Appendix S
Water Resources Technical Memorandum

RED AHEAD
Moving Ahead to a Better Red

Red Line Extension

Chicago Red Line Extension Project

Water Resources
Technical Memorandum

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Abbreviations

API	Area of Potential Impact
BRT	Bus Rapid Transit
CCSMP	Cook County Stormwater Management Plan
CFR	Code of Federal Regulations
CTA	Chicago Transit Authority
CWA	Clean Water Act
DWRM	Division of Water Resource Management
EcoCAT	Ecological Compliance Assessment Tool
EIS	Environmental Impact Statement
IDNR	Illinois Department of Natural Resources
IEPA	Illinois Environmental Protection Agency
ILCS	Illinois Compiled Statutes
ILRDSS	Illinois River Decision Support System
ISWS	Illinois State Water Survey
MWRD	Metropolitan Water Reclamation District of Greater Chicago
NEPA	National Environmental Policy Act
NPDES	National Pollution Discharge Elimination System
NRCS	Natural Resources Conservation Service
NWI	National Wetlands Inventory
RLE	Red Line Extension
ROW	right-of-way
TARP	Tunnel and Reservoir Plan
TMDLs	Total Maximum Daily Loads
UPRR	Union Pacific Railroad
USACE	U.S. Army Corps of Engineers
USC	United States Code
USDA	U.S. Department of Agriculture
USEPA	U.S. Environmental Protection Agency
USFWS	U.S. Fish and Wildlife Service
USGS	U.S. Geological Survey
WMO	Watershed Management Ordinance

Section 1
Summary

This technical memorandum analyzes the potential impacts of the Red Line Extension (RLE) Project on water resources, including surface and groundwater resources, the local drainage system, water quality, and wetlands. Potential impacts on floodplains are not discussed in this technical memorandum; potential impacts on floodplains will be included in the Draft Environmental Impact Statement (EIS).

The areas of potential impact (APIs) for the water resources evaluation included an area 500 feet on either side of the alternative centerlines; the API is different for each alternative and each alternative option. In order to determine alternative-specific impacts on water resources, existing data on surface and groundwater resources, drainage patterns, water quality, the water supply, and wetlands were reviewed. A field visit was conducted to evaluate potential wetlands.

Lake Michigan is the dominant topographic feature in the region and is approximately 4.8 miles from the RLE alignment at its closest point. Lake Calumet is in the eastern portion of the project area, and the Little Calumet River flows along the southern boundary of the project area. The project area is urbanized and is primarily made up of commercial and residential development. The APIs are in portions of two watersheds: the Chicago/Calumet watershed and the Lake Michigan watershed. The features of all alternatives would be within the Chicago/Calumet watershed. The Lake Michigan watershed is to the east of Union Pacific Railroad (UPRR) Rail Alternative Segment UB; the only portion of the project area that would be in the Lake Michigan watershed is an access road (Illinois River Decision Support System [ILRDSS] 2009). The APIs are not within the Inland Waterway Coastal Zone boundary or a sole source aquifer. The Little Calumet River is on the Illinois 303(d) list of impaired waterways; it is listed as impaired for mercury, polychlorinated biphenyls, aldrin, iron, dissolved oxygen, total phosphorus, and silver (Illinois Environmental Protection Agency [IEPA] 2012b). No Total Maximum Daily Loads (TMDLs) have been developed for this portion of the Little Calumet River. Due to the predominance of impervious surfaces throughout the APIs, minimal percolation to the underlying groundwater occurs.

Potential wetlands were identified at the sites of the Bus Rapid Transit (BRT) Alternative 130th Street park & ride; UPRR Rail Alternative South Station Option and West Station Option; and the 120th Street yard and shop. All sites are highly disturbed and hydrophytic vegetation is present. It is likely that large portions of these sites would be considered wetlands, but not all of the areas may be jurisdictional wetlands subject to regulation. As a basis for impact analysis and to evaluate the maximum potential impact, the following areas (approximate) were considered to be potential wetlands:

- 1.5 to 9 acres of the BRT Alternative 130th Street park & ride site (final impact acreage will be dependent on a formal wetland delineation)

- 14 acres in the vicinity of the UPRR Rail Alternative 120th Street yard and shop location
- 7 acres associated with the UPRR Rail Alternative South Station Option
- 6 acres associated with the UPRR Rail Alternative West Station Option

It is likely that some surface water connections exist between these wetland areas and the Little Calumet River, making some of these areas jurisdictional wetlands. It is more likely that a surface water connection exists from the sites of the BRT Alternative park & ride and UPRR Rail Alternative stations to the river than from the yard site to the river. Due to the highly disturbed topography, a connection would require extensive research and fieldwork to confirm. The fieldwork and formal wetland delineation would take place at the time of the permit application, concurrent with final design.

This analysis identifies maximum potential wetland impacts; formal wetland delineations and confirmation of impacts would be performed following the determination of an environmentally preferred alternative and concurrent with final design. Actual impacts would likely be fewer and/or smaller than the maximum impacts described in this report. Table 1-1 (at the end of this section) summarizes the impacts on water resources including drainage, groundwater, water quality, and wetlands.

The physical modifications associated with the alternatives would result in impacts on the existing stormwater drainage infrastructure, particularly where park & ride facilities would be constructed. These alterations would not greatly affect the direction of drainage through the project area and would not change drainage within the watershed. Following mitigation, there would be no adverse permanent impacts on stormwater drainage associated with the alternatives.

Mitigation options proposed herein would be confirmed during the design and engineering process in the event that contaminated groundwater was encountered and it was determined that there would be the potential for the contamination to spread. Additional best management practices that would address potential impacts from encountering contaminated groundwater and groundwater dewatering are proposed in the *Hazardous Materials Technical Memorandum*.

There would be no adverse permanent or construction impacts on water quality associated with the alternatives following mitigation. The transit system would replace automobile trips and there would be an associated reduction in roadway pollutants. The introduction of new impervious surfaces would have the potential to increase the concentration and accumulation of runoff contaminants; however, there would be no adverse permanent or construction impacts following mitigation. Due to the predominance of impervious surfaces throughout the project area, minimal percolation to the underlying groundwater occurs in the APIs. Therefore, any potential increases in contaminated surface water runoff would have no adverse impact on groundwater quality.

The RLE Project, with compensatory mitigation, either through creation, restoration, enhancement, or preservation of wetlands, would result in no adverse permanent impacts on

affected wetlands in the APIs. There are several potential underutilized or vacant industrial land areas, with a connection to the Little Calumet River, that exist within 3 miles of the alternative alignments; these land areas could be restored as compensatory mitigation. Construction staging areas would be sited outside of wetlands as much as possible, but if there were any temporary impacts, those areas would be reconstructed as wetlands following construction.

Development of the BRT Alternative, UPRR Rail Alternative, or Halsted Rail Alternative in combination with related renovation, new construction, and transportation projects identified in the vicinity of the proposed project would not contribute to substantial cumulative water quality, hydrology, and/or drainage impacts.

Updated July 28, 2015
In August 2014, based on the technical analysis and public input until then, CTA announced the NEPA Preferred Alternative—the UPRR Rail Alternative. CTA is considering two alignment (route) options of this alternative: the East Option and the West Option. At this time, CTA is also considering only the South Station Option of the 130th Street Station. In late 2014 and early 2015, CTA conducted additional engineering on the East and West Options to refine the East and West Option alignments. Appendix G of this technical memorandum summarizes the refined alignments and any additional or different impacts that would result. The information in Appendix G supersedes information presented in other chapters of this technical memorandum.

Table 1-1: Maximum Potential Water Resources Impacts

	Permanent				Construction			
	Drainage	Groundwater	Water Quality	Wetlands	Drainage	Groundwater	Water Quality	Wetlands
No Build Alternative	No impacts	No impacts	No impacts	No wetlands - No impacts	No impacts	No impacts	No impacts	No wetlands - No impacts
BRT Alternative	No adverse impacts	No adverse impacts	No adverse impacts after mitigation	Compensatory mitigation	No adverse impacts after mitigation	No adverse impacts after mitigation	No adverse impacts after mitigation	Compensatory mitigation
UPRR Rail Alternative ROW Option Segment UA	No adverse impacts after mitigation - pump station	No adverse impacts	No adverse impacts after mitigation	No wetlands - No impacts	No adverse impacts after mitigation	No adverse impacts after mitigation	No adverse impacts after mitigation	No wetlands - No impacts
UPRR Rail Alternative East Option Segment UA	No adverse impacts after mitigation - pump station	No adverse impacts	No adverse impacts after mitigation	No wetlands - No impacts	No adverse impacts after mitigation - pump station	No adverse impacts after mitigation	No adverse impacts after mitigation	No wetlands - No impacts
UPRR Rail Alternative West Option Segment UA	No adverse impacts after mitigation	No adverse impacts	No adverse impacts after mitigation	No wetlands - No impacts	No adverse impacts after mitigation	No adverse impacts after mitigation	No adverse impacts after mitigation	No wetlands - No impacts
UPRR Rail Alternative Segment UB	No adverse impacts after mitigation	No adverse impacts	No adverse impacts after mitigation	Compensatory mitigation	No adverse impacts after mitigation	No adverse impacts after mitigation	No adverse impacts after mitigation	Compensatory mitigation
UPRR Rail Alternative 120th Street Yard & Shop	No adverse impacts after mitigation	No adverse impacts	No adverse impacts after mitigation	Compensatory mitigation	No adverse impacts after mitigation	No adverse impacts after mitigation	No adverse impacts after mitigation	Compensatory mitigation
Halsted Rail Alternative Segment HA	No adverse impacts after mitigation	No adverse impacts	No adverse impacts after mitigation	No wetlands - No impacts	No adverse impacts after mitigation	No adverse impacts after mitigation	No adverse impacts after mitigation	No wetlands - No impacts

	Permanent				Construction			
	Drainage	Groundwater	Water Quality	Wetlands	Drainage	Groundwater	Water Quality	Wetlands
Halsted Rail Alternative Segment HB	No adverse impacts after mitigation	No adverse impacts	No adverse impacts after mitigation	No wetlands - No impacts	No adverse impacts after mitigation	No adverse impacts after mitigation	No adverse impacts after mitigation	No wetlands - No impacts
Halsted Rail Alternative 119th Street Yard & Shop	No adverse impacts after mitigation	No adverse impacts	No adverse impacts after mitigation	No wetlands - No impacts	No adverse impacts after mitigation	No adverse impacts after mitigation	No adverse impacts after mitigation	No wetlands - No impacts

Notes:
BRT = Bus Rapid Transit, UPRR = Union Pacific Railroad, ROW = right-of-way

Section 2
Project Description

The Chicago Transit Authority (CTA) is proposing to extend the Red Line from the existing 95th Street Terminal to the vicinity of 130th Street, subject to the availability of funding. The proposed Red Line Extension (RLE) would include four stations. Each station would include bus transfer and parking facilities. This project is one part of the Red Ahead Program to extend and enhance the entire Red Line. The CTA is also planning 95th Street Terminal improvements that are anticipated to be completed prior to the proposed RLE construction.

The project area is 11 miles south of the Chicago central business district (commonly referred to as the Loop) and encompasses approximately 20 square miles. The boundaries of the project area are 95th Street on the north, Ashland Avenue on the west, Stony Island Avenue on the east, and the Calumet-Sag Channel/Little Calumet River and 134th Street on the south. The I-57 Expressway and I-94 Bishop Ford Freeway cross the western and eastern edges of the project area, respectively. Lake Calumet is in the eastern portion of the project area. The project area encompasses parts of nine community areas in the City of Chicago and the eastern section of the Village of Calumet Park. Chicago community areas include Beverly, Washington Heights, Roseland, Morgan Park, Pullman, West Pullman, Riverdale, Hegewisch, and South Deering. The project area comprises residential (primarily single family), industrial (both existing and vacant), transportation (including freight), and commercial development.

The Draft Environmental Impact Statement (EIS) focuses on the following alternatives (shown in Figure 2-1), which emerged from the Alternatives Analysis and the National Environmental Policy Act (NEPA) scoping process:

- No Build Alternative
- Bus Rapid Transit (BRT) Alternative
- Union Pacific Railroad (UPRR) Rail Alternative
    - Right-of-Way (ROW) Option
    - East Option
    - West Option
- Halsted Rail Alternative

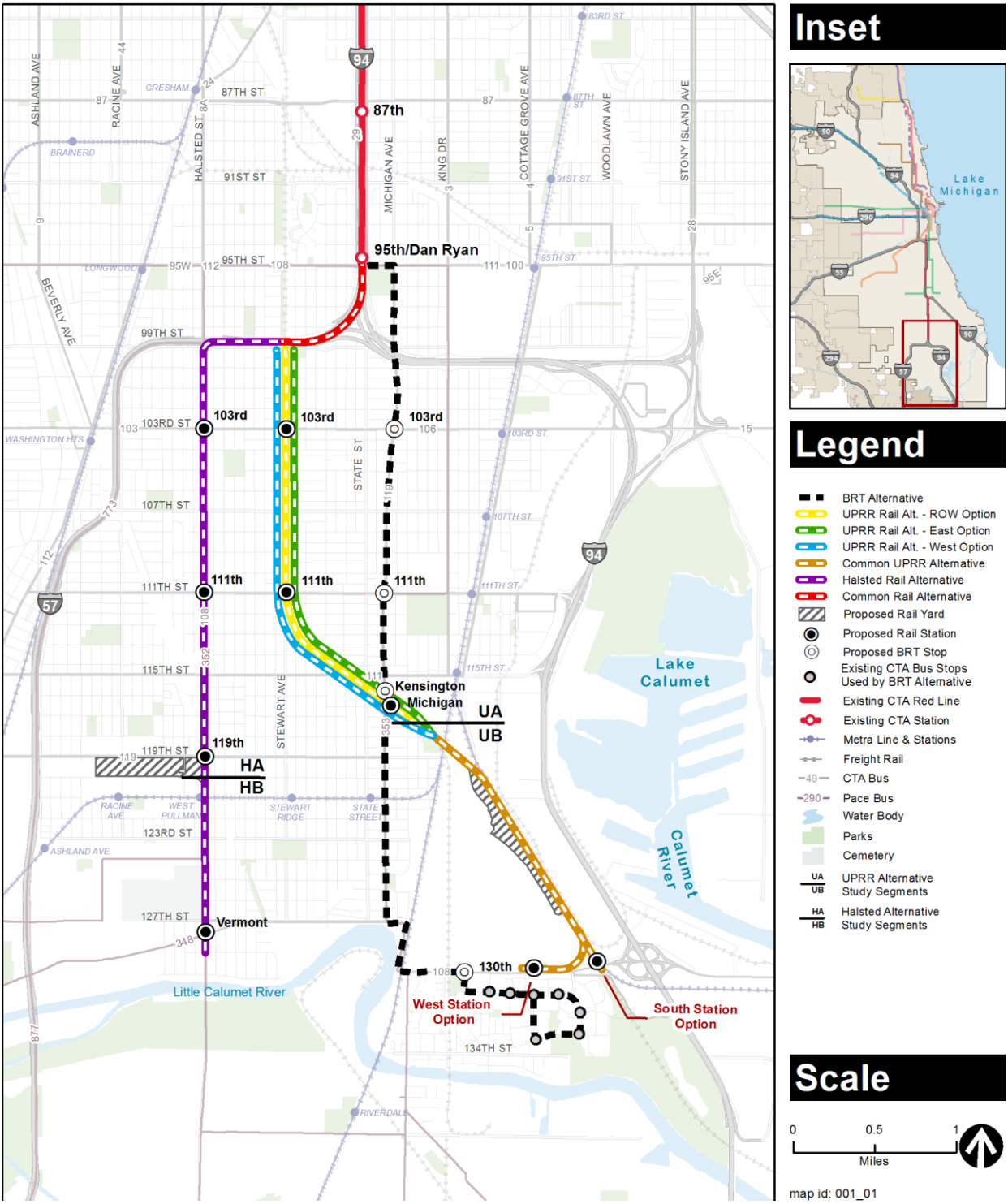


Figure 2-1: Red Line Extension Project Alternatives

The No Build Alternative is a required alternative as part of the NEPA environmental analysis and is used for comparison purposes to assess the relative benefits and impacts of extending the Red Line. The No Build Alternative is carried into the Draft EIS phase of the project development regardless of its performance versus the build alternatives under consideration. No new infrastructure would be constructed as part of the No Build Alternative other than committed transportation improvements that are already in the Chicago Metropolitan Agency for Planning (CMAP) Fiscal Year 2010–2015 Transportation Improvement Program (TIP) and the improvements to 95th Street Terminal. The TIP projects within the project area consist of four bridge reconstructions, several road improvement projects including resurfacing and coordination of signal timing on 95th Street, work on Metra's facilities, construction of a bicycle/pedestrian multi-use trail, and preservation of historic facilities. The No Build Alternative includes regular maintenance of existing track and structures, and bus transit service would be focused on the preservation of existing services and projects. All elements of the No Build Alternative are included in each of the other alternatives. Under this alternative, travel times would not improve from existing conditions.

