Peter Y LRC [<mailto:Peter.Y.Bullock@usace.army.mil>]

Sent: Wednesday, January 23, 2013 9:13 AM

To: Haaker, Anne

Subject: Here's a fish barrier question for you (UNCLASSIFIED)

Classification: UNCLASSIFIED

Caveats: NONE

Anne, I've got a question for you about agency coordination concerning the electric fish barrier. I'm afraid I don't have the IHPA log number for this project. Here's the issue. The Chicago District of the Corps is planning an upgrade of the electric fish barrier to allow them to up the voltage. The appearance of the barrier won't change. Is it necessary for us to send you a coordination letter for this, or is IHPAs earlier concurrence letter (possibly of October 27, 2009 since we can't find it)adequate since the appearance of the barrier won't change?

Peter Y. Bullock
Archaeologist
USACE
CELRC-PM-PL-E
312-846-5587
FAX 312-886-2891

Classification: UNCLASSIFIED

Caveats: NONE

Classification: UNCLASSIFIED

Caveats: NONE

Classification: UNCLASSIFIED

Caveats: NONE

*Permanent Barrier I
Lockport Pool, CSSC
Will County, Illinois*

Environmental Assessment



REPLY TO
ATTENTION OF

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

APR 02 2013

Planning Branch
Environmental Formulation Section

SEE DISTRIBUTION LIST,

Enclosed is a draft Environmental Assessment entitled *Environmental Assessment, Permanent Barrier I, Lockport Pool, Chicago Sanitary and Ship Canal, Will County, Illinois*. This documentation was prepared in accordance with the National Environmental Policy Act of 1969 and is being distributed for your review.

The project is for the proposed construction of Permanent Barrier I, an upgrade of the Aquatic Nuisance Species Demonstration Barrier, located near Romeoville, IL in the Chicago Sanitary and Ship Canal. Currently there are three electrical barriers: Demonstration Barrier, Barrier IIA and Barrier IIB. The proposed Permanent Barrier I is designed to replace the Demonstration Barrier.

Comments must be received within 30 days and may be sent to Mr. Mark Cornish, U.S. Army Corps of Engineers, Clock Tower Building, P.O. Box 2004, Rock Island, IL 61204-2004, by fax at 309/794-5157, or by email at Mark.A.Cornish@usace.army.mil. Questions should be directed to Mr. Cornish at 309/794-5385.

Sincerely,

A handwritten signature in cursive script, appearing to read "Susanne J. Davis".

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

Enclosure

*Permanent Barrier I
Lockport Pool, CSSC
Will County, Illinois*

Environmental Assessment



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

REGION 5
77 WEST JACKSON BOULEVARD
CHICAGO, IL 60604-3590

APR 24 2013

REPLY TO THE ATTENTION OF:

E-19J

Mark A. Cornish
Department of the Army
U.S. Army Corps of Engineers – Rock Island District
Clock Tower Building
P.O. Box 2004
Rock Island, Illinois 61204

Re: USEPA Comments on Draft Environmental Assessment – Permanent Barrier I, Lockport Pool, Chicago Sanitary and Ship Canal, Romeoville, Illinois

Dear Mr. Cornish:

The U.S. Environmental Protection Agency (EPA) has reviewed the U.S. Army Corps of Engineers' (USACE) draft Environmental Assessment (EA) dated March, 2013, concerning the above-mentioned project. Our comments in this letter are provided in accordance with our responsibilities under the National Environmental Policy Act (NEPA), the Council on Environmental Quality's NEPA Implementing Regulations (40 CFR 1500-1508), and Section 309 of the Clean Air Act.

As Asian carp have migrated northward up the Mississippi and Illinois Rivers, the threat posed by the possibility of ANS gaining access to Lake Michigan and the rest of the Great Lakes is clear. The Demonstration Barrier was built in 2002 to deter the inter-basin transfer of ANS via the Chicago Sanitary and Ship Canal (CSSC) between the Mississippi River and the Great Lakes. The Demonstration Barrier, however, was not built with long-term use in mind. If Barriers IIA and IIB were to go off-line simultaneously, there would be increased vulnerability due to the passage of juvenile fish at the Demonstration Barrier. The preferred alternative involves the construction of Permanent Barrier I as a replacement for the Demonstration Barrier. The proposed Permanent Barrier I would be capable of emitting higher voltages and would work in concert with Barriers IIA and IIB to prevent movement of fish past the project area. The proposed project is one part of a series of studies, reports, and actions USACE is conducting to examine a range of options to further reduce the possibility of ANS transfer.