The BRT Alternative (formerly referred to as the Transportation Systems Management Alternative) is a 5.0-mile, limited-stop, enhanced BRT route, which would operate 24 hours per day between the existing 95th Street Terminal and the intersection of 130th Street and Eberhart Avenue. No dedicated bus lanes would be provided for the BRT Alternative; however, parking lanes would be removed for some portions of the alignment and four stops with improved bus shelters and park & ride facilities would be created at 103rd Street and Michigan Avenue, 111th Street and Michigan Avenue, Kensington Avenue and Michigan Avenue, and 130th Street and Eberhart Avenue. Although BRT service elements would not continue south of the 130th Street stop, the bus route would continue through Altgeld Gardens along the existing route with six stops. The BRT Alternative would be consistent with bus routing changes that may occur as part of improvements to the 95th Street Terminal. Under this alternative, travel times between 130th Street and the Loop would improve over existing conditions.

The UPRR Rail Alternative is a 5.3-mile extension of the heavy rail transit Red Line from its existing 95th Street Terminal to 130th Street, just west of I-94. The Chicago Transit Board designated the UPRR Rail Alternative as the Locally Preferred Alternative at its August 12, 2009 board meeting. This alternative includes construction and operation of new heavy rail transit tracks, mostly in existing transportation corridors. The UPRR Rail Alternative has three options for alignment (ROW, East, and West), all of which would include operation on elevated structure from 95th Street to just past the Canadian National/Metra Electric District tracks near 119th Street. The alignment would then transition to at-grade through an industrial area with no public through streets, terminating at 130th Street in the vicinity of Altgeld Gardens. Four new stations would be constructed at 103rd Street, 111th Street, Michigan Avenue, and 130th Street. The 130th Street station would be the terminal station, with two options under evaluation: the South Station Option and the West Station Option. A new yard and shop facility would be sited near 120th Street and Cottage Grove Avenue. The bus routes in the vicinity of the UPRR Rail Alternative would be modified to enhance connectivity between the Red Line and the bus network. The hours

of operation for the UPRR Rail Alternative would be the same as for the current Red Line (24 hours every day of the year), and the service frequency is expected to be the same as current service. Under this alternative, travel times between 130th Street and the Loop would improve substantially over existing conditions.

The Halsted Rail Alternative is a 5.0-mile heavy rail transit extension of the existing Red Line. In this alternative, the Red Line would operate on an elevated structure running south from 95th Street along I-57 until Halsted Street. The alignment would then turn south and continue along Halsted Street to the intersection of Halsted Street and Vermont Avenue near 127th Street. This alternative would include four new stations at 103rd Street, 111th Street, 119th Street, and Vermont Avenue. A new yard and shop would be sited west of Halsted Street and between the 119th Street and Vermont Avenue stations. The bus routes in the vicinity of the Halsted Rail Alternative would be modified to enhance connectivity to the Red Line. The hours of operation for the Halsted Rail Alternative would be the same as for the current Red Line (24 hours every day of the year), and the service frequency is expected to be the same as current service. Under this alternative, travel times between 127th Street and the Loop would improve substantially over existing conditions. This alternative would not extend rail to Altgeld Gardens, which would be served by bus connecting to the Vermont station.

Section 3
Methods for Impact Evaluation

This analysis included an evaluation of the existing water resources, including wetlands, within an API of 500 feet around each alternative alignment. The analysis also resulted in the identification of proposed best management practices and mitigation measures to avoid, minimize, mitigate, and compensate for adverse impacts. Although floodplain impacts are not analyzed in this technical report, the EIS document reports the results of the floodplain analysis.

3.1 Regulatory Framework

This section describes federal, state, regional, and local regulations and requirements related to water resources.

3.1.1 Federal

3.1.1.1 Clean Water Act (33 United States Code 1251)

The Clean Water Act (CWA) establishes the basic structure for regulating discharges of pollutants into waters of the United States and gives the U.S. Environmental Protection Agency (USEPA) the authority to implement pollution control programs and actions, such as setting wastewater standards for industries.

3.1.1.2 Clean Water Act (Section 303(d))

Section 303(d) of the CWA requires states, territories, and authorized tribes to develop a list of water quality-impaired segments of waterways. The 303(d) list includes water bodies that do not meet water quality standards for their specified beneficial uses, even after point sources of pollution have the minimum required levels of pollution control technology. The law requires that jurisdictions establish priority rankings for water bodies on their 303(d) lists and implement a process, called TMDLs, to meet water quality standards.

Section 4 describes the existing condition of waterways and groundwater in the project area, established beneficial uses, and associated TMDLs. These water quality regulations would be applicable during construction and operation of the project alternatives.

3.1.1.3 Clean Water Act (Section 401)

Section 401 of the CWA requires a State Water Quality Certification to show that the proposed project will comply with State water quality standards for any activity that results in a discharge to a water body. In the event that a proposed alternative requires permitting under CWA Section 404 (described below, Section 404 regulates the discharge of dredged or fill material into waters of the United States), a water quality certification is required under CWA Section 401. These regulatory requirements are applicable during construction.

3.1.1.4 Clean Water Act - National Pollution Discharge Elimination System (Section 402)

The National Pollution Discharge Elimination System (NPDES) permit process provides a regulatory mechanism for the control of point source discharges—a municipal or industrial discharge from a specific location or pipe—to surface waters of the United States. Two exceptions that are regulated under the NPDES program are (1) diffuse source discharges caused by general construction that disturb more than 1 acre, and (2) stormwater discharges from municipal stormwater systems that are a separate system in which runoff is carried through a developed conveyance system to specific discharge locations.

The NPDES program regulates pollution generated by runoff from construction, industrial activities, and general and urban land use, including runoff from streets. Federal stormwater regulations require municipalities to obtain NPDES permits for stormwater discharges from municipal storm drains to surface waters. In 1990, USEPA established final regulations for stormwater discharges through the implementation of Section 402(p) of the CWA. The two permits that enforce Section 402(p), the General Industrial Permit and the General Construction Permit, are major attempts to control non-point source pollutants that discharge to local storm drain systems and receiving waters in urban runoff. A General Construction Permit would be required during construction of the proposed alternatives.

3.1.1.5 Clean Water Act (Section 404)

Section 404 of the CWA authorizes the U.S. Army Corps of Engineers (USACE) to issue permits for the discharge of dredged or fill material into waters of the United States, including wetlands (33 United States Code [USC] 1344). The USEPA guidelines (40 Code of Federal Regulations [CFR] 230 et seq.), USACE regulatory guidelines (33 CFR 320 et seq.), and NEPA guidelines (40 CFR 1500 et seq.) are the substantive environmental criteria used to evaluate permit applications submitted to USACE. The USEPA's guidelines suggest a sequential approach to project planning; mitigation measures are considered only after the applicant shows that no practicable alternatives are available to achieve the basic project purpose with a lesser environmental impact. The USACE evaluation of permit applications includes an analysis of practicable alternatives, which is the primary screening mechanism used to determine the appropriateness of permitting a discharge. Section 404(b)(1) guidelines prohibit discharges of dredged or fill material into waters of the United States, including wetlands, if a practicable alternative to the proposed discharge exists that would have less adverse impacts on the aquatic ecosystem (provided that the alternative does not cause other significant adverse environmental impacts) (40 CFR 230[a]).

The 1987 USACE *Wetland Delineation Manual* (USACE 1987) is the current federal delineation manual used in the CWA Section 404 for the identification and delineation of wetlands. The three parameters for defining wetlands are as follows:

- Hydric soils (soils formed under saturation, flooding, or ponding conditions long enough during the growing season to develop anaerobic conditions)

- Wetland hydrology ("areas that are periodically inundated or have soils saturated to the surface at some time during the growing season" [USACE 1987])

- Hydrophytic vegetation (vegetation that thrives in wet conditions)

All three parameters are required "under normal circumstances" for a location to be considered a wetland. Determining whether normal circumstances exist in a disturbed area "involves an evaluation of the extent and relative permanence of the physical alteration of wetland hydrology and hydrophytic vegetation" and consideration of the "purpose and cause of the physical alterations to hydrology and vegetation" (USACE 1987). The Supreme Court refined the requirements for wetlands to be considered jurisdictional based on its 2001 decision *Solid Waste Agency of Northern Cook County v. USACE*, which concluded that a wetland is required to be hydrologically connected to a jurisdictional water of the United States.

3.1.1.6 Rivers and Harbors Appropriation Act of 1899 (33 United States Code 403)

Section 10 of the Rivers and Harbors Act of 1899 (33 USC 403) prohibits the unauthorized obstruction or alteration of any navigable water of the United States. This section provides that the construction of any structure in or over any navigable water of the United States, or the accomplishment of any other work affecting the course, location, condition, or physical capacity of such waters is unlawful unless the work has been recommended by the Chief of Engineers and authorized by the Secretary of the Army. The Secretary of the Army's approval authority has since been delegated to the Chief of Engineers.

3.1.1.7 Sole Source Aquifers (40 Code of Federal Regulations 149)

Sole source aquifer designation is one tool to protect drinking water supplies in areas with few or no alternative sources to the groundwater resource, and where, if contamination occurred, using an alternative source would be extremely expensive. The designation protects an area's groundwater resource by requiring USEPA to review all proposed projects within the designated area that will receive federal financial assistance. All proposed projects receiving federal funds are subject to review, to ensure that the projects do not endanger the groundwater source.

The USEPA defines a sole or principal source aquifer as one that supplies at least 50 percent of the drinking water consumed in the area overlying the aquifer. These areas may have no alternative drinking water source(s) that could physically, legally, and economically supply all those who depend upon the aquifer for drinking water. For convenience, all designated sole or principal source aquifers are referred to as "sole source aquifers."

3.1.1.8 Protection of Wetlands (Executive Order 11990)

Executive Order 11990 directs federal agencies to minimize the destruction, loss, or degradation of wetlands. It also assures the protection, preservation, and enhancement of the nation's wetlands to the fullest extent practicable during the planning, construction, funding, and operation of transportation facilities and projects.

3.1.1.9 Floodplain Management (Executive Order 11988)

Executive Order 11988 directs federal agencies to avoid conducting, allowing, or supporting actions on a floodplain. The order requires that the federal agency evaluate the potential effects of any actions that it may take in a floodplain.

3.1.2 State

Title 17 of the Illinois Administrative Code covers conservation; Part 3704 covers Regulation of Public Waters. The Division of Water Resource Management (DWRM) of the Illinois Department of Natural Resources (IDNR) issues permits for construction and other activities in public waters of the State. Public waters may generally be described as commercially navigable lakes and streams of the State and the backwater areas of those streams. There are certain public rights in public waters that are reserved for the citizens of the State.

The DWRM reviews proposed activities in public waters to ensure that the public's rights are not diminished by the activity. Activities that require review are not limited to construction. A permit is issued to demonstrate that the activity does not diminish the public's rights. A construction project in public waters may also require review under Parts 3700 (Construction in Floodways of Rivers, Lakes, and Streams), 3702 (Construction and Maintenance of Dams), or 3708 (Floodway Construction in Northeastern Illinois), as well as the Part 3704 rules. A number of common, minor construction activities regulated under Part 3704 are automatically authorized by statewide permits or by Regional Permit No. 3 (Authorizing Construction of Minor Projects in Northeastern Illinois Regulatory Floodways). A permit application submittal to DWRM is not needed for a construction activity that meets the terms and conditions of one or more of these statewide or regional permits.

3.1.2.1 Illinois Coastal Program

The Illinois Coastal Management Program was approved in November 2011. The program defines Inland Waterway Coastal Zone Boundaries, which consist of waterways close to the shore of Lake Michigan and designated land on either side of waterways. These areas are subject to the requirements of the federal Coastal Zone Management Act.

3.1.2.2 Illinois Interagency Wetland Policy Act of 1989

The Illinois Interagency Wetlands Policy Act of 1989 (the Act [20 Illinois Compiled Statues (ILCS) 830 et seq.]) is intended to ensure that there is no overall net loss of the State's existing wetland acres or their functional values resulting from State-supported activities.

The Act charges State agencies with a further duty to "preserve, enhance, and create wetlands where necessary to increase the quality and quantity of the State's wetland resource base" (20 ILCS 830/1-4). The Act uses the same definition for wetlands as defined in the 1987 USACE *Wetland Delineation Manual* used by federal agencies in implementation of the federal CWA.

All three parameters (hydric soils, wetland hydrology, and hydrophytic vegetation) are required for a location to be considered a wetland. However, areas that have been restored or created as

the result of mitigation or planned construction projects, and that function as wetlands, are also defined as wetlands under the Act even when all three wetland parameters are not yet present.

3.1.2.3 Illinois Rivers, Lakes, and Streams Act

The Illinois Rivers, Lakes, and Streams Act regulates construction in floodplains and focuses on preserving the hydrological integrity of the State's public waters. There are two separate but similar floodplain regulatory programs established in the Illinois Rivers, Lakes, and Streams Act. One is for the six metropolitan counties in northeastern Illinois: Cook, DuPage, Kane, Lake, McHenry, and Will. The second program is for the rest of Illinois. The purpose of both programs is to "protect the rights, safety, and welfare of private and public landowners by the regulation of floodway development, [because] construction activities which restrict a stream's capacity to carry flood flows may result in channel instability and increased flood damages to neighboring properties" (State of Illinois 1994). The Northeastern Illinois Program requires permits be issued for construction in any regulated floodway.

3.1.3 Local

3.1.3.1 Cook County Watershed Management Ordinance

The Metropolitan Water Reclamation District of Greater Chicago (MWRD) began developing a countywide stormwater management regulatory ordinance to be known as the Cook County Watershed Management Ordinance (WMO) in 2007. The WMO's goal is to establish uniform, minimum, countywide stormwater management regulations. Components that may be regulated under the WMO include drainage and detention, floodplain management, wetland protection, stream habitat and riparian environment protection, soil erosion and sediment control, and water quality.

3.1.3.2 Cook County Stormwater Management Plan

On February 15, 2007, the MWRD's Board of Commissioners adopted the Cook County Stormwater Management Plan (CCSMP) by ordinance. The CCSMP is a high-level organizational plan wherein the overall framework for the countywide program is established and which MWRD is required to adopt as a first step in establishing its countywide stormwater management program. The CCSMP is not a regulatory ordinance and does not set forth any rules, regulations, or standards to which a municipality will be held or be required to enforce.

3.1.3.3 City of Chicago Stormwater Management Ordinance

It is the policy of the City of Chicago to encourage and promote programs with the following goals:

- Minimize the negative stormwater impacts of new development and redevelopment.
- Protect and conserve land and water resources in conjunction with orderly and responsible property development.
- Prevent pollution of local waters, groundwater, and land.

- Minimize stormwater flows into the combined sewer system by minimizing impervious surfaces, promoting infiltration, or discharging to local waters, where appropriate.
- Preserve the natural characteristics of stream corridors in order to moderate flood and stormwater impacts, improve water quality, reduce soil erosion, protect aquatic and riparian habitat, provide recreational opportunities, provide aesthetic benefits, and enhance community and economic development.
- Preserve the natural hydrologic and hydraulic functions of watercourses, floodplains, and wetlands.
- Facilitate existing and future intergovernmental agreements for stormwater management.
- Manage stormwater on the site of a regulated development to the fullest feasible extent.

To achieve these goals, the primary stormwater management objectives for development sites are to (1) reduce impervious areas, (2) capture stormwater on site, and (3) either use or retain the stormwater on-site for evaporation and absorption into the ground. Stormwater that is not used or retained may be discharged into a city-owned combined sewer, storm sewer, or open waterway.

3.1.3.4 Village of Calumet Park

Chapter 151 of the Calumet Park Code of Ordinances regulates Flood Protection and Prevention in order to maintain the "Village's eligibility in the National Flood Insurance Program; to minimize potential losses due to periodic flooding including loss of life, loss of property, health and safety hazards, disruption of commerce and governmental services, extraordinary public expenditures for flood protection and relief, and impairment of the tax base, all of which adversely affect the public health, safety and general welfare; and to preserve and enhance the quality of surface waters, conserve economic and natural values and provide for the wise utilization of water and related land resources" (Village of Calumet Park 2008).

Calumet Park Ordinance 98-712 prohibits the use of groundwater as a potable water supply.

3.2 Impact Analysis Thresholds

While NEPA does not specify federal thresholds of significance for impacts on water resources, it does require that EISs be integrated with the environmental analyses and related surveys and studies required by other federal statutes. Based upon the regulatory framework established by the regulations discussed in Section 3.1, a qualitative evaluation was performed to evaluate potential impacts on water resources.

For the purpose of this EIS, an impact would be adverse if it would do any of the following:

- Violate any applicable water quality standards or waste discharge requirements.

- Affect the rate or change the direction of movement of existing groundwater contaminants, or expand the area affected by contaminants.
- Substantially deplete groundwater supplies or interfere substantially with groundwater recharge such that there would be a net deficit in aquifer volume or a lowering of the local groundwater table.
- Substantially alter the existing drainage pattern of the site or area, including the alteration of the course of a stream or river, in a manner that would result in substantial erosion or siltation on- or off-site.
- Create or contribute runoff water that would exceed the capacity of existing or planned stormwater drainage systems or provide substantial additional sources of polluted runoff.
- Destruction, loss, or degradation of wetlands, including any net loss of their functional values.
- Discharges of dredged or fill material into wetlands.
- Otherwise substantially degrade water quality.

3.3 Area of Potential Impact

The APIs for the water resources evaluation extend 500 feet on either side of the project alternative centerlines; the API is different for each alternative and each alternative option. The RLE alternatives are shown in Figure 2-1. Given that the project would occur in a highly urbanized environment, the effects of construction and operation on water resources would not be expected to extend beyond 500 feet.

3.4 Methods

Existing data sources were reviewed to evaluate potential impacts on water resources. The evaluation of potential wetland impacts included a field reconnaissance to establish the potential presence and condition of wetlands within the project area. The potential permanent and/or construction effects of each alternative on identified water resources were evaluated. Measures to avoid, minimize, mitigate, and compensate for potential adverse impacts were proposed.

3.4.1 Review Existing Data

In order to determine alternative-specific impacts on water resources, existing data on surface and groundwater resources, drainage patterns, water quality, and water supply were reviewed. Existing TMDLs and NPDES permits, which could affect the project, were also reviewed. Information from USEPA Region V was reviewed to determine whether the project area has any sole source aquifers. The APIs were reviewed to determine whether they are within the designated coastal zone.

Existing wetland data was obtained from the U.S. Fish and Wildlife Service (USFWS) National Wetlands Inventory (NWI) and also from the updated coverage prepared by Ducks Unlimited under contract with USFWS. To help locate wetland sites that may have been missed, the U.S. Department of Agriculture (USDA) Natural Resources Conservation Service (NRCS) Web Soil Survey website was used, where available, to locate areas of potentially hydric soils. The IDNR Ecological Compliance Assessment Tool (EcoCAT) was reviewed to identify resources mapped by IDNR.

3.4.2 Field Review

A general field reconnaissance was conducted to identify potential wetlands within the project area. Aerial photographs were used to evaluate existing mapped wetlands and to help pinpoint potential sensitive areas that may not be included in any of the existing wetland maps or inventories. Potential wetlands within the APIs were evaluated to locate any potential wetland resources intersecting the project area.

The 1987 USACE *Wetland Delineation Manual* was used to determine the presence of wetlands in the project area; the *Wetland Delineation Manual* defines areas as wetland if they meet all three parameters (hydric soils, wetland hydrology, and hydrophytic vegetation). Reconnaissance level wetland assessments were completed and no formal wetland delineations were conducted, although an estimate of wetland size was calculated from aerial photographs after the field review confirmed the presence and extent of wetland areas. Using the USACE manual, each potential wetland site was evaluated for the presence or absence of hydric soils, the dominance of hydrophytic vegetation, and the presence or absence of wetland hydrology.

3.4.3 Impact Analysis

Potential impacts that would be associated with the alternatives were identified, then categorized and analyzed separately based on whether the impacts would be related to permanent activities or construction-period activities. Results of the field survey were used to determine whether wetlands might be present and whether they might be affected within the project area. Wetland resources were described at a reconnaissance level of detail and each alternative was assessed for potential impacts on wetlands within the project area.

Permanent impacts on water resources could result from stormwater runoff, changes in impervious surfaces throughout the APIs (resulting in changes to groundwater infiltration), and surface water and groundwater contamination. Each of these potential permanent impacts was analyzed in relation to applicable permits and regulations.

Construction-related potential impacts on water resources could result from stormwater runoff as well as impacts on the existing drainage infrastructure. Existing water quality conditions and beneficial uses in project area watersheds were assessed. Water quality regulations that would apply to construction of the project alternatives were identified. Each of the alternatives was analyzed for potential construction-related surface water sedimentation impacts generated by erosion and runoff from construction staging areas. Possible groundwater contamination

resulting from implementation of the alternatives was considered. Mitigation options were identified to address these potential effects in accordance with applicable NPDES permit requirements and other water resources regulations.

For potential wetlands identified in the API of the NEPA preferred alternative, formal wetland delineations would be performed at the time of permit application submittal, concurrent with final design, to refine the specific area of impacts. The NEPA analysis would support the permit application and review in compliance with wetlands regulations as appropriate. This analysis identifies maximum potential wetland impacts; formal wetland delineations and confirmation of impacts would be performed for the NEPA preferred alternative. Actual impacts would likely be fewer and/or smaller than the maximum impacts described in this report.

Each project alternative was qualitatively assessed for potential impacts on water resources within the project area and recommendations were identified for avoiding and minimizing water resources impacts, as well as potential mitigation measures.

Section 4
Affected Environment

Lake Michigan is the dominant topographic feature in the region and is approximately 4.8 miles from the project area at its closest point near the UPRR Rail Alternative alignment. Lake Calumet is in the eastern portion of the project area, and the Little Calumet River flows along the southern boundary of the project area. The project area is urbanized and is primarily made up of commercial and residential development. Figure 4-1 depicts a regional view of the project area and identifies Lake Calumet and the Little Calumet River.

4.1 Municipal Water Supply/Wastewater Collection

The City of Chicago Department of Water Management is responsible for treating and supplying potable water in the project area. Lake Michigan is the drinking water source for Chicago and its suburbs. Groundwater is not a drinking water source within the project area. The Jardine Water Purification Plant draws raw water from Lake Michigan and serves the northern areas of the City and suburbs, while the South Water Purification Plant draws raw water from Lake Michigan and serves southern areas of the City and suburbs. The Village of Calumet Park also receives water from Lake Michigan.

The MWRD is responsible for wastewater collection and treatment in the project area, including the Village of Calumet Park, which has a combined sewer system to collect both sanitary sewage and stormwater runoff. This agency maintains regional sewer interceptors within the project area.

4.2 Surface Water

4.2.1 Regional Surface Water Setting and Conditions

The APIs are in two watersheds: the Chicago/Calumet watershed and the Lake Michigan watershed. The features of all alternatives would be within the Chicago/Calumet watershed. The Lake Michigan watershed is to the east of Segment UB; the only portion of the project that would be in the Lake Michigan watershed is an access road (ILRDSS 2009).

The Lake Michigan watershed (U.S. Geological Survey [USGS] Cataloging Unit 04040002) lies along the Lake Michigan shoreline, and has a drainage area of about 90 square miles (ILRDSS 2011b). The Chicago/Calumet watershed (USGS Cataloging Unit 07120003) lies directly west of the Lake Michigan watershed, and covers about 580 square miles. Both watersheds are primarily residential and urban, with some forests throughout. The far south of the Chicago/Calumet watershed contains a few agricultural areas (ILRDSS 2011a).

Lake Michigan borders Illinois, Indiana, Michigan, and Wisconsin. It is the second largest Great Lake by volume, with 1,180 cubic miles of water. Lake Michigan is the third largest Great Lake by area.

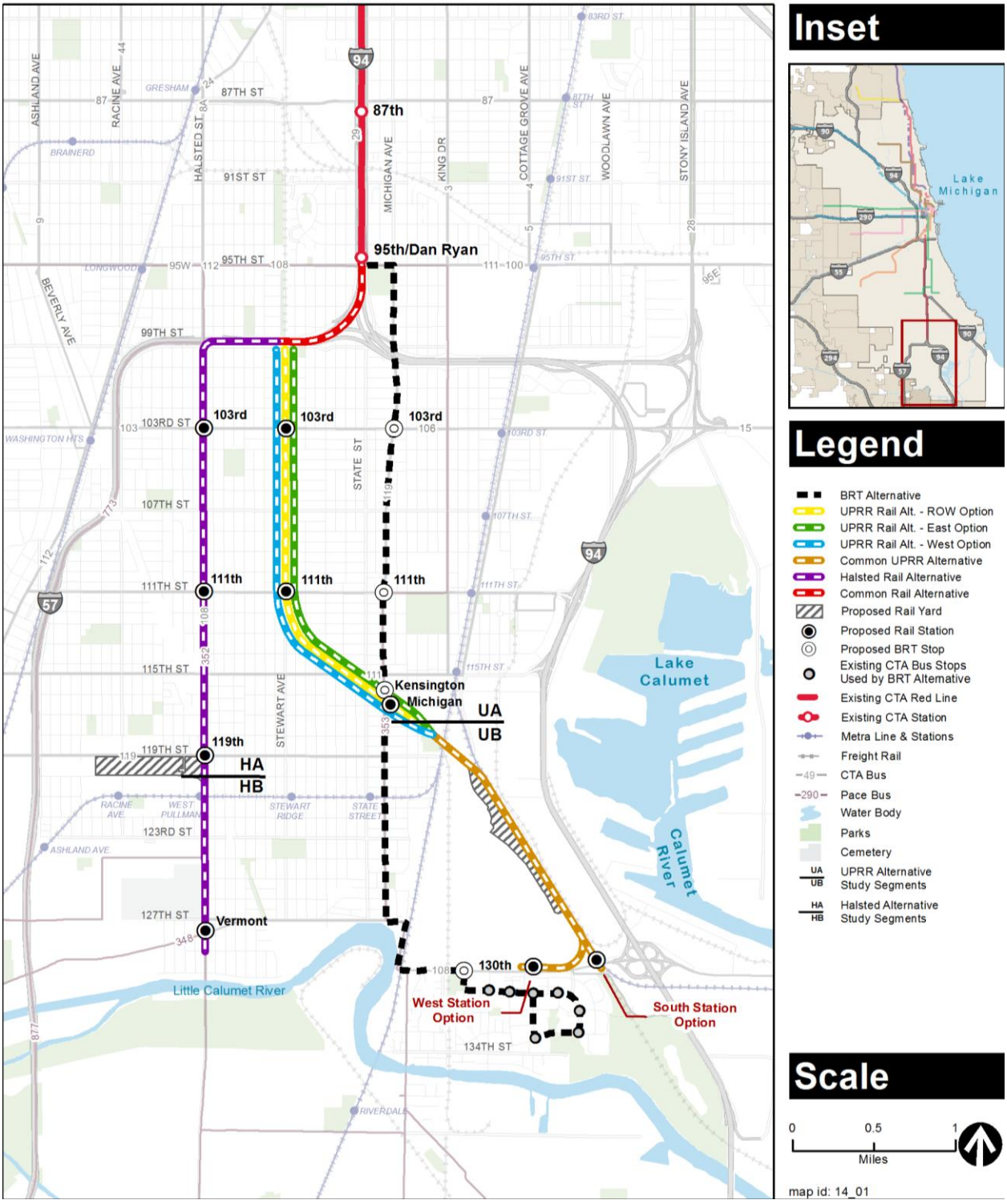


Figure 4-1: Project Area including Waterbodies

The climate for the project area is typically continental with cold winters and warm summers. The average temperature for the project area is around 52 degrees Fahrenheit (°F), with the average high around 83°F in the summer and the average low around 21°F in the winter. There are about 130 rain days per year (Illinois State Water Survey [ISWS] - Illinois State Climatologist Data 2012). Lake Michigan moderates the regional temperature and causes cooler summers and warmer winters (ISWS - Institute of Natural Resource Sustainability 2012) than other areas of the state. Per the Chicago Climate Change Task Force (2007), peak runoff is predicted to increase and levels in Lake Michigan are likely to decrease. Peak flows in local rivers are expected to increase slightly, increasing the risk of flooding and associated damages.

Local topography typically varies less than 40 feet, with a minimum elevation of 580 feet and a maximum elevation of 620 feet above sea level.

4.2.2 Local Surface Water Setting and Conditions

The alternative alignments would not cross or come in contact with any local water bodies.

The Little Calumet River flows along the southern boundary of the project area. The Little Calumet River flows to the west, away from Lake Michigan. The river flows into the Cal-Sag Channel then into the Chicago Sanitary and Ship Canal, and then into the Des Plaines River.

Lake Calumet is approximately 0.5 mile east of the UPRR Rail Alternative alignment. The lake is owned by the Illinois International Port District and is 8.6 acres in size.

Lake Calumet lies within the Inland Waterway Coastal Zone boundary, but the APIs do not. The inland waterway corridor consists of both the waterway and designated land area on either side of the waterway, and meets the requirements of federal regulations and guidelines for the inclusion within the coastal zone of rivers (waterways), on which uses may have direct impacts on coastal waters (IDNR 2011).

4.2.3 Surface Water Drainage

Storm drains throughout the project area divert water into the Tunnel and Reservoir Plan (TARP), maintained by MWRD. The TARP is a system of deep rock tunnels and surface reservoirs that capture, convey, and store combined sewage during storms until it can be distributed to MWRD's treatment plants as capacity becomes available. The project area is along the Mainstream tunnel of the TARP system (MWRD 2012b). The combined sewers in the Village of Calumet Park carry runoff to the MWRD interceptors. Stormwater runoff exceeding MWRD interceptor capacity is conveyed to the TARP system. In the event of high flows, TARP discharges to the Little Calumet River, which receives discharges from 15 permitted outfalls (MWRD 2012a).

4.3 Groundwater

Groundwater in the project area is in the deep bedrock Cambrian-Ordovician aquifers. Wells drilled into this aquifer range from 800 to 1,500 feet deep. The estimated sustained yield for the Cambrian-Ordovician aquifer system is 65 million gallons per day; by 1979, pumping from this

aquifer reached 182.9 million gallons per day. This pumping caused the groundwater levels to drop over 850 feet by 1980. Lake Michigan became a water resource to DuPage, Kane, Lake, McHenry, and Will counties in the early 1980s. Current withdrawals from the Cambrian-Ordovician aquifers are close to the estimated sustainable yield (ISWS - Center for Groundwater Science 2012).