Based on the information provided in the draft EA, EPA has no substantive comments to offer. However, we recommend information be added to several sections of the EA to clarify and provide a more robust analysis.

*Permanent Barrier I
Lockport Pool, CSSC
Will County, Illinois*

Environmental Assessment

Business and Industrial Activity:

- EPA recommends this section be amended to clarify the “short duration” of any temporary closures of the CSSC at the barriers to all commercial and recreational vessel traffic during construction. We suggest best-case and worst-case closure durations be added to inform users.

Best Management Practices (BMPs):

- EPA recommends Section XII be amended to include examples of BMPs typically used to protect water quality during and after construction. This information would provide reviewers with a better understanding of the actions taken to reduce impacts.

State-listed Threatened and Endangered (T&E) Species:

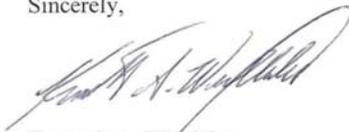
- In our scoping letter, we requested information concerning coordination with the Illinois Department of Natural Resources (IDNR) regarding T&E species and suitable habitat, if any, that could be affected by the proposed project. In Appendix EA-A, Pertinent Correspondence, a reply from IDNR indicates that listed aquatic organisms would not be impacted. This correspondence also indicated that a wildlife and/or natural heritage biologist should be contacted regarding potential impacts to terrestrial species. However, the draft EA did not include correspondence with a wildlife and/or natural heritage biologist concerning this project. We request coordination with an IDNR wildlife and/or natural heritage biologist be added to this appendix covering analysis of potential impacts, if any, to terrestrial species.

Diesel Emission Reductions:

Lastly, we include our standard list of BMPs for reducing diesel emissions at construction sites. While we anticipate, due to the uniqueness of the proposed project, that only some of the BMPs listed on this enclosure will be applicable to the proposed project, we recommend the USACE commit to including all relevant BMPs in the Finding of No Significant Impact (FONSI).

We appreciate the opportunity to comment on this project. Please send one copy of the final EA and FONSI when available. If we can be of service to the USACE during the preparation of appropriate NEPA documents, please do not hesitate to contact me at (312) 886-2910 or via email at westlake.kenneth@epa.gov or Kathleen Kowal of my staff at (312) 353-5206 or via email at kowal.kathleen@epa.gov.

Sincerely,



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

Enclosure – Diesel Emissions Reductions BMPs

*Permanent Barrier I
Lockport Pool, CSSC
Will County, Illinois*

Environmental Assessment

Diesel Emissions

The National Institute for Occupational Safety and Health (NIOSH) has determined that diesel exhaust is a potential occupational carcinogen, based on a combination of chemical, genotoxicity, and carcinogenicity data. In addition, acute exposures to diesel exhaust have been linked to health problems such as eye and nose irritation, headaches, nausea, asthma, and other respiratory system issues.

Recommendation: Although every construction site is unique, common actions can reduce exposure to diesel exhaust. EPA recommends the USACE commit to the following actions during construction, where applicable:

- Using low-sulfur diesel fuel (less than 0.05% sulfur).
- Retrofitting engines with an exhaust filtration device to capture diesel particulate matter before it enters the construction site.
- Positioning the exhaust pipe so that diesel fumes are directed away from the operator and nearby workers, thereby reducing the fume concentration to which personnel are exposed.
- Using catalytic converters to reduce carbon monoxide, aldehydes, and hydrocarbons in diesel fumes. These devices must be used with low sulfur fuels.
- Ventilating wherever diesel equipment operates indoors. Roof vents, open doors and windows, roof fans, or other mechanical systems help move fresh air through work areas. As buildings under construction are gradually enclosed, remember that fumes from diesel equipment operating indoors can build up to dangerous levels without adequate ventilation.
- Attaching a hose to the tailpipe of diesel vehicles running indoors and exhaust the fumes outside, where they cannot reenter the workplace. Inspect hoses regularly for defects and damage.
- Using enclosed, climate-controlled cabs pressurized and equipped with high efficiency particulate air (HEPA) filters to reduce the operators' exposure to diesel fumes. Pressurization ensures that air moves from inside to outside. HEPA filters ensure that any incoming air is filtered first.
- Regularly maintaining diesel engines, which is essential to keep exhaust emissions low. Follow the manufacturer's recommended maintenance schedule and procedures. Smoke color can signal the need for maintenance. For example, blue/black smoke indicates that an engine requires servicing or tuning.
- Reducing exposure through work practices and training, such as turning off engines when vehicles are stopped for more than a few minutes, training diesel-equipment operators to perform routine inspection, and maintaining filtration devices.
- Purchasing new vehicles that are equipped with the most advanced emission control systems available.
- With older vehicles, using electric starting aids such as block heaters to warm the engine reduces diesel emissions.
- Using respirators, which are only an interim measure to control exposure to diesel emissions. In most cases, an N95 respirator is adequate. Workers must be trained and fit-tested before they wear respirators. Depending on work being conducted, and if oil is present, concentrations of particulates present will determine the efficiency and type of mask and respirator. Personnel familiar with the selection, care, and use of respirators must perform the fit testing. Respirators must bear a NIOSH approval number. Never use paper masks or surgical masks without NIOSH approval numbers.