Smaller aquifers overlying the Cambrian-Ordovician aquifers are not widespread and are not utilized for municipal or private water use. Shallow perched groundwater is commonly identified in the Chicago area, though the substrate materials confining the water are characterized as discontinuous lenses and are not laterally continuous. Groundwater generally flows from areas of higher surface elevation to areas of lower surface elevation and toward the nearest surface water body. The flow direction for groundwater underlying the site is assumed to be to the northeast towards Lake Michigan. Localized perched groundwater may flow toward shallower surface water bodies such as Lake Calumet, the Calumet River, or the Little Calumet River.

There are no sole source aquifers in the project area. The closest sole source aquifer is the St. Joseph Aquifer System in northern Indiana, about 70 miles to the east (USEPA Ground Water Branch 2012).

4.4 Water Quality

4.4.1 Surface Water Quality

Urban stormwater runoff from the project area may have negative impacts on surface water quality. Runoff washes residues from the land surface, including deposits from street surfaces, parking surfaces, facility grounds, vehicles, pesticides, and pet waste into the storm drain system.

The Little Calumet River is regulated under the Secondary Contact and Indigenous Aquatic Life Standards. Water bodies regulated under this standard are suited for secondary contact uses and are capable of supporting indigenous aquatic life (IEPA 2012a).

The Little Calumet River is on Illinois 303(d) list of impaired waterways; it is listed as impaired for mercury, polychlorinated biphenyls, aldrin, iron, dissolved oxygen, total phosphorus, and silver (IEPA 2012b). A TMDL analysis has not been developed for this segment of the Little Calumet River system.

4.4.2 Groundwater Quality

The Cambrian-Ordovician aquifers are known to contain high concentrations of naturally occurring barium and radium. The greatest risk for deep aquifer contamination is through contaminant pathways such as abandoned wells; however, vertical migration of chemicals from the land surface poses a low risk of groundwater contamination. Based on information from the Illinois Groundwater Consortium, concentrations of chloride and total dissolved solids have increased in shallow aquifers in the last 20 years (ISWS - Center for Groundwater Science 2012).

4.5 Wetlands

4.5.1 Bus Rapid Transit Alternative

A data review obtained the following about existing conditions within the BRT Alternative API:

- Aerial Photographs

  A review of the aerial photographs confirmed that the API is heavily urbanized and is characterized by paved surfaces and structures (Google Earth 2012). Few, if any, potential wetland areas would be expected to occur in the API based on the review of aerial photographs.

- IDNR EcoCAT

  A review of the IDNR EcoCAT identified no wetlands (IDNR 2012). Appendix A contains the EcoCAT report.

- NRCS Soil

  The NRCS Web Soil Survey website defines four soil types within the BRT Alternative API as hydric soils, as described in Table 4-1 (USDA 2012a, USDA 2012k).

Table 4-1: Hydric Soils within Bus Rapid Transit Alternative Area of Potential Impact

Location	Approximate Distance from Alignment	Soil Type
Southeast quadrant of the intersection of 98th Street and Indiana Avenue	440 feet east	232A
Southwest quadrant of the intersection of 117th Street and Indiana Avenue	Adjacent to the west	2232A
South of the intersection of 130th Street and the UPRR tracks	Adjacent to the south	69A
South of the intersection of 130th Street and Eberhart Avenue, along Eberhart Avenue	Along the alignment	2232A

Notes:
UPRR = Union Pacific Railroad
See references USDA 2012a and USDA 2012k for soil type definitions

  Appendix B includes a summary of information from the NRCS Web Soil Survey website.

- NWI

  The NWI classifies several wetland areas within the BRT Alternative API. Updated wetland coverage was confirmed using the Ducks Unlimited web database; data is summarized in Table 4-2 (Ducks Unlimited 2012) and shown on Figure 4-2. Table 4-2 provides the wetland location, approximate distance from the alignment, wetland category, and wetland type.

Wetland categories correspond to the classification nomenclature that best describes the habitat; definitions are included in Appendix C.

Table 4-2: National Wetland Inventory Areas within Bus Rapid Transit Alternative Area of Potential Impact

Location	Approximate Distance from Alignment	Wetland Category	Wetland Type
Little Calumet River	50 feet west	R2UBH	Riverine
Kensington Marsh - north of 130th Street, west of the MWRD facility	350 feet north	LTU2BKh	Wetland Type Not Provided
North of the intersection of 130th Street and Eberhart Avenue, south of the MWRD facility, on the 130th Street park & ride site	On the 130th Street park & ride site	PFO1C	Freshwater Shrub/Forested Wetland
Northeast of the intersection of 130th Street and Eberhart Avenue, south of the MWRD facility, west of the MWRD access road, on the 130th Street park & ride site	On the 130th Street park & ride site	PEM1Ch	Freshwater Emergent Wetland
North of 130th Street and east of the 130th Street park & ride site	130 feet east	PFO1C	Freshwater Forested/Shrub Wetland
North of 130th Street and east of the 130th Street park & ride site	400 feet east	PEM1Ch	Freshwater Emergent Wetland

Notes:
MWRD = Metropolitan Water Reclamation District of Greater Chicago
See reference Ducks Unlimited 2012 for more info on Wetland Types

- Field Visit

A field visit was conducted on August 8, 2012 to look for evidence of potential wetlands within the BRT Alternative API. Wetland resources were evaluated at a reconnaissance level of detail; no formal wetland delineations were conducted. The field reconnaissance found some standing water, indicative of potential wetland areas at the proposed 130th Street park & ride location.

The BRT Alterative 130th Street park & ride site is highly disturbed in both soil and topography. Although hydrophytic vegetation is present, the results of this cursory field investigation were inconclusive. As a basis for impact analysis and to evaluate the maximum potential impact, between approximately 1.5 and 9 acres of the 130th Street park & ride site are considered a potential wetland, dependent on a formal wetland delineation. It is likely that there is a surface water connection between this wetland area and the Little Calumet River, indicating that this is a jurisdictional wetland.

Following the determination of an environmentally preferred alternative and as the design is finalized, a formal wetland delineation would be conducted and the amount and type of impact would be refined. As part of obtaining permits for work on the project, mitigation would be needed if wetlands would be affected. Coordination with the local USACE district is recommended.

4.5.2 Union Pacific Railroad Rail Alternative

4.5.2.1 Segment UA

A data review obtained the following about existing conditions within the UPRR Rail Alternative Segment UA API:

- Aerial Photographs

  A review of the aerial photographs confirmed that most of the API is heavily urbanized and is characterized by paved surfaces and structures (Google Earth 2012). Few, if any, potential wetland areas would be expected to occur in the API in Segment UA.

- IDNR EcoCAT

  A review of the IDNR EcoCAT found no wetlands (IDNR 2012). Appendix A contains the EcoCAT report.

- NRCS Soil

  The NRCS Web Soil Survey website defines one soil type within the UPRR Rail Alternative Segment UA API as hydric soil, as described in Table 4-3 (USDA 2012a, USDA 2012k).

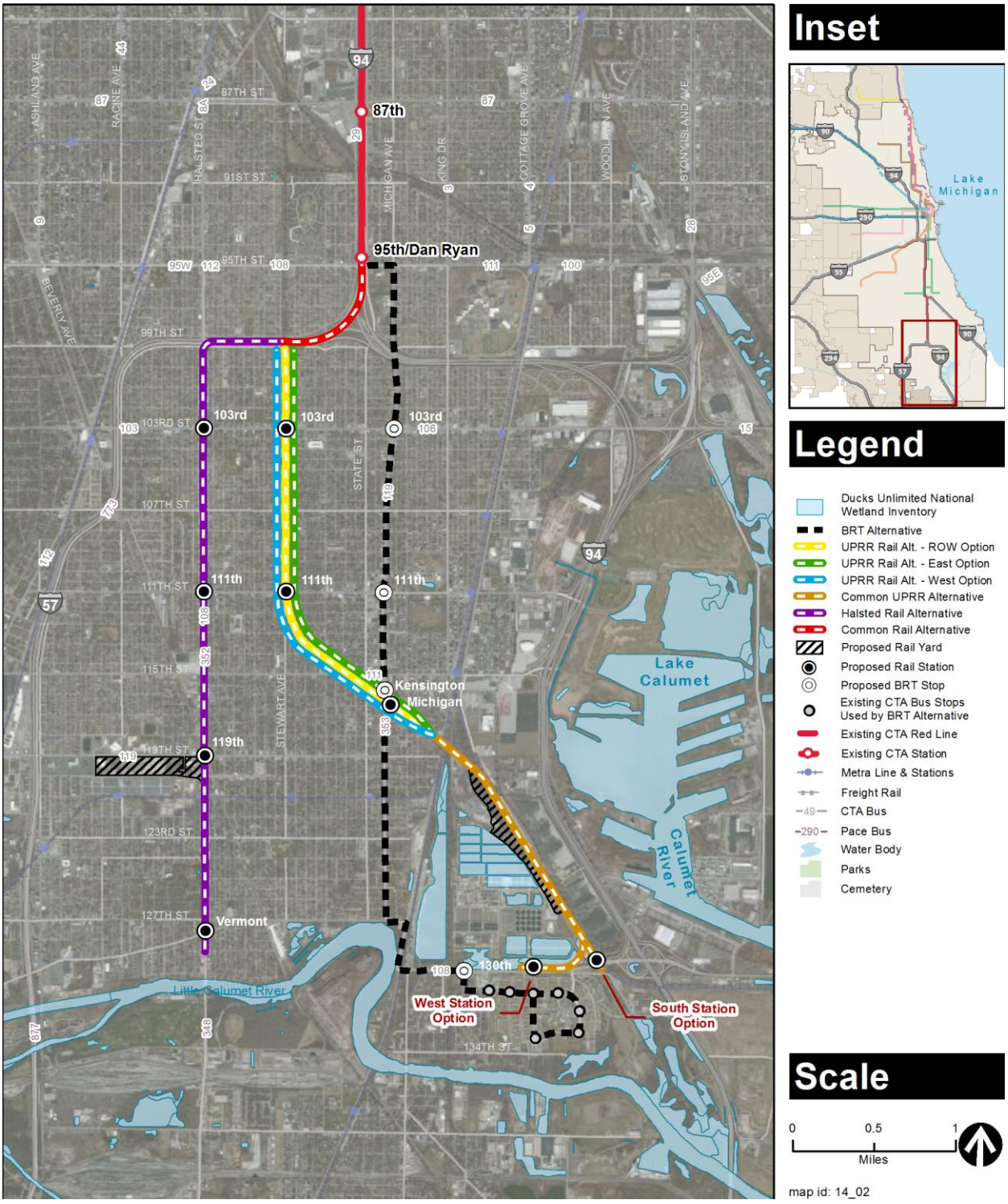


Figure 4-2: Ducks Unlimited National Wetland Inventory Map

Table 4-3: Hydric Soils within Segment UA of Union Pacific Railroad Rail Alternative Area of Potential Impact

Location	Distance from Alignment	Soil Type
Southwest quadrant of the intersection of 117th Street and Indiana Avenue	0 feet	2232A

Notes:
See references USDA 2012a, USDA 2012k for more info on soil types

A summary of information from the NRCS Web Soil Survey website is included in Appendix B.

- NWI

  The NWI does not classify any wetland areas within Segment UA of the UPRR Rail Alternative API.

- Field Visit

  A field visit was conducted on August 13, 2012 to look for evidence of potential wetlands along Segment UA of the UPRR Rail Alternative alignment. Wetland resources were evaluated at a reconnaissance level of detail; no formal wetland delineations were conducted. The field reconnaissance found no evidence of potential wetland areas.

4.5.2.2 Segment UB

A data review obtained the following about existing conditions within Segment UB of the UPRR Rail Alternative API:

- Aerial Photographs

  Aerial photographs display potentially sensitive areas east of the Canadian National/Metra Electric crossing along the southern end of the UPRR Rail Alternative API, between the MWRD treatment plant and the Northern Indiana Commuter Transportation District/Chicago South Shore & South Bend Railroad tracks. A review of the aerial photographs confirmed that most of the API is heavily urbanized and is characterized by paved surfaces and structures (Google Earth 2012). Few, if any, potential wetland areas would be expected to occur in the API other than in the vicinity of the 120th Street yard and shop, South Station Option, and West Station Option.

- IDNR EcoCAT

  A review of the IDNR EcoCAT found no wetlands (IDNR 2012). Appendix A contains the EcoCAT report.

- NRCS Soil

  The NRCS Web Soil Survey website defines two soil types within Segment UB of the UPRR Rail Alternative API as hydric soils, as described in Table 4-4 (USDA 2012a, USDA 2012k).

Table 4-4: Hydric Soils within Segment UB of the Union Pacific Railroad Rail Alternative Area of Potential Impact

Location	Distance from Alignment	Soil Type
Southwest quadrant of the intersection of 117th Street and Indiana Avenue	0 feet	2232A
Kensington Park	70 feet to the southwest	232A

Notes:
See references USDA 2012a, USDA 2012k for more info on soil types

A summary of information from the NRCS Web Soil Survey website is included in Appendix B.

- NWI

  The NWI classifies several wetland areas within Segment UB of the UPRR Rail Alternative API. Updated wetland coverage was confirmed using the Ducks Unlimited web database; data is summarized in Table 4-5 (Ducks Unlimited 2012) and shown on Figure 4-2 in relation to the API. Table 4-5 provides the wetland location, approximate distance from the alignment, wetland category, and wetland type. Wetland categories correspond to the classification nomenclature that best describes the habitat; definitions are included in Appendix C. The MWRD drying ponds, which are within the API, are classified as freshwater ponds.

Table 4-5: National Wetland Inventory Areas within Segment UB of the Union Pacific Railroad Rail Alternative Area of Potential Impact

Location	Approximate Distance from Alignment	Wetland Category	Wetland Type
Five MWRD drying ponds	75-200 feet west	PUBKh	Freshwater Ponds
West of UPRR Rail Alternative, south of yard, north of South Station Option site	180 feet west	PUBGx	Freshwater Pond
Along South Station Option site, north of 130th Street	0 feet	PEM1Kh	Freshwater Forested/Shrub Wetland
West of South Station Option site, north of 130th Street	58 feet west	PUBKh	Freshwater Pond
Along West Station Option site, north of 130th Street	0 feet	PEM1Kh	Freshwater Forested/Shrub Wetland
Along West Station Option site, north of 130th Street	0 feet	PEM1Ch	Freshwater Emergent Wetland
North of West Station Option site, north of 130th Street	100 feet north	PUBKh	Freshwater Pond

Location	Approximate Distance from Alignment	Wetland Category	Wetland Type
Along West Station Option site, north of 130th Street	0 feet	PFO1C	Freshwater Forested/Shrub Wetland
West of West Station Option site, north of 130th Street	25 feet west	PEM1Ch	Freshwater Emergent Wetland
West of West Station Option site, north of 130th Street	415 feet west	PFO1C	Freshwater Forested/Shrub Wetland

Notes:
MWRD = Metropolitan Water Reclamation District of Greater Chicago, UPRR = Union Pacific Railroad
See reference Ducks Unlimited 2012 for more info on wetland types

- Field Visit

A field visit was conducted on August 13, 2012 to look for evidence of potential wetlands along the UPRR Rail Alternative alignment. The field visit focused on the area along the southern end of the UPRR Rail Alternative alignment, in Segment UB, from the Canadian National/Metra Electric crossing to 130th Street, as shown in Figure 4-3. Wetland resources were evaluated at a reconnaissance level of detail; no formal wetland delineations were conducted. During the site visit, notes regarding potential wetland hydrology, soils, and vegetation were collected. Soils within four hand-dug test pits were evaluated for hydric characteristics. Test pits were dug at representative locations where there appeared to be differences in the vegetation, topography, or soils. Several test pits were dug in an attempt to identify variations in soils that could be useful in differentiating between wetland and non-wetland areas. Test pit locations (Figure 4-3) were in the vicinity of the 120th Street yard and shop. Appendix D contains photographs from the field visit.

The area in the vicinity of the 120th Street yard and shop is highly disturbed. The area is characterized by a young cottonwood forest with pockets of phragmites. At the time of the field visit, the cottonwoods were generally 6 inches in diameter. Based on historical aerial photos (Google Earth 1998, 2002, 2004, 2005, 2007, 2008, 2009, 2010, 2011, 2012), the area to the southwest of the Northern Indiana Commuter Transportation District/Chicago South Shore & South Bend Railroad train tracks began to become forested around 2005/2007 (Google Earth 2012). Table 4-6 summarizes the plants identified throughout the area.

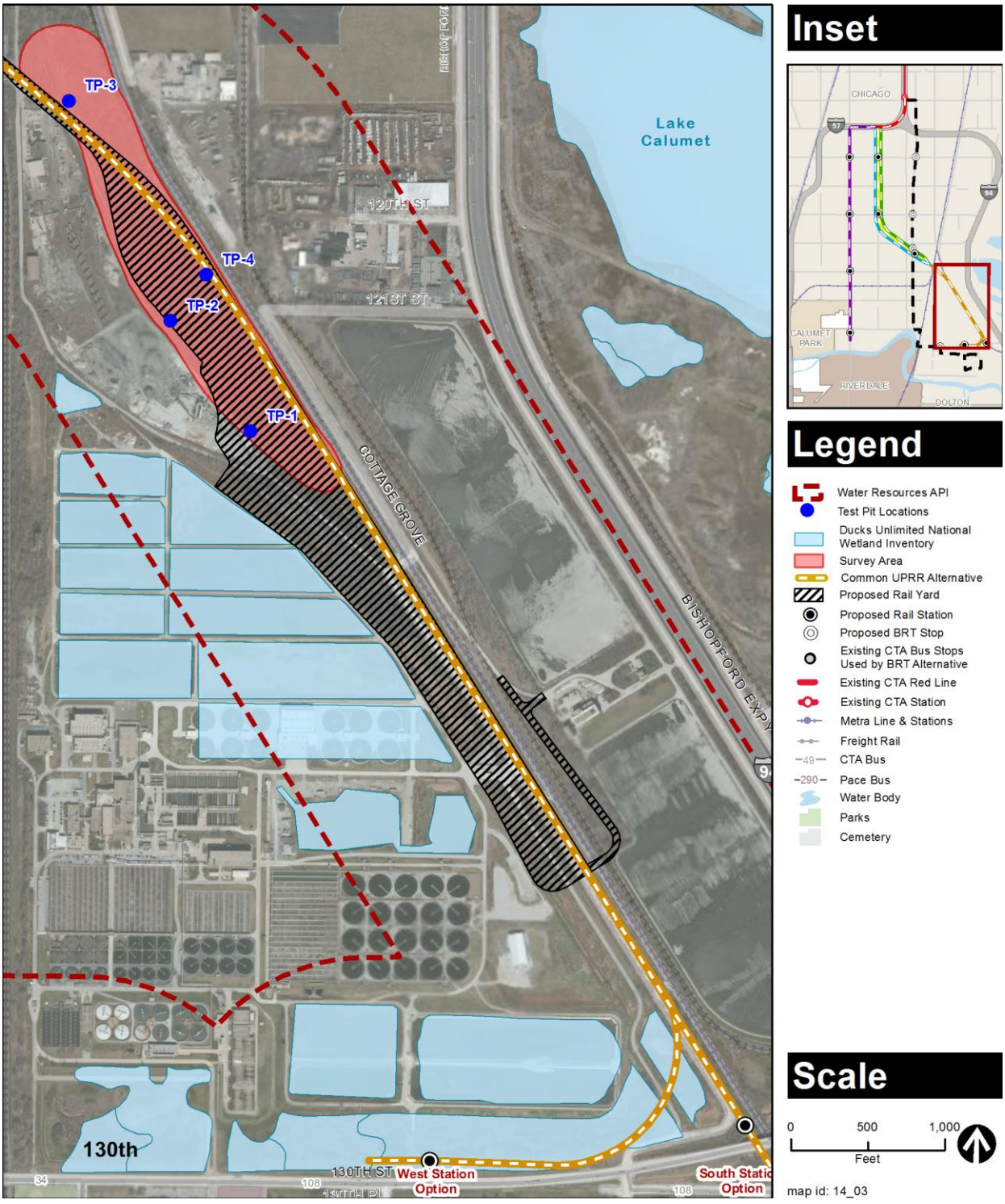


Figure 4-3: Field Survey Area and Test Pit Locations

Table 4-6: Plants Identified in the Union Pacific Railroad Rail Alternative Area of Potential Impact

Scientific Name	Common Name	Wetland Indicator Status
Acer negundo	boxelder	FACW-
Daucus carota	Queen Anne's lace	--
Phragmites australis	common reed	FACW+
Populous deltoides	eastern cottonwood	FAC+
Prunus virginiana	chokecherry	FAC-
Rhamnus cathartica	common buckthorn	FACU
Rhus typhina	staghorn sumac	--
Ulmus americana	American elm	FACW

Notes:

- **FACW =** Facultative Wetland (usually occurs in wetlands but occasionally found in non-wetland), **FAC =** Facultative (equally likely to occur in wetlands or non-wetlands)**, FACU =** Facultative Upland (usually occurs in non-wetlands, but occasionally found on wetlands)
- A positive (+) or negative (-) sign more specifically defines the regional frequency of occurrence in wetlands.
- References: USDA 2012b, USDA 2012c, USDA 2012d, USDA 2012e, USDA 2012f, USDA 2012g, USDA 2012h, USDA 2012i, USDA 2012j

The soils appeared to be highly disturbed and likely include material imported from other locations. Railroad ties and potential slag were identified throughout the area. Four test pits were hand dug (using a shovel) to evaluate for hydric soil characteristics. Figure 4-2 shows the test pit locations. The evaluated soils appeared to be imported fill; the soil was heavily compacted shortly below the ground surface. Test pits TP-1, TP-2, and TP-3 showed similar dark, organic soils with unnatural objects, including slag. From 0 to 8 inches below grade, test pit TP-4 had organic soils; from 8 inches to the bottom of the text pit was sand with red features. Data collected from the test pits is presented in Appendix E and summarized in Table 4-7.

Table 4-7: August 2012 Field Visit Summary

Test Pit	Hydrophytic Vegetation Present?	Wetland Hydrology Present?	Hydric Soil Present?
TP-1	Yes	Unknown	No
TP-2	Yes	Unknown	No
TP-3	Yes	Unknown	Yes
TP-4	Yes	Unknown	No

The 2012 January–August period was the warmest and fourth driest on record in Illinois. During January–August 2012, statewide average precipitation was a total of 17.5 inches, 7.3 inches below normal. The statewide average temperature during January–August was 59.0°F, 4.2°F above normal (ISWS - Prairie Research Institute 2012). These unusually dry conditions may have contributed to the lack of evident signs of seepage, springs, or ponding visible during the field survey of the 120th Street yard and shop location; however, it is possible that the soil could be saturated to the surface during the spring. The area surveyed has flat topography; there were no obvious drainages and there were depressions where there was some standing water. The flat

topography, combined with the highly compacted soils, likely holds water at the surface for the required two weeks in the spring growing season, leading to the preponderance of wetland vegetation observed.

Both the South Station Option and West Station Option terminal locations include a drainage ditch (along the north side of 130th Street, south of the MWRD facility); phragmites were identified in the drainage ditch.

The soils and topography of the 120th Street yard and shop site, the South Station Option site, and the West Station Option site are all highly disturbed. Although the vegetation is predominantly hydrophytic, the results of this cursory field investigation were inconclusive. As a basis for impact analysis and to evaluate the maximum potential impact, approximately 14 acres in the vicinity of the 120th Street yard and shop, 7 acres associated with the South Station Option, and 6 acres associated with the West Station Option are considered potential wetlands. It is likely that there is a surface water connection between these wetland areas and the Little Calumet River, making these jurisdictional wetlands. It is more likely that a surface water connection exists from the proposed stations to the river than from the yard site to the river, but due to the highly disturbed topography a connection would require extensive research and fieldwork to confirm. The fieldwork would take place at the time of the permit application, concurrent with final design.

This analysis identifies maximum potential wetland impacts; formal wetland delineations and confirmation of impacts would be performed for the NEPA preferred alternative. Actual impacts would likely be fewer and/or smaller than the maximum impacts described in this report. As part of obtaining permits for work on the project, mitigation would be needed. Coordination with the local USACE district is recommended.

4.5.3 Halsted Rail Alternative

4.5.3.1 Segment HA

A data review obtained the following information about existing conditions within Segment HA of the Halsted Rail Alternative API:

- Aerial Photographs

  A review of the aerial photographs confirmed that the Halsted Rail Alternative API is heavily urbanized and is characterized by paved surfaces and structures (Google Earth 2012). Few, if any, potential wetland areas would be expected to occur in the API based on the review of aerial photographs.

- IDNR EcoCAT

  A review of the IDNR EcoCAT identified no wetlands in Segment HA of the Halsted Rail Alternative API (IDNR 2012). Appendix A contains the EcoCAT report.

- NRCS Soil

  The NRCS Web Soil Survey website defines no soil types within the Halsted Rail Alternative API as hydric soils (USDA 2012a, USDA 2012k). Sites containing soils classified as "not hydric" are unlikely to contain wetlands. Appendix B contains a summary of information from the NRCS Web Soil Survey website.

- NWI

  The NWI classifies no wetland areas within Segment HA of the Halsted Rail Alternative API.

- Field Visit

  A field visit was conducted on August 13, 2012 to look for evidence of potential wetlands within the Halsted Rail Alternative API. Wetland resources were evaluated at a reconnaissance level of detail and no formal wetland delineations were conducted. The field reconnaissance found no evidence of potential wetland areas.

  The USACE *Wetland Delineation Manual* defines areas as wetland if they meet all three parameters (hydric soils, wetland hydrology, and hydrophytic vegetation). No areas along the Halsted Rail Alternative Segment HA would be considered a wetland according to this definition.

4.5.3.2 Segment HB

A data review obtained the following information about existing conditions within Segment HB of the Halsted Rail Alternative API:

- Aerial Photographs

  A review of the aerial photographs confirmed that the Halsted Rail Alternative API is heavily urbanized and is characterized by paved surfaces and structures (Google Earth 2012). Few, if any, potential wetland areas would be expected to occur in the API based on the review of aerial photographs.

- IDNR EcoCAT

  A review of the IDNR EcoCAT identified the Riverdale Marsh within the vicinity of the southern end of the Halsted Rail Alternative alignment (IDNR 2012). No other wetlands were identified in Segment HB of the Halsted Rail Alternative API. Appendix A contains the EcoCAT report.

- NRCS Soil

  The NRCS Web Soil Survey website defines no soil types within the Halsted Rail Alternative API as hydric soils (USDA 2012a, USDA 2012k). Sites containing soils classified as "not hydric"

are unlikely to contain wetlands. Appendix B contains a summary of information from the NRCS Web Soil Survey website.

- NWI

  The NWI classifies two wetland areas within the Halsted Rail Alternative API. Updated wetland coverage was confirmed using the Ducks Unlimited web database; the data is summarized in Table 4-8 (Ducks Unlimited 2012) and shown on Figure 4-2. Table 4-8 provides the wetland location, approximate distance from the alignment, wetland category, and wetland type. Wetland categories correspond to the classification nomenclature that best describes the habitat; definitions are included in Appendix C.

Table 4-8: National Wetland Inventory Areas within Halsted Rail Alternative Area of Potential Impact

Location	Approximate Distance from Alignment	Wetland Category	Wetland Type
Northwest of intersection of 125th Street and Halsted Avenue, in Cedar Park Cemetery	120 feet west	PUBGx	Freshwater Pond
Little Calumet River	100 feet south	R2UBH	Riverine

Notes:
See reference Ducks Unlimited 2012 for more information on wetland types

- Field Visit

  A field visit was conducted on August 13, 2012 to look for evidence of potential wetlands within the Halsted Rail Alternative API. Wetland resources were evaluated at a reconnaissance level of detail and no formal wetland delineations were conducted. The field reconnaissance found no evidence of potential wetland areas.

  The USACE *Wetland Delineation Manual* defines areas as wetland if they meet all three parameters (hydric soils, wetland hydrology, and hydrophytic vegetation). No areas along the Halsted Rail Alternative Segment HB would be considered a wetland according to this definition.

4.6 Floodplains

There are no floodplains in the APIs; see map in Appendix F.

Section 5
Impacts and Mitigation

5.1 No Build Alternative

The No Build Alternative represents existing conditions for water resources in the project area.

5.1.1 Permanent Impacts and Mitigation - No Build Alternative

It is anticipated that there would be no permanent impacts on water resources as a result of the No Build Alternative.

5.1.2 Construction Impacts and Mitigation - No Build Alternative

It is anticipated that there would be no construction impacts on water resources as a result of the No Build Alternative.

5.2 Bus Rapid Transit Alternative

5.2.1 Permanent Impacts and Mitigation - Bus Rapid Transit Alternative

5.2.1.1 Drainage Impacts

The physical modifications associated with the BRT Alternative would result in impacts on the existing stormwater drainage infrastructure, particularly where park & ride facilities would be constructed. These alterations would not greatly affect the direction of drainage through the project area and would not change drainage within the watershed. There would be no adverse permanent impacts on stormwater drainage associated with the BRT Alternative.

With the exception of the park & ride facilities at 102nd Street and 130th Street, proposed construction would take place on already impervious land, and therefore would not substantially increase the amount or peak flow rate of stormwater runoff entering the storm drain system. The decrease in pervious area in the vicinity of the 102nd Street and 130th Street park & ride facilities could be mitigated by incorporating new stormwater management structures.

An additional potential mitigation measure to protect water resources is listed below.

- Establishing an erosion control plan prior to the initiation of construction. The erosion control plan could include the following:
    - Use of natural drainage, detention ponds, sediment ponds, or infiltration pits to allow runoff to collect and reduce or prevent erosion
    - Use of barriers to direct and slow the rate of runoff and to filter out large-sized sediments
    - Use of down-drains or chutes to carry runoff from the top of a slope to the bottom

5.2.1.2 Groundwater Impacts

There would be no adverse permanent groundwater impacts associated with the BRT Alternative.

5.2.1.3 Water Quality Impacts

There would be no adverse permanent water quality impacts associated with the BRT Alternative. The BRT Alternative would supplement the existing #34 bus route along Michigan Avenue; the transit system would replace automobile trips and there would be an associated reduction in roadway pollutants. There would be a minimal change from existing conditions in the buildup of typical runoff contaminants that collect on streets (i.e., oil, grease, and metals).

The introduction of new impervious surfaces resulting from the construction of park & ride facilities associated with the BRT Alternative would have the potential to increase the concentration and accumulation of runoff contaminants. Due to the predominance of impervious surfaces throughout the project area, minimal percolation to the underlying groundwater occurs in the API. Therefore, any potential increases in contaminated surface water runoff would have no adverse impact on groundwater quality.