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Lockport Pool, CSSC
Will County, Illinois*

Environmental Assessment



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/2013-CPA-0031

April 30, 2013

Mark Cornish
U.S. Army Corps of Engineers
Rock Island District
Clock Tower Building – PO Box 2004
Rock Island, Illinois 61204-2004

Dear Mr. Cornish:

This letter responds to your request for comments on the draft Environmental Assessment (EA) for the Permanent Barrier I – Lockport Pool, Chicago Ship and Sanitary Canal project. This letter also serves as a follow-up response to our prior response dated February 13, 2013, confirming that we did not anticipate impacts from this project to any federally listed species. The proposed activities are located near Romeoville, Will County, Illinois.

The District proposes to construct Permanent Barrier I, which would be an upgrade of the Aquatic Nuisance Species Demonstration Barrier. Three electrical barriers are currently located in the Chicago Ship and Sanitary Canal: the Demonstration Barrier, Barrier IIA, and Barrier IIB. Permanent Barrier I would replace the Demonstration Barrier.

Based on the information provided, we offer the following comments on the draft EA:

- The Threatened and Endangered Species sections and associated tables should be changed to reflect that both the sheepsnose mussel (*Plethobasus cyphus*) and snuffbox mussel (*Epioblasma triquetra*) are listed as Endangered under the Endangered Species Act. The EA indicates that both species are going through the listing process; however, both species were listed as Endangered in 2012.
- The District should indicate what time of the year the proposed activities would occur.

This letter provides comment under the authority of, and in accordance with, the provisions of the National Environmental Policy Act of 1969 (83 Stat. 852, as amended P.L. 91-190, 42 U.S.C. 4321 *et seq.*), the Fish and Wildlife Coordination Act (48 Stat. 401, as amended; 16 U.S.C. 661 *et seq.*), the Endangered Species Act of 1973, as amended (87 Stat. 884, as amended; 16 U.S.C. 1531 *et seq.*), the Migratory Bird Treaty Act (40 Stat. 755, as amended; 16

*Permanent Barrier I
Lockport Pool, CSSC
Will County, Illinois*

Environmental Assessment

U.S.C. 703 et seq.), and the Bald and Golden Eagle Protection Act (54 Stat. 250, as amended;
16 U.S.C. 668-668d).

If you have any questions, please contact Mr. Shawn Cirton at 847/381-2253, ext. 19.

Sincerely,

A handwritten signature in cursive script that reads "Louise Clemency". The signature is written in black ink and is positioned above the printed name and title.

Louise Clemency
Field Supervisor

cc: Davis, USACE
Kowal, USEPA

*Permanent Barrier I
Lockport Pool, CSSC
Will County, Illinois*

Environmental Assessment



**Illinois Historic
Preservation Agency**

FAX (217) 782-8161

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

Will County

Romeoville and Lemont

Upgrade to Permanent Fish Dispersal Barrier I

Chicago Sanitary and Ship Canal between River Miles 296.35 and 296.50 between
Romeoville and Lemont

IDNR-1312327, OWR-2013031

IHPA Log #004042513

April 26, 2013

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 provided for the above referenced project. The Chicago Sanitary and Ship Canal Historic District was listed on the National Register of Historic Places on December 20, 2011. 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 contact me at 217/785-5027.