Potential impacts on water resources stemming from both construction and operation could be mitigated with the following measures as appropriate:

- Project design that includes properly designed and maintained biological oil and grease removal systems in new storm drain systems to treat water before it leaves project construction areas
- Proper storage of hazardous materials to prevent contact with precipitation and runoff
- Development and maintenance of an effective monitoring and cleanup program for spills and leaks of hazardous materials
- Placement of equipment to be repaired or maintained in covered areas on a pad of absorbent material to contain leaks, spills, or small discharges
- Periodic and consistent removal of landscape and construction debris
- Removal of any significant chemical residue on the project sites through appropriate methods
- Use of non-toxic alternatives for any necessary applications of herbicides or fertilizers
- Installation of detention basins or other landscaping features to remove suspended solids by settlement
- Periodic monitoring of runoff water quality before discharge from the site and into the storm drainage system

5.2.1.4 Wetland Impacts

The BRT Alternative park & ride facility could affect between 1.5 and 9 acres of wetlands, dependent on a formal wetland delineation. Following compensatory mitigation, either through creation, restoration, enhancement, or preservation of wetlands, the BRT Alternative would have no adverse permanent impacts on wetlands in the API. Compensatory mitigation is regulated under the 2008 CWA Section 404 Final Compensatory Mitigation Rule and is intended to replace lost aquatic resource functions and area with the goal of "no net loss" of wetlands (USEPA 2008). Compensatory mitigation should take place on public or private land at or adjacent to the impact site or at another location generally within the same watershed where it is most likely to replace lost functions. There are several potential underutilized or vacant industrial land areas, with a connection to the Little Calumet River, that exist within 3 miles of the alignment; these land areas could be restored as compensatory mitigation.

5.2.2 Construction Impacts and Mitigation - Bus Rapid Transit Alternative

5.2.2.1 Drainage Impacts

The physical modifications associated with the BRT Alternative would result in potential impacts on the existing stormwater drainage infrastructure, particularly where park & ride lots and structures would be constructed. These alterations would not greatly affect the direction or volume of drainage through the API. In areas where construction could result in the need to relocate certain drainage infrastructure, temporary lines would be installed during the construction period.

In addition to the mitigation measures recommended in Section 5.2.1.1, controlled use of water for irrigation and dust control is also recommended to avoid off-site runoff.

5.2.2.2 Groundwater Impacts

There would be a potential need for dewatering by removing groundwater from the construction site by pumping if groundwater were encountered during construction. Dewatering during construction could temporarily affect local shallow groundwater levels. Given the likelihood of encountering contaminated groundwater, compliance with federal, state, and local laws and regulations (as described in the *Hazardous Materials Technical Memorandum*) would be required during construction.

5.2.2.3 Water Quality Impacts

Water quality impacts could result from construction of the BRT Alternative. Construction would have the potential to increase erosion and sedimentation around proposed construction and staging areas. Grading associated with construction could result in a temporary increase in the amount of suspended solids in stormwater running off construction sites. In the case of a storm event, construction site runoff would result in sheet erosion of exposed soil. If not adequately controlled, contaminated runoff from these areas would have the potential to degrade surface water quality.

The impacts of construction of the BRT Alternative on water quality would be minor because the project area is already highly urbanized. In order to ensure that surface water runoff would not have adverse impacts on water quality, human health, or safety, appropriate measures would be taken to control runoff during implementation. Some examples of these mitigation measures include establishing an erosion control plan, ensuring the proper storage and handling of hazardous materials including paints, solvents, fuels, and hydraulic fluids, and periodic monitoring of the water quality of runoff leaving the site. Section 5.2.1.3 summarizes proposed mitigation measures.

5.2.2.4 Wetland Impacts

Compensatory mitigation would be needed for construction related, temporary impacts on wetlands. Construction staging areas would be sited outside of wetlands as much as possible, but if there were any temporary impacts, those areas would be reconstructed as wetlands following construction.

5.3 Union Pacific Railroad Rail Alternative - Right-of-Way Option

5.3.1 Permanent Impacts and Mitigation - Union Pacific Railroad Rail Alternative - Right-of-Way Option

5.3.1.1 Segment UA

5.3.1.1.1 Drainage Impacts

The physical modifications associated with the UPRR Rail Alternative ROW Option would result in impacts on the existing stormwater drainage infrastructure. These alterations would not greatly affect the direction of drainage through the project area and would not change drainage within the watershed.

Much of the proposed construction would take place on already impervious land and therefore would not significantly increase the amount or peak flow rate of stormwater runoff entering the storm drain system. Pervious area is anticipated to decrease in the following areas under the ROW Option: along I-57, through the northwest corner of Wendell Smith Park and across the UPRR ROW to the west of Wendell Smith Park, around stations, and at the park & ride facilities and substations. The decrease in pervious area could be mitigated by incorporating new stormwater management structures.

After mitigation, there would be no adverse permanent stormwater drainage impacts associated with the UPRR Rail Alternative ROW Option.

The Roseland Pump Station is east of the UPRR Rail Alternative ROW Option at 104th Street. The Roseland Pump Station is a major water distribution facility supplying water to the City of Chicago and surrounding suburbs. There are underground pipes and structures running west from the pump station. Other major underground pipes and structures include the 10-foot-diameter Stewart Avenue water tunnel, the 10-foot-diameter sewer underneath Wentworth

Avenue near 114th Street, and the 17.5-foot, horseshoe-shaped MWRD Calumet Intercepting Sewer tunnel. Stormwater drainage and water structures would need to be designed to accommodate the pump station and other underground utilities.

Section 5.2.1.1 summarizes proposed mitigation measures.

5.3.1.1.2 Groundwater Impacts

There would be no adverse permanent groundwater impacts associated with the UPRR Rail Alternative ROW Option.

5.3.1.1.3 Water Quality Impacts

The operation of the Red Line under the ROW Option would replace automobile trips; there would be an associated reduction in runoff contaminants that collect on streets (i.e., oil, grease, and metals). For this reason, the ROW Option is anticipated to have a minor but positive water quality impact.

The introduction of new impervious surfaces would have the potential to increase the concentration and accumulation of runoff contaminants. Due to the predominance of impervious surfaces throughout the project area, minimal percolation to the underlying groundwater occurs in the API. Therefore, any potential increases in contaminated surface water runoff would have no adverse impact on groundwater quality.

After mitigation, there would be no adverse permanent water quality impacts associated with the UPRR Rail Alternative ROW Option. Section 5.2.1.3 summarizes proposed mitigation measures.

5.3.1.1.4 Wetland Impacts

Because there are no wetlands in Segment UA of the UPRR Rail Alternative, there would be no permanent impacts on wetlands.

5.3.1.2 Segment UB

5.3.1.2.1 Drainage Impacts

The physical modifications associated with the UPRR Rail Alternative ROW Option would result in impacts on the existing stormwater drainage infrastructure. These alterations would not greatly affect the direction of drainage through the project area and would not change drainage within the watershed.

Much of the proposed construction would take place on already impervious land and therefore would not substantially increase the amount or peak flow rate of stormwater runoff entering the storm drain system. Pervious area is anticipated to decrease in the following areas under the ROW Option: around stations, at the park & ride facilities, and from north of Kensington Park where the UPRR Rail Alternative splits from the existing UPRR tracks through the southern end of the UPRR Rail Alternative, including both terminal options. The decrease in pervious area could be mitigated by incorporating new stormwater management structures.

After mitigation, there would be no adverse permanent stormwater drainage impacts associated with the UPRR Rail Alternative ROW Option. Section 5.2.1.1 summarizes proposed mitigation measures.

5.3.1.2.2 Groundwater Impacts

There would be no adverse permanent groundwater impacts associated with the UPRR Rail Alternative ROW Option.

5.3.1.2.3 Water Quality Impacts

See Section 5.3.1.1.3.

5.3.1.2.4 Wetland Impacts

The UPRR Rail Alternative ROW Option South Station Option and West Station Option facilities could affect approximately 7 and 6 acres of wetlands, respectively. Following compensatory mitigation these options would have no adverse permanent impacts on wetlands in the API. Section 5.2.1.4 discusses compensatory mitigation.

5.3.2 Construction Impacts and Mitigation - Union Pacific Railroad Rail Alternative - Right-of-Way Option

5.3.2.1 Segment UA

5.3.2.1.1 Drainage Impacts

The physical modifications associated with the UPRR Rail Alternative ROW Option would result in impacts on the existing stormwater drainage infrastructure. These alterations would not greatly affect the direction of drainage through the project area and would not change drainage within the watershed. In areas where construction could result in the need to relocate certain drainage infrastructure, temporary lines would be installed during the construction period. Care would need to be taken during construction in the vicinity of the Roseland Pump Station at 104th Street, as well as the other underground utilities called out in Section 5.3.1.1.1, in order to not damage existing structures. Proposed mitigation measures are summarized in Section 5.2.1.1 and 5.2.2.1.

5.3.2.1.2 Groundwater Impacts

See Section 5.2.2.2.

5.3.2.1.3 Water Quality Impacts

See Section 5.2.2.3.

5.3.2.1.4 Wetland Impacts

Because there are no wetlands in Segment UA of the UPRR Rail Alternative, there would be no construction impacts on wetlands.

5.3.2.2 Segment UB

5.3.2.2.1 Drainage Impacts

See Section 5.3.2.1.1.

5.3.2.2.2 Groundwater Impacts
See Section 5.2.2.2.

5.3.2.2.3 Water Quality Impacts
See Section 5.2.2.3.

5.3.2.2.4 Wetland Impacts
See Section 5.2.2.4.

5.3.3 120th Street Yard and Shop

5.3.3.1 Permanent Impacts and Mitigation

5.3.3.1.1 Drainage Impacts
The physical modifications associated with the UPRR Rail Alternative 120th Street yard and shop would result in impacts on the existing stormwater drainage infrastructure. These alterations would not greatly affect the direction of drainage through the project area and would not change drainage within the watershed.

The proposed construction would take place on pervious area; the decrease in pervious area could be mitigated by incorporating new stormwater management structures.

After mitigation, there would be no adverse permanent stormwater drainage impacts associated with the UPRR Rail Alternative 120th Street yard and shop. Section 5.2.1.1 summarizes proposed mitigation measures.

5.3.3.1.2 Groundwater Impacts
There would be no adverse permanent groundwater impacts associated with the UPRR Rail Alternative 120th Street yard and shop.

5.3.3.1.3 Water Quality Impacts
The introduction of new impervious surfaces would have the potential to increase the concentration and accumulation of runoff contaminants. After mitigation, there would be no adverse permanent water quality impacts associated with the 120th Street yard and shop. Section 5.2.1.3 summarizes proposed mitigation measures.

5.3.3.1.4 Wetland Impacts
Development of the 120th Street yard and shop facility could affect approximately 14 acres of wetlands. Following compensatory mitigation, the 120th Street yard and shop would have no adverse permanent impacts on wetlands in the API. Compensatory mitigation is discussed in Section 5.2.1.4.

5.3.3.2 Construction Impacts and Mitigation

5.3.3.2.1 Drainage Impacts
See Section 5.3.2.1.1.

5.3.3.2.2 Groundwater Impacts
See Section 5.2.2.2.

5.3.3.2.3 Water Quality Impacts
See Section 5.2.2.3.

5.3.3.2.4 Wetland Impacts
See Section 5.2.2.4.

5.4 Union Pacific Railroad Rail Alternative - East Option

5.4.1 Permanent Impacts and Mitigation - Union Pacific Railroad Rail Alternative - East Option

5.4.1.1 Segment UA

5.4.1.1.1 Drainage Impacts
Impacts associated with the UPRR Rail Alternative East Option would be similar to those discussed in Section 5.3.1.1.1. The UPRR Rail Alternative East Option alignment would be closer to the Roseland Pump Station than the ROW Option alignment; consequently, it would be more complex from a drainage standpoint. Stormwater drainage and water structures would need to be designed to accommodate the pump station as well as the other underground utilities called out in Section 5.3.1.1.1. Section 5.2.1.1 summarizes proposed mitigation measures.

5.4.1.1.2 Groundwater Impacts
There would be no adverse permanent groundwater impacts associated with the UPRR Rail Alternative East Option.

5.4.1.1.3 Water Quality Impacts
See Section 5.3.1.1.3.

5.4.1.1.4 Wetland Impacts
Because there are no wetlands in Segment UA of the UPRR Rail Alternative, there would be no permanent impacts on wetlands.

5.4.1.2 Segment UB
See Section 5.3.1.2.

5.4.2 Construction Impacts and Mitigation - Union Pacific Railroad Rail Alternative - East Option

5.4.2.1 Segment UA

5.4.2.1.1 Drainage Impacts
See Section 5.3.2.1.1. Additional care would need to be taken in the vicinity of the Roseland Pump Station at 104th Street and near the other underground utilities called out in Section 5.3.1.1.1. Mitigation measures are summarized in Section 5.2.1.1 and 5.2.2.1.

5.4.2.1.2 Groundwater Impacts

See Section 5.2.2.2.

5.4.2.1.3 Water Quality Impacts

See Section 5.2.2.3.

5.4.2.1.4 Wetland Impacts

Because there are no wetlands in Segment UA along the UPRR Rail Alternative, there would be no construction impacts on wetlands.

5.4.2.2 Segment UB

See Section 5.3.2.2.

5.4.3 120th Street Yard and Shop

See Section 5.3.3.

5.5 Union Pacific Railroad Rail Alternative - West Option

5.5.1 Permanent Impacts and Mitigation - Union Pacific Railroad Rail Alternative - West Option

5.5.1.1 Segment UA

5.5.1.1.1 Drainage Impacts

The physical modifications associated with the UPRR Rail Alternative West Option would result in impacts on the existing stormwater drainage infrastructure. These alterations would not greatly affect the direction of drainage through the project area and would not change drainage within the watershed.

Much of the proposed construction would take place on already impervious land and therefore would not substantially increase the amount or peak flow rate of stormwater runoff entering the storm drain system. Pervious area is anticipated to decrease in the following areas under the West Option: along I-57, along Fernwood Parkway, around stations, and at the park & ride facilities and substations. The decrease in pervious area could be mitigated by incorporating new stormwater management structures.

After mitigation, there would be no adverse permanent impacts on stormwater drainage associated with the UPRR Rail Alternative West Option. Section 5.2.1.1 summarizes proposed mitigation measures. Among the build alternatives, the UPRR Rail Alternative West Option would have the least impact on the Roseland Pump Station.

5.5.1.1.2 Groundwater Impacts

There would be no adverse permanent groundwater impacts associated with the UPRR Rail Alternative West Option.

5.5.1.1.3 Water Quality Impacts
See Section 5.3.1.1.3.

5.5.1.1.4 Wetland Impacts
Because there are no wetlands in Segment UA of the UPRR Rail Alternative, there would be no permanent impacts on wetlands.

5.5.1.2 Segment UB
See Section 5.3.1.2.

5.5.2 Construction Impacts and Mitigation – Union Pacific Railroad Rail Alternative - West Option

5.5.2.1 Segment UA

5.5.2.1.1 Drainage Impacts
See Section 5.3.2.1.1.

5.5.2.1.2 Groundwater Impacts
See Section 5.2.2.2.

5.5.2.1.3 Water Quality Impacts
See Section 5.2.2.3.

5.5.2.1.4 Wetland Impacts
Because there are no wetlands in Segment UA of the UPRR Rail Alternative, there would be no construction impacts on wetlands.

5.5.2.2 Segment UB
See Section 5.3.2.2.

5.5.3 120th Street Yard and Shop
See Section 5.3.3.

5.6 Halsted Rail Alternative

5.6.1 Permanent Impacts and Mitigation - Halsted Rail Alternative

5.6.1.1 Segment HA

5.6.1.1.1 Drainage Impacts
The physical modifications associated with the Halsted Rail Alternative would result in impacts on the existing stormwater drainage infrastructure. These alterations would not greatly affect the direction of drainage through the project area and would not change drainage within the watershed.

Much of the proposed construction would take place on already impervious land and therefore would not substantially increase the amount or peak flow rate of stormwater runoff entering the storm drain system. Pervious area is anticipated to decrease along I-57 and around stations, park & ride facilities, and substations. The decrease in pervious area could be mitigated by incorporating new stormwater management structures.

After mitigation there would be no adverse permanent stormwater drainage impacts associated with the Halsted Rail Alternative. Section 5.2.1.1 summarizes proposed mitigation measures.

5.6.1.1.2 Groundwater Impacts

There would be no adverse permanent groundwater impacts associated with the Halsted Rail Alternative.

5.6.1.1.3 Water Quality Impacts

See Section 5.3.1.1.3.

5.6.1.1.4 Wetland Impacts

Because there are no wetlands in Segment HA of the Halsted Rail Alternative, there would be no permanent impacts on wetlands.

5.6.1.2 Segment HB

5.6.1.2.1 Drainage Impacts

The physical modifications associated with the Halsted Rail Alternative would result in impacts on the existing stormwater drainage infrastructure. These alterations would not greatly affect the direction of drainage through the project area and would not change drainage within the watershed.

Much of the proposed construction would take place on already impervious land and therefore would not substantially increase the amount or peak flow rate of stormwater runoff entering the storm drain system. Pervious area is anticipated to decrease along I-57 and around stations, park & ride facilities, and substations. The decrease in pervious area could be mitigated by incorporating new stormwater management structures.

After mitigation, the Halsted Rail Alternative would have no adverse permanent impacts on stormwater drainage. Section 5.2.1.1 summarizes proposed mitigation measures.

5.6.1.2.2 Groundwater Impacts

The Halsted Rail Alternative would have no adverse permanent impacts on groundwater.

5.6.1.2.3 Water Quality Impacts

See Section 5.3.1.1.3.

5.6.1.2.4 Wetland Impacts

Because there are no wetlands in Segment HB of the Halsted Rail Alternative, there would be no permanent impacts on wetlands.

5.6.2 Construction Impacts and Mitigation - Halsted Rail Alternative

5.6.2.1 Segment HA

5.6.2.1.1 Drainage Impacts

See Section 5.3.2.1.1.

5.6.2.1.2 Groundwater Impacts

See Section 5.2.2.2.

5.6.2.1.3 Water Quality Impacts

See Section 5.2.2.3.

5.6.2.1.4 Wetland Impacts

Because there are no wetlands in Segment HA of the Halsted Rail Alternative, there would be no construction impacts on wetlands.

5.6.2.2 Segment HB

5.6.2.2.1 Drainage Impacts

See Section 5.3.2.1.1.

5.6.2.2.2 Groundwater Impacts

See Section 5.2.2.2.

5.6.2.2.3 Water Quality Impacts

See Section 5.2.2.3.

5.6.2.2.4 Wetland Impacts

Because there are no wetlands in Segment HB of the Halsted Rail Alternative, there would be no construction impacts on wetlands.

5.6.3 119th Street Yard and Shop

5.6.3.1 Permanent Impacts and Mitigation

5.6.3.1.1 Drainage Impacts

The physical modifications associated with the Halsted Rail Alternative 119th Street yard and shop would result in impacts on the existing stormwater drainage infrastructure. These alterations would not greatly affect the direction of drainage through the project area and would not change drainage within the watershed.

Much of the proposed construction would take place on already impervious land and therefore would not substantially increase the amount or peak flow rate of stormwater runoff entering the

storm drain system. The decrease in pervious area could be mitigated by incorporating new stormwater management structures.

After mitigation, the development of the 119th Street yard and shop would have no adverse permanent impacts on stormwater drainage. Section 5.2.1.1 summarizes proposed mitigation measures.

5.6.3.1.2 Groundwater Impacts

There would be no adverse permanent groundwater impacts associated with the 119th Street yard and shop.

5.6.3.1.3 Water Quality Impacts

See Section 5.3.1.1.3.

5.6.3.1.4 Wetland Impacts

Because there are no wetlands at the 119th Street yard and shop site, there would be no permanent impacts on wetlands.

5.6.3.2 Construction Impacts and Mitigation

5.6.3.2.1 Drainage Impacts

See Section 5.3.2.1.1.

5.6.3.2.2 Groundwater Impacts

See Section 5.2.2.2.

5.6.3.2.3 Water Quality Impacts

See Section 5.2.2.3.

5.6.3.2.4 Wetland Impacts

Because there are no wetlands at the 119th Street yard and shop site, there would be no construction impacts on wetlands.

Section 6
Impacts Remaining After Mitigation

6.1 No Build Alternative

After mitigation, there would be no effects on water resources.

6.2 Bus Rapid Transit Alternative

After mitigation, there would be no effects on water resources.

6.3 Union Pacific Railroad Rail Alternative - Right-of-Way Option

After mitigation, there would be no effects on water resources.

6.4 Union Pacific Railroad Rail Alternative - East Option

After mitigation, there would be no effects on water resources.

6.5 Union Pacific Railroad Rail Alternative - West Option

After mitigation, there would be no effects on water resources.

6.6 Halsted Rail Alternative

After mitigation, there would be no effects on water resources.

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Appendix A
EcoCAT Report

EcoCAT
Ecological Compliance Assessment Tool

Applicant: CDM Smith
Contact: Claudia Lea
Address: 125 S Wacker Drive
Suite 600
Chicago, IL 60606

IDNR Project #: 1304095
Date: 09/12/2012

Project: CTA Red Line Extension Project
Address: 95th Street Terminal, Chicago

Description: The Chicago Transit Authority (CTA) is proposing to extend the Red Line from the 95th Street Station to the vicinity of 130th Street.

Natural Resource Review Results

This project was submitted for information only. It is not a consultation under Part 1075.

The Illinois Natural Heritage Database contains no record of State-listed threatened or endangered species, Illinois Natural Area Inventory sites, dedicated Illinois Nature Preserves, or registered Land and Water Reserves in the vicinity of the project location.

Location

The applicant is responsible for the accuracy of the location submitted for the project.

County: Cook

Township, Range, Section:

37N, 14E, 3	37N, 14E, 4
37N, 14E, 9	37N, 14E, 10
37N, 14E, 15	37N, 14E, 22



IL Department of Natural Resources Contact
Impact Assessment Section
217-785-5500
Division of Ecosystems & Environment

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2. Unauthorized attempts to upload, download, or change information on this website are strictly prohibited and may be punishable under the Computer Fraud and Abuse Act of 1986 and/or the National Information Infrastructure Protection Act.

3. IDNR reserves the right to enhance, modify, alter, or suspend the website at any time without notice, or to terminate or restrict access.

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EcoCAT
Ecological Compliance Assessment Tool

Applicant: CDM Smith
Contact: Claudia Lea
Address: 125 S Wacker Drive
Suite 600
Chicago, IL 60606

IDNR Project #: 1304098
Date: 09/12/2012

Project: CTA Red Line Extension
Address: 95th Street Terminal, Chicago

Description: The Chicago Transit Authority (CTA) is proposing to extend the Red Line from the 95th Street Station to the vicinity of 130th Street.

Natural Resource Review Results

This project was submitted for information only. It is not a consultation under Part 1075.

The Illinois Natural Heritage Database contains no record of State-listed threatened or endangered species, Illinois Natural Area Inventory sites, dedicated Illinois Nature Preserves, or registered Land and Water Reserves in the vicinity of the project location.

Location

The applicant is responsible for the accuracy of the location submitted for the project.

County: Cook

Township, Range, Section:

37N, 14E, 3
37N, 14E, 4
37N, 14E, 8
37N, 14E, 9
37N, 14E, 10



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EcoCAT
Ecological Compliance Assessment Tool

Applicant: CDM Smith
Contact: Claudia Lea
Address: 125 S Wacker Drive
Suite 600
Chicago, IL 60606

IDNR Project #: 1304099
Date: 09/12/2012

Project: CTA Red Line Extension
Address: 95th Street Terminal, Chicago

Description: The Chicago Transit Authority (CTA) is proposing to extend the Red Line from the 95th Street Station to the vicinity of 130th Street.

Natural Resource Review Results

This project was submitted for information only. It is not a consultation under Part 1075.

The Illinois Natural Heritage Database shows the following protected resources may be in the vicinity of the project location:

Riverdale Marsh INAI Site
Black-Crowned Night Heron *(Nycticorax nycticorax)*
Little Blue Heron *(Egretta caerulea)*
Yellow-Crowned Night Heron *(Nyctanassa violacea)*
Yellow-Headed Blackbird *(Xanthocephalus xanthocephalus)*

Location

The applicant is responsible for the accuracy of the location submitted for the project.

County: Cook

Township, Range, Section:

37N, 14E, 8	37N, 14E, 9
37N, 14E, 16	37N, 14E, 17
37N, 14E, 20	37N, 14E, 21
37N, 14E, 22	37N, 14E, 28
37N, 14E, 29	37N, 14E, 32
37N, 14E, 33	



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EcoCAT
Ecological Compliance Assessment Tool

Applicant: CDM Smith
Contact: Claudia Lea
Address: 125 S Wacker Drive
Suite 600
Chicago, IL 60606

IDNR Project #: 1304096
Date: 09/12/2012

Project: CTA Red Line Extension
Address: 95th Street Terminal, Chicago

Description: The Chicago Transit Authority (CTA) is proposing to extend the Red Line from the 95th Street Station to the vicinity of 130th Street.

Natural Resource Review Results

This project was submitted for information only. It is not a consultation under Part 1075.

The Illinois Natural Heritage Database shows the following protected resources may be in the vicinity of the project location:

Lake Calumet INAI Site
Blanding'S Turtle *(Emydoidea blandingii)*
Common Moorhen *(Gallinula chloropus)*
Little Blue Heron *(Egretta caerulea)*
Peregrine Falcon *(Falco peregrinus)*
Yellow-Crowned Night Heron *(Nyctanassa violacea)*
Yellow-Headed Blackbird *(Xanthocephalus xanthocephalus)*

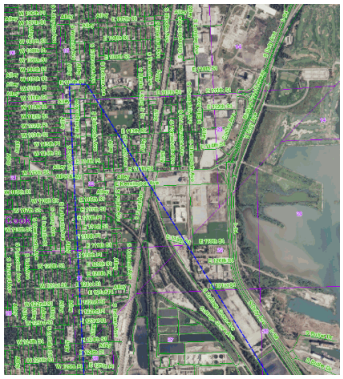
Location

The applicant is responsible for the accuracy of the location submitted for the project.

County: Cook

Township, Range, Section:

37N, 14E, 15	37N, 14E, 22
37N, 14E, 26	37N, 14E, 27
37N, 14E, 28	37N, 14E, 33
37N, 14E, 34	37N, 14E, 35



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EcoCAT
Ecological Compliance Assessment Tool

Applicant: CDM Smith
Contact: Claudia Lea
Address: 125 S Wacker Drive
Suite 600
Chicago, IL 60606

IDNR Project #: 1304295
Date: 09/18/2012

Project: CTA Red Line Extension Project
Address: 95th Street Terminal, Chicago

Description: The Chicago Transit Authority (CTA) is proposing to extend the Red Line from the 95th Street Station to the vicinity of 130th Street.

Natural Resource Review Results

This project was submitted for information only. It is not a consultation under Part 1075.

The Illinois Natural Heritage Database shows the following protected resources may be in the vicinity of the project location:

Riverdale Marsh INAI Site
Black-Crowned Night Heron *(Nycticorax nycticorax)*

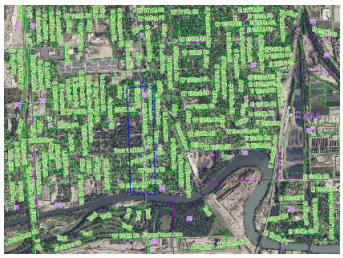
Location

The applicant is responsible for the accuracy of the location submitted for the project.

County: Cook

Township, Range, Section:

37N, 14E, 28
37N, 14E, 29
37N, 14E, 32
37N, 14E, 33



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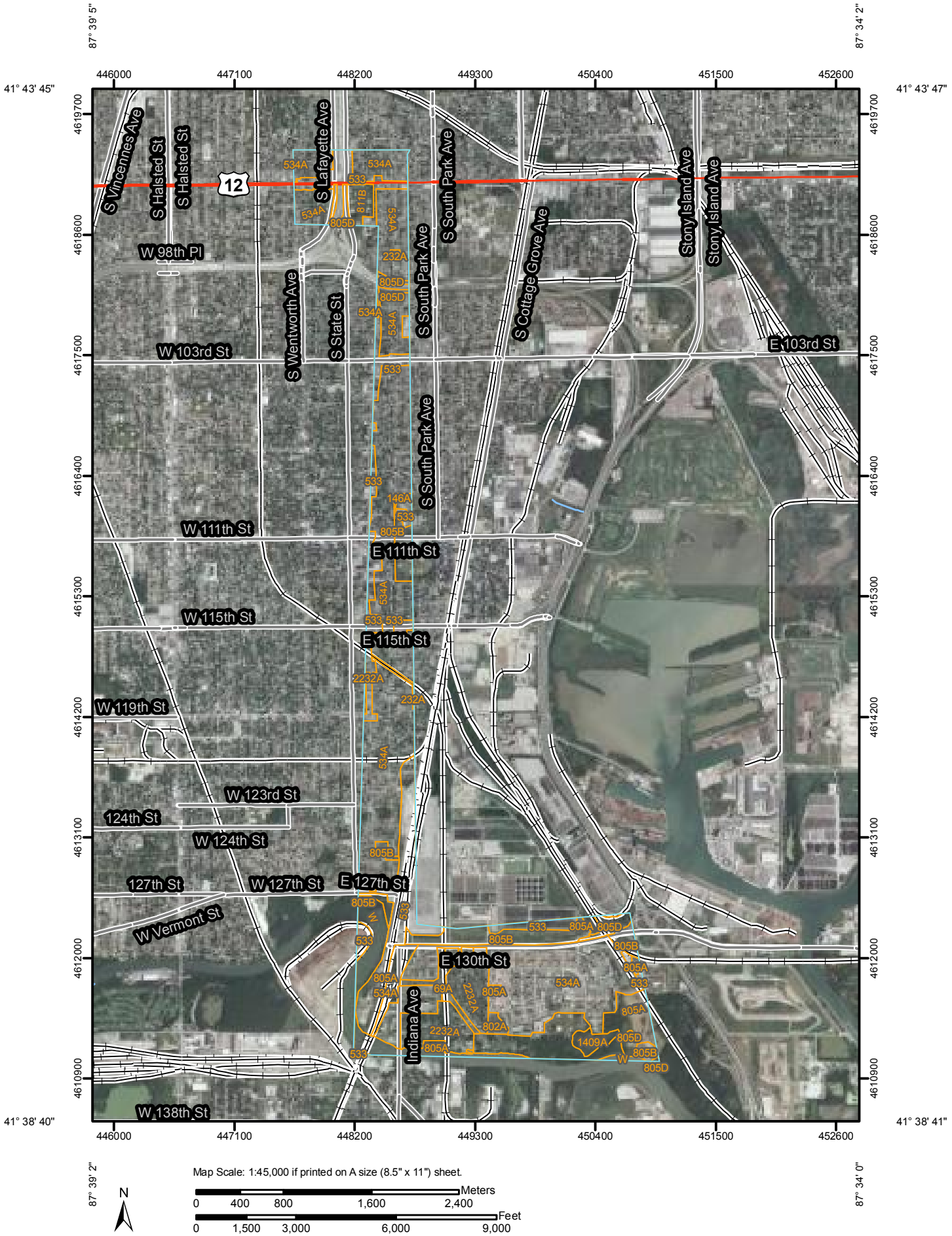
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Appendix B
Natural Resources Conservation Service Web Soil Survey Summary

Soil Map—Cook County, Illinois
(RLE TSM/BRT Alternative)



MAP LEGEND

Area of Interest (AOI)
- Area of Interest (AOI)

Soils
- Soil Map Units

Special Point Features
- Blowout
- Borrow Pit
- Clay Spot
- Closed Depression
- Gravel Pit
- Gravelly Spot
- Landfill
- Lava Flow
- Marsh or swamp
- Mine or Quarry
- Miscellaneous Water
- Perennial Water
- Rock Outcrop
- Saline Spot
- Sandy Spot
- Severely Eroded Spot
- Sinkhole
- Slide or Slip
- Sodic Spot
- Spoil Area
- Stony Spot
- Very Stony Spot
- Wet Spot
- Other

Special Line Features
- Gully
- Short Steep Slope
- Other

Political Features
- Cities

Water Features
- Streams and Canals

Transportation
- Rails
- Interstate Highways
- US Routes
- Major Roads

MAP INFORMATION

Map Scale: 1:45,000 if printed on A size (8.5" × 11") sheet.