Sincerely,

Anne E. Haaker

Deputy State Historic

Preservation Officer

c: Harold Hassen, Ph.D., Illinois Department of Natural Resources

*Permanent Barrier I
Lockport Pool, CSSC
Will County, Illinois*

Environmental Assessment

Cornish, Mark A MVR

From: Julia Wozniak [jwozniak@mwgen.com]
Sent: Monday, April 29, 2013 2:40 PM
To: Cornish, Mark A MVR
Subject: Re: Permanent Barrier 1 draft Environmental Assessment (UNCLASSIFIED)

Mark:

Thank you for forwarding the draft EA (both electronic and hard-copy versions) for Midwest Generation's review. With the closure of our two Chicago generating stations in August, 2012, we no longer have any barging operations in the Canal system which traverse the electric barrier zone. Nonetheless, we will continue to stay involved with all of the ongoing Electric Barrier activities, as well as the Asian Carp monitoring efforts, since our Will County Power Generating Station is directly downstream of the current barrier installation on the Chicago Sanitary and Ship Canal (CSSC). Midwest Generation representatives routinely attend the Barrier Safety Committee meetings, as well as the Technical and Policy Group meetings organized by Dr. Phil Moy.

Midwest Generation has been fully supportive of the efforts which have been made up to this point, and which will continue to be made, by the U.S. Army Corps, and other state and federal agencies, to prevent the introduction of Asian Carp (and other invasive species) into both the Great Lakes and Mississippi River basin.

However, that being said, we do have a continuing concern regarding the proximity of the electric barrier system to our property with respect to any possible adverse impacts on human health and safety, as well as on-site electrical equipment, related to the ground current generated by more powerful barrier arrays and/or the combination of higher powered arrays which will result from the construction of a permanent Barrier I. Our concerns stem from the following language contained in the Draft EA:

Page 17, Section 0:

"The Preferred Alternative has the potential to impact nearby structures through increased electrical ground current in the Project vicinity."

And at page 18, Section 12:

"Business and industrial activity could be impacted by greater electrical ground current. There would be an increase in ground potentials in the soil and rock in the immediate vicinity of the fish barriers due to the addition of a new barrier. The impact of this increase is being addressed by operational changes to the existing barriers and by monitoring adjacent properties both now and after the addition of the Preferred Alternative."

Midwest Generation would appreciate more information on how much greater the risks are expected to be with the installation of the Permanent Barrier I than with the current configuration (i.e. demonstration barrier and Barriers IIA and IIB). We are aware that the Corps has conducted previous ground current studies in the vicinity (including locations on Midwest Generation property) and have not found any major concerns. With the current plan to increase the strength of the Permanent Barrier I over that of the existing demonstration barrier, we believe that detailed information on the possible additional risks, if available, should be shared with all adjacent property owners prior to the commencement of the construction phase of this project.

*Permanent Barrier I
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We understand that with the installation of the permanent Barrier I, as well as with the potential combined effects of running multiple barriers at one time, that the ground current studies will continue, and adjustments to barrier operations will be made, as needed. However, this retrospective evaluation (once the new barrier is in place and operating) does not provide the necessary level of comfort that there will be no adverse impacts on Midwest Generation's personnel or operations, as well as on other adjacent property owners, when the new barrier initially goes on-line. To that end, if there is additional signage that the Corps believes we need to install after the barrier is constructed warning of the potential current, that would be helpful information to have.

Midwest Generation's primary commitment is to ensure the continuing health and safety of our personnel and equipment, while also continuing to support Asian Carp control efforts. We appreciate the Corps on-going efforts to keep us in the loop regarding barrier operations and future plans. We look forward to continuing to work cooperatively with you to ensure that both of our objectives can be attained safely.

Please let me know if you have any questions, or if you need any additional information regarding our comments.

Thanks again for the opportunity to comment.

Julia

Julia Wozniak
Environmental Program Manager
Midwest Generation
Edison Mission Energy
235 Remington Blvd--Suite A
Bolingbrook, IL 60440

Office: (630) 771-7880
Cell: (312) 925-3184

e:mail Fax: (312) 788-5274

[NOTE: Our main office is no longer in Chicago, so please use the contact information above for all future correspondence]

From: "Cornish, Mark A MVR" <Mark.A.Cornish@usace.army.mil>
To: "jwozniak@mwgen.com" <jwozniak@mwgen.com>
Date: 04/19/2013 01:11 PM
Subject: Permanent Barrier 1 draft Environmental Assesment (UNCLASSIFIED)

Classification: UNCLASSIFIED
Caveats: NONE

*Permanent Barrier I
Lockport Pool, CSSC
Will County, Illinois*

Environmental Assessment

Julia,

We've sent the Permanent Barrier 1 draft EA to the wrong address and I wanted to make sure you had time to look at it during the review period which ends on May 2. A paper copy of the attached should get to you early next week. Please let me know if you have questions.

Have a nice weekend,

Mark Cornish

Chief, Environmental Planning Section

Regional Planning and Environmental Division, North (CEMVP-PD-P-RI)

U.S. Army Corps of Engineers

Phone: 309-794-5385, Cell: 309-912-3024; Fax: 309-794-5157

Mark.A.Cornish@usace.army.mil

Classification: UNCLASSIFIED

Caveats: NONE

[attachment "27MAR2013B -Barrier 1 - DRAFT EA with Cover Letter.pdf" deleted by Julia Wozniak/Chicago/EMG/EIX]

*Permanent Barrier I
Lockport Pool, CSSC
Will County, Illinois*

Environmental Assessment

Cornish, Mark A MVR

From: Schuessler, Joseph [Joseph.Schuessler@mwr.org]
Sent: Tuesday, May 07, 2013 9:32 AM
To: Cornish, Mark A MVR
Cc: Yurik, James
Subject: RE: Permanent Barrier I Environmental Assessment - Request for Comments (UNCLASSIFIED)

Mark,

Jim Yurik and I did review this during the comment period and concurred with the environmental assessment. We have no further comments at this time.

Joe

Joseph M. Schuessler, P.E., CFM
Principal Civil Engineer
Engineering Department, Collection Facilities/TARP
111 East Erie Street
Chicago, IL 60611-3154
ph: 312-751-3236, fax: 312-751-4028

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

From: Cornish, Mark A MVR [<mailto:Mark.A.Cornish@usace.army.mil>]
Sent: Tuesday, May 07, 2013 8:56 AM
To: Schuessler, Joseph; Yurik, James
Subject: Permanent Barrier I Environmental Assessment - Request for Comments (UNCLASSIFIED)

Classification: UNCLASSIFIED
Caveats: NONE

Mr. Schuessler and Mr. Yurik,

The Corps of Engineers plans to upgrade of the Aquatic Nuisance Species Demonstration Barrier, located near Romeoville, IL in the Chicago Sanitary and Ship Canal. The comment period for the attached Environmental Assessment on the proposed construction of Permanent Barrier I closed on May 2.

Please let me know if MWRD will be providing comments on the Environmental Assessment. We are interested in addressing your issues (if any) even though the comment period has passed.

Thanks,
Mark Cornish
Chief, Environmental Planning Section
Regional Planning and Environmental Division, North (CEMVP-PD-P-RI) U.S. Army Corps of Engineers
Phone: 309-794-5385, Cell: 309-912-3024; Fax: 309-794-5157 Mark.A.Cornish@usace.army.mil

Classification: UNCLASSIFIED
Caveats: NONE

*Permanent Barrier I
Lockport Pool, CSSC
Will County, Illinois*

Environmental Assessment



Illinois Department of
Natural Resources

One Natural Resources Way Springfield, Illinois 62702-1271
<http://dnr.state.il.us>

Pat Quinn, Governor
Marc Miller, Director

May 16, 2013

Mr. Mark Cornish
US Army Corp of Engineers
Clock Tower Building
PO Box 2004
Rock Island, IL 61204-2004

Dear Mr. Cornish:

The Illinois Department of Natural Resources, Office of Realty and Environmental Planning, has reviewed the following Environmental Assessment and has no comments or objections:

Project Name

Permanent Barrier I, Lockport Pool, Chicago Sanitary and Ship Canal, Will County, Illinois

Please contact me at 217-524-0501 if I can be of further assistance.

Sincerely,

Stefanie Fitzsimons
Impact Assessment, OREP

PERMANENT BARRIER I
LOCKPORT POOL
CHICAGO SANITARY AND SHIP CANAL
WILL COUNTY, ILLINOIS

ENVIRONMENTAL ASSESSMENT

APPENDIX EA-B
ILLINOIS ENDANGERED AND THREATENED SPECIES

Permanent Barrier 1
Lockport Pool, CSSC
Will County, Illinois

Environmental Assessment

Common Name	Scientific Name	Status
Redveined Prairie Leafhopper	<i>Aflexia rubranura</i>	Threatened
Slippershell	<i>Alasmidonta viridis</i>	Threatened
Western Sand Darter	<i>Ammocrypta clarum</i>	Endangered
Mead's Milkweed	<i>Asclepias meadii</i>	Endangered
Forked Aster	<i>Aster furcatus</i>	Threatened
Upland Sandpiper	<i>Bartramia longicauda</i>	Endangered
American Slough Grass	<i>Beckmannia syzigachne</i>	Endangered
Oklahoma grass pink orchid	<i>Calopogon oklahomensis</i>	Endangered
Grass Pink Orchid	<i>Calopogon tuberosus</i>	Endangered
Little Green Sedge	<i>Carex viridula</i>	Threatened
Pretty Sedge	<i>Carex woodii</i>	Threatened
Northern Harrier	<i>Circus cyaneus</i>	Endangered
Spotted Turtle	<i>Clemmys guttata</i>	Endangered
Kirtland's Snake	<i>Clonophis kirtlandi</i>	Threatened
Spotted Coral-root Orchid	<i>Corallorhiza maculata</i>	Threatened
Purple Wartyback	<i>Cyclonaias tuberculata</i>	Threatened
White Lady's Slipper	<i>Cypripedium candidum</i>	Threatened
Leafy Prairie Clover	<i>Dalea foliosa</i>	Endangered
Narrow-leaved Sundew	<i>Drosera intermedia</i>	Threatened
Spike Rush	<i>Eleocharis rostellata</i>	Threatened
Spike	<i>Elliptio dilatata</i>	Threatened
Blanding's Turtle	<i>Emydoidea blandingii</i>	Endangered
Iowa Darter	<i>Etheostoma exile</i>	Threatened
Starhead topminnow	<i>Fundulus dispar</i>	Threatened
Common Moorhen	<i>Gallinula chloropus</i>	Endangered
Hedge Hyssop	<i>Gratiola quartermaniae</i>	Endangered
Four-toed Salamander	<i>Hemidactylum scutatum</i>	Threatened
Pallid Shiner	<i>Hybopsis amnis</i>	Endangered
Shore St. John's Wort	<i>Hypericum adpressum</i>	Endangered
Quillwort	<i>Isoetes butleri</i>	Endangered
Least Bittern	<i>Ixobrychus exilis</i>	Threatened
Loggerhead Shrike	<i>Lanius ludovicianus</i>	Endangered
Blazing Star	<i>Liatris scariosa var.</i>	Threatened
Black Sandshell	<i>Ligumia recta</i>	Threatened
Running Pine	<i>Lycopodium clavatum</i>	Endangered
False Mallow	<i>Malvastrum hispidum</i>	Endangered
Slender Sandwort	<i>Minuartia patula</i>	Threatened
River Redhorse	<i>Moxostoma carinatum</i>	Threatened
Mudpuppy	<i>Necturus maculosus</i>	Threatened
Black-crowned Night-Heron	<i>Nycticorax nycticorax</i>	Endangered
Small Sundrops	<i>Oenothera perennis</i>	Threatened
Eryngium Stem Borer	<i>Papaipema eryngii</i>	Endangered
Tuberclad Orchid	<i>Platanthera flava var.</i>	Threatened
Eastern Prairie Fringed Orchid	<i>Platanthera leucophaea</i>	Endangered
Sheepnose	<i>Plethobasus cyphus</i>	Endangered

*Permanent Barrier I
Lockport Pool, CSSC
Will County, Illinois*

Environmental Assessment

Common Name	Scientific Name	Status
King Rail	<i>Rallus elegans</i>	Endangered
Bristly Blackberry	<i>Rubus schneideri</i>	Threatened
Blue Sage	<i>Salvia azurea ssp. pitcheri</i>	Threatened
American Burnet	<i>Sanguisorba canadensis</i>	Endangered
Salamander Mussel	<i>Simpsonaias ambigua</i>	Endangered
Eastern Massasauga	<i>Sistrurus catenatus catenatus</i>	Endangered
Hine's Emerald Dragonfly	<i>Somatochlora hineana</i>	Endangered
Franklin's Ground Squirrel	<i>Spermophilus franklinii</i>	Threatened
Ornate Box Turtle	<i>Terrapene ornata</i>	Threatened
Lakeside Daisy	<i>Tetranuris herbacea</i>	Endangered
Ear-leafed Foxglove	<i>Tomanthera auriculata</i>	Threatened
Buffalo Clover	<i>Trifolium reflexum</i>	Threatened
Slender Bog Arrow Grass	<i>Triglochin palustris</i>	Threatened
Barn Owl	<i>Tyto alba</i>	Endangered
Large Cranberry	<i>Vaccinium macrocarpon</i>	Endangered
Corn Salad	<i>Valerianella chenopodifolia</i>	Endangered
Marsh Speedwell	<i>Veronica scutellata</i>	Threatened
Canada Violet	<i>Viola canadensis</i>	Endangered
Yellow-headed Blackbird	<i>Xanthocephalus</i>	Endangered

PERMANENT BARRIER I
LOCKPORT POOL
CHICAGO SANITARY AND SHIP CANAL
WILL COUNTY, ILLINOIS

ENVIRONMENTAL ASSESSMENT

APPENDIX EA-C
FINDING OF NO SIGNIFICANT IMPACTS

PERMANENT BARRIER I
LOCKPORT POOL
CHICAGO SANITARY AND SHIP CANAL
WILL COUNTY, ILLINOIS

ENVIRONMENTAL ASSESSMENT

FINDING OF NO SIGNIFICANT IMPACT

I. BACKGROUND

The U.S. Army Corps of Engineers (Corps), Chicago District, operates the Aquatic Nuisance Species Dispersal Barriers Project (Project) which is comprised of three electrical barriers: Demonstration Barrier, Barrier IIA and Barrier IIB. The barriers consist of steel electrodes mounted across the bed of the canal and on-land power generation and distribution equipment. The on-land equipment sends a pulsing DC current through the electrodes, creating an electric field in the water that repels and potentially stuns fish. The Demonstration Barrier has been operational since 2002 and was rehabilitated in 2008, but it was designed and built with materials that were not intended for long-term use due to its demonstration status. The environmental assessment evaluated the potential impacts of replacing the Demonstration Barrier with Permanent Barrier I. Permanent Barrier I would incorporate the lessons learned from the operation of the Demonstration Barrier, Barrier IIA, and Barrier IIB in its design to improve durability and effectiveness. It would be capable of generating higher voltages and work in concert with Barriers IIA and IIB to prevent the movements of fish upstream of the barrier Project area.

II. IMPLEMENTING AUTHORITY

The National Invasive Species Act of 1990, as amended in 1996, authorized the Corps to examine potential methods to create an aquatic nuisance species barrier in the CSSC and construct the Demonstration Barrier. The Corps received additional authorization in Section 3061(b) of the Water Resources Development Act of 2007 to construct and operate Barriers IIA and IIB, and to upgrade and make permanent Barrier I. The Aquatic Nuisance Species Dispersal Barriers Project (Project) is 100 percent Federal and there are no non-Federal sponsors.

Environmental Assessment - Finding of No Significant Impact

III. ALTERNATIVES CONSIDERED

The following are the alternatives considered in detail:

A. No Action

Under the No Action alternative the three electrical barriers: Demonstration Barrier, Barrier IIA and Barrier IIB would continue to operate and be maintained. Each individual barrier in the barrier system will at times need to be shut down for maintenance. When the Barriers IIA and IIB are turned off, the barriers Project will remain vulnerable to the passage of small fish at the Demonstration Barrier. Other actions to prevent the transfer of aquatic nuisance species may occur in the Chicago Area Waterways System (CAWS) through the implementation of the measures identified in the Corps' Efficacy Study or the Great Lakes and Mississippi River Interbasin Study; however these studies do not authorize construction. The activities of the interagency Asian Carp Regional Coordination Committee and the Monitoring and Rapid Response Working Group including overharvest and potential periodic rotenone applications in the CAWS, would also continue.

B. Replacement of the Demonstration Barrier with Permanent Barrier I

This alternative involves the construction of Permanent Barrier I as a replacement for the Demonstration Barrier. It would be capable of generating higher voltages and work in concert with Barriers IIA and IIB to prevent the movements of fish past the barrier Project area. The Corps determined the replacement of the Demonstration Barrier with Permanent Barrier I to be the preferred alternative.

IV. DISCUSSION OF MAJOR ENVIRONMENTAL COMPLIANCE

A. Clean Air Act

No aspect of the proposed Project has been identified that would result in violations to air quality standards. The Project is considered below the de minimis level of particulate matter of 100 tons per year.

B. Diesel Emission Reductions

In order to reduce exposure to diesel exhaust, which has been identified as a possible occupational carcinogen, equipment meeting the most stringent EPA and CARB air standards has been selected for the Permanent Barrier I project. The Permanent Barrier I emergency generator meets the Best Available Technology standard and is certified by the USEPA (Tier 3) to conform to applicable Clean Air Act requirements. The engine will meet applicable EPA non-road mobile regulations and/or the EPA New Source Performance Standards rule for stationary reciprocating compression ignition engines. The engine shall also meet applicable emission requirements specified by the National Emission Standards for Hazardous Air Pollutants and comply with the State Emission regulations at the time of installation/commissioning. Actual engine emissions values must be in compliance with applicable EPA emissions standards per ISO 8178 - D2 Emissions Cycle at specified kWh/bHP rating.

Environmental Assessment - Finding of No Significant Impact

C. Clean Water Act (Sections 401 and 404)

No sediment dredging or filling activities are included in the proposed work. Sediment or debris located in the electrode placement area may be pushed aside during installation, but significant sediment accumulations in the area are not expected. The Corps has determined that Section 404 of the CWA does not apply to the proposed installation, since the Project will not include any direct return to waters of the United States and since there is no dredge or fill activity included in the Project. The Preferred Alternative would be in full compliance. Coordination with the Illinois EPA is in progress and they are expected to concur.

D. USFWS Coordination

Consultation with the USFWS under Section 7 is completed and documented via a letter dated 13 February 2013. Concurrence was reached that the action would not affect threatened and endangered species.

E. SHPO Coordination

There are no affects to cultural, historical or archaeological resources associated with the Preferred Alternative.

F. Public Interest

An Environmental Assessment was completed for the proposed measures. A Public Review period was held from April 2, 2013 to May 2, 2013 for the Environmental Assessment. The proposed Project has been determined to be in full compliance with appropriate statutes including the National Environmental Policy Act, the Endangered Species Act, the Fish and Wildlife Coordination Act, the National Historic Preservation Act, the Clean Air Act, Sections 401 and 404 of the CWA, and the Corps of Engineer's regulations.

V. AFFECTED ENVIRONMENT

A. Affected Resources

The Preferred Alternative would increase electrical ground potentials in the soil and rock in the immediate vicinity of the fish barriers due to the addition of a new barrier. Increased ground potential could accelerate corrosion of buried conductive structures or create an electrical shock hazard for partially buried conductive structures that can be contacted by people. Corrosion or shock potential at distances from the barrier are only likely for long metal items that span significant lengths, such as fences, pipelines, or railroad tracks.

The Corps will continue monitor the effects of the electrical barriers on land uses to ensure the safety of the Barrier Project area and the adjacent proprietries. The Corps will work in close contact and collaborate with adjacent property owners to ensure the safety of pipelines, bridges, railways, navigation, docking facilities, and recreational areas. Any issues identified through monitoring and

*Permanent Barrier I
Lockport Pool, CSSC
Will County, Illinois*

Environmental Assessment - Finding of No Significant Impact

research will be addressed through operational changes to the barriers or mitigated to a level where they would not be considered significant to humans and the environment.

B. Cumulative Impacts Analysis

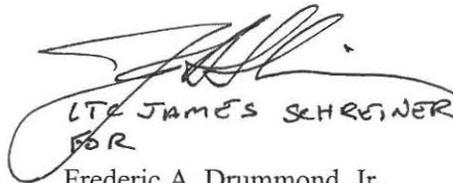
Along with direct and indirect effects, cumulative effects of the alternative were assessed following the guidance provided by the President's Council on Environmental Quality. There have been numerous effects to resources from past and present actions, and reasonably foreseeable future actions can also be expected to produce both beneficial and adverse affects. In this context, the increments of effects from the proposed risk reduction measures are relatively minor in terms of adverse effects, but may be important in terms of the long term viability of the Great Lakes and Mississippi River Basins. Based on the expectation of continued sustainability of all resources, cumulative effects of this project are not considered significant.

*Permanent Barrier I
Lockport Pool, CSSC
Will County, Illinois*

Environmental Assessment - Finding of No Significant Impact

IV. 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 (Chicago District) has assessed the environmental impacts associated with this Project. It was concluded construction of Permanent Barrier I as a replacement for the Demonstration Barrier in the CSSC would not cause significant effects on the quality of the human environment. The assessment process indicates that this Project would have mainly beneficial impacts upon the ecological, biological, social, cultural, or physical resources of the CSSC and the Great Lakes watershed. The findings indicate that the proposed action is not a major Federal action significantly affecting the quality of the human environment. Therefore, it was determined that an Environmental Impact Statement is not required.



LTJAMES SCHREINER
FOR

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

Date: 17 June 13

PERMANENT BARRIER I
LOCKPORT POOL
CHICAGO SANITARY AND SHIP CANAL
WILL COUNTY, ILLINOIS

ENVIRONMENTAL ASSESSMENT

APPENDIX EA-D

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*Permanent Barrier I
Lockport Pool, CSSC
Will County, Illinois*

Environmental Assessment

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Lockport Pool, CSSC
Will County, Illinois*

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*Permanent Barrier I
Lockport Pool, CSSC
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Environmental Assessment

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