The soil surveys that comprise your AOI were mapped at 1:12,000.

Please rely on the bar scale on each map sheet for accurate map measurements.

Source of Map: Natural Resources Conservation Service
Web Soil Survey URL: http://websoilsurvey.nrcs.usda.gov
Coordinate System: UTM Zone 16N NAD83

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: Cook County, Illinois
Survey Area Data: Version 6, Nov 2, 2011

Date(s) aerial images were photographed: 7/30/2007; 8/3/2007

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

Map Unit Legend

Cook County, Illinois (IL031)			
Map Unit Symbol	**Map Unit Name**	**Acres in AOI**	**Percent of AOI**
69A	Milford silty clay loam, 0 to 2 percent slopes	17.7	1.1%
146A	Elliott silt loam, 0 to 2 percent slopes	1.8	0.1%
232A	Ashkum silty clay loam, 0 to 2 percent slopes	2.7	0.2%
533	Urban land	264.9	16.3%
534A	Urban land-Orthents, clayey, complex, nearly level	834.7	51.2%
802A	Orthents, loamy, nearly level	6.7	0.4%
802B	Orthents, loamy, undulating	5.0	0.3%
805A	Orthents, clayey, nearly level	151.0	9.3%
805B	Orthents, clayey, undulating	109.3	6.7%
805D	Orthents, clayey, rolling	31.6	1.9%
811B	Alfic Udarents, clayey, 2 to 6 percent slopes	19.6	1.2%
1409A	Aquents, clayey, undrained, nearly level	14.0	0.9%
2049A	Orthents, loamy-Urban land-Watseka complex, 0 to 2 percent slopes	0.1	0.0%
2232A	Orthents, clayey-Urban land-Ashkum complex, 0 to 2 percent slopes	99.4	6.1%
W	Water	71.2	4.4%
Totals for Area of Interest		**1,629.8**	**100.0%**

Soil Map—Cook County, Illinois
(RLE UPRR Alternative)



MAP LEGEND

Area of Interest (AOI)
- Area of Interest (AOI)

Soils
- Soil Map Units

Special Point Features
- Blowout
- Borrow Pit
- Clay Spot
- Closed Depression
- Gravel Pit
- Gravelly Spot
- Landfill
- Lava Flow
- Marsh or swamp
- Mine or Quarry
- Miscellaneous Water
- Perennial Water
- Rock Outcrop
- Saline Spot
- Sandy Spot
- Severely Eroded Spot
- Sinkhole
- Slide or Slip
- Sodic Spot
- Spoil Area
- Stony Spot
- Very Stony Spot
- Wet Spot
- Other

Special Line Features
- Gully
- Short Steep Slope
- Other

Political Features
- Cities

Water Features
- Streams and Canals

Transportation
- Rails
- Interstate Highways
- US Routes
- Major Roads

MAP INFORMATION

Map Scale: 1:40,900 if printed on A size (8.5" × 11") sheet.

The soil surveys that comprise your AOI were mapped at 1:12,000.

Please rely on the bar scale on each map sheet for accurate map measurements.

Source of Map: Natural Resources Conservation Service
Web Soil Survey URL: http://websoilsurvey.nrcs.usda.gov
Coordinate System: UTM Zone 16N NAD83

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: Cook County, Illinois
Survey Area Data: Version 6, Nov 2, 2011

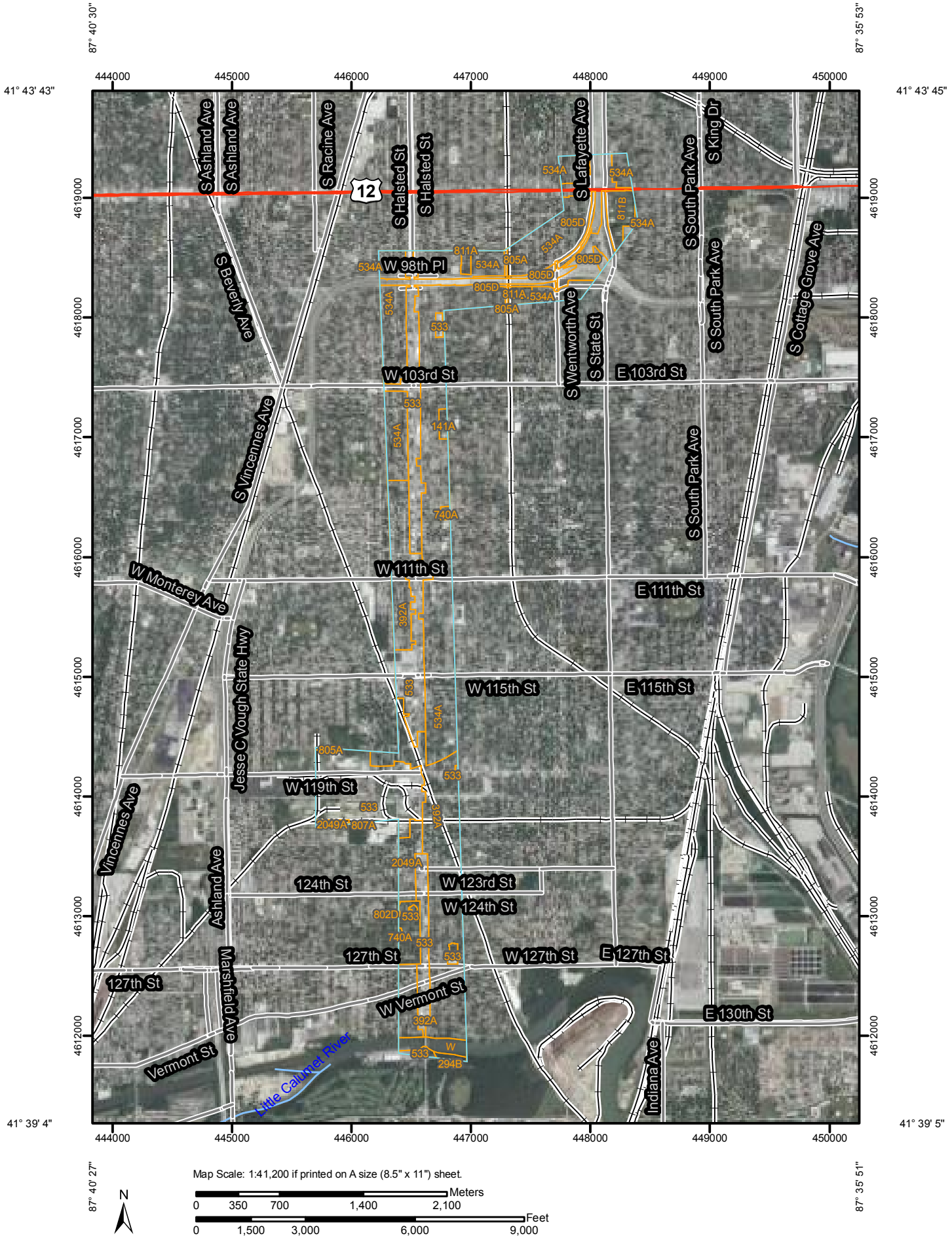
Date(s) aerial images were photographed: 7/30/2007; 8/3/2007

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

Map Unit Legend

Cook County, Illinois (IL031)			
Map Unit Symbol	**Map Unit Name**	**Acres in AOI**	**Percent of AOI**
69A	Milford silty clay loam, 0 to 2 percent slopes	7.7	0.6%
125A	Selma loam, 0 to 2 percent slopes	2.1	0.2%
232A	Ashkum silty clay loam, 0 to 2 percent slopes	4.6	0.3%
522B	Orthents, clayey, refuse substratum, undulating	0.1	0.0%
533	Urban land	432.1	31.4%
534A	Urban land-Orthents, clayey, complex, nearly level	590.1	42.9%
802A	Orthents, loamy, nearly level	90.6	6.6%
802B	Orthents, loamy, undulating	5.0	0.4%
805A	Orthents, clayey, nearly level	14.4	1.0%
805B	Orthents, clayey, undulating	111.7	8.1%
805D	Orthents, clayey, rolling	55.8	4.1%
811A	Alfic Udarents, clayey, 0 to 2 percent slopes	5.4	0.4%
811B	Alfic Udarents, clayey, 2 to 6 percent slopes	11.4	0.8%
2232A	Orthents, clayey-Urban land-Ashkum complex, 0 to 2 percent slopes	43.4	3.2%
Totals for Area of Interest		**1,374.3**	**100.0%**

Soil Map—Cook County, Illinois
(RLE Halsted Rail Alternative)



MAP LEGEND

Area of Interest (AOI)
- Area of Interest (AOI)

Soils
- Soil Map Units

Special Point Features
- Blowout
- Borrow Pit
- Clay Spot
- Closed Depression
- Gravel Pit
- Gravelly Spot
- Landfill
- Lava Flow
- Marsh or swamp
- Mine or Quarry
- Miscellaneous Water
- Perennial Water
- Rock Outcrop
- Saline Spot
- Sandy Spot
- Severely Eroded Spot
- Sinkhole
- Slide or Slip
- Sodic Spot
- Spoil Area
- Stony Spot
- Very Stony Spot
- Wet Spot
- Other

Special Line Features
- Gully
- Short Steep Slope
- Other

Political Features
- Cities

Water Features
- Streams and Canals

Transportation
- Rails
- Interstate Highways
- US Routes
- Major Roads

MAP INFORMATION

Map Scale: 1:41,200 if printed on A size (8.5" × 11") sheet.

The soil surveys that comprise your AOI were mapped at 1:12,000.

Please rely on the bar scale on each map sheet for accurate map measurements.

Source of Map: Natural Resources Conservation Service
Web Soil Survey URL: http://websoilsurvey.nrcs.usda.gov
Coordinate System: UTM Zone 16N NAD83

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: Cook County, Illinois
Survey Area Data: Version 6, Nov 2, 2011

Date(s) aerial images were photographed: 7/30/2007; 8/3/2007

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

Map Unit Legend

Cook County, Illinois (IL031)			
Map Unit Symbol	**Map Unit Name**	**Acres in AOI**	**Percent of AOI**
141A	Wesley fine sandy loam, 0 to 2 percent slopes	4.2	0.3%
293A	Andres silt loam, 0 to 2 percent slopes	0.6	0.0%
294B	Symerton silt loam, 2 to 5 percent slopes	2.9	0.2%
392A	Urban land-Orthents, loamy, complex, nearly level	273.7	21.9%
533	Urban land	348.4	27.8%
534A	Urban land-Orthents, clayey, complex, nearly level	480.8	38.4%
740A	Darroch silt loam, 0 to 2 percent slopes	23.2	1.9%
802D	Orthents, loamy, rolling	0.8	0.1%
805A	Orthents, clayey, nearly level	2.2	0.2%
805D	Orthents, clayey, rolling	41.6	3.3%
807A	Orthents, loamy-skeletal, nearly level	0.1	0.0%
811A	Alfic Udarents, clayey, 0 to 2 percent slopes	8.0	0.6%
811B	Alfic Udarents, clayey, 2 to 6 percent slopes	21.6	1.7%
2049A	Orthents, loamy-Urban land-Watseka complex, 0 to 2 percent slopes	27.5	2.2%
W	Water	16.3	1.3%
Totals for Area of Interest		**1,251.9**	**100.0%**

Appendix C
Wetlands and Deepwater Habitats Classification

WETLANDS AND DEEPWATER HABITATS CLASSIFICATION

System: M - Marine

Subsystem	Class	Subclass
1 - Subtidal	RB – Rock Bottom	1 Bedrock 2 Rubble
	UB – Unconsolidated Bottom	1 Cobble-Gravel 2 Sand 3 Mud
	AB – Aquatic Bed	1 Algal 3 Rooted Vascular
	RF – Reef	1 Coral 3 Worm
2 - Intertidal	AB – Aquatic Bed	1 Algal 3 Rooted Vascular
	RF – Reef	1 Coral 3 Worm
	RS – Rocky Shore	1 Bedrock 2 Rubble
	US – Unconsolidated Shore	1 Cobble-Gravel 2 Sand 3 Mud 4 Organic

System: E - Estuarine

Subsystem	Class	Subclass
1 - Subtidal	RB – Rock Bottom	1 Bedrock 2 Rubble
	UB – Unconsolidated Bottom	1 Cobble-Gravel 2 Sand 3 Mud 4 Organic
	AB – Aquatic Bed	1 Algal 3 Rooted Vascular 4 Floating Vascular
	RF – Reef	2 Mollusk 3 Worm
2 - Intertidal	AB – Aquatic Bed	1 Algal 3 Rooted Vascular 4 Floating Vascular
	RF – Reef	2 Mollusk 3 Worm
	SB – Streambed	1 Bedrock 2 Rubble 3 Cobble-Gravel 4 Sand 5 Mud 6 Organic
	RS – Rocky Shore	1 Bedrock 2 Rubble
	US – Unconsolidated Shore	1 Cobble-Gravel 2 Sand 3 Mud 4 Organic
	EM – Emergent	1 Persistent 2 Non-persistent 5 *Phragmites australis*
	SS – Scrub-Shrub	1 Broad-Leaved Deciduous 2 Needle-Leaved Deciduous 3 Broad-Leaved Evergreen 4 Needle-Leaved Evergreen 5 Dead 6 Deciduous 7 Evergreen
	FO – Forested	1 Broad-Leaved Deciduous 2 Needle-Leaved Deciduous 3 Broad-Leaved Evergreen 4 Needle-Leaved Evergreen 5 Dead 6 Deciduous 7 Evergreen

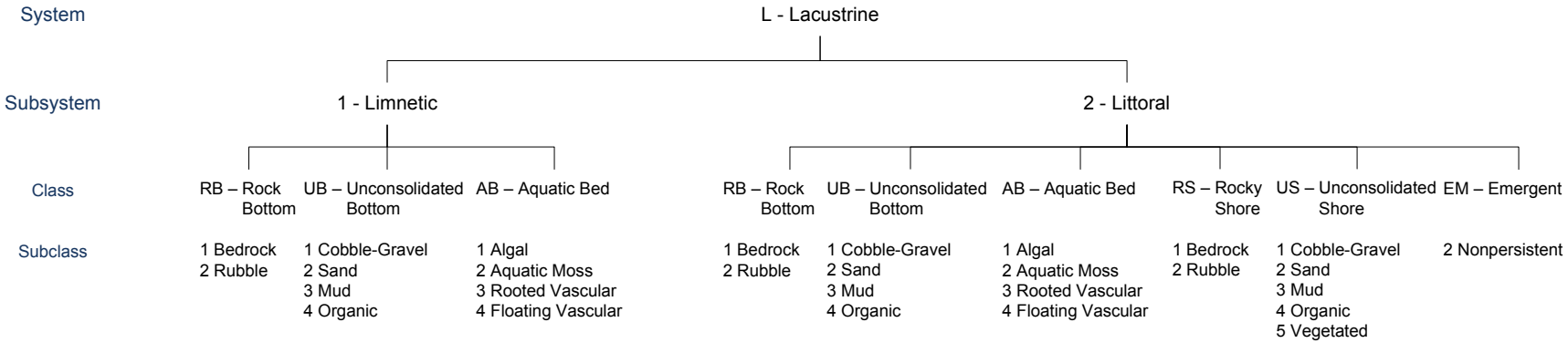
System: R - Riverine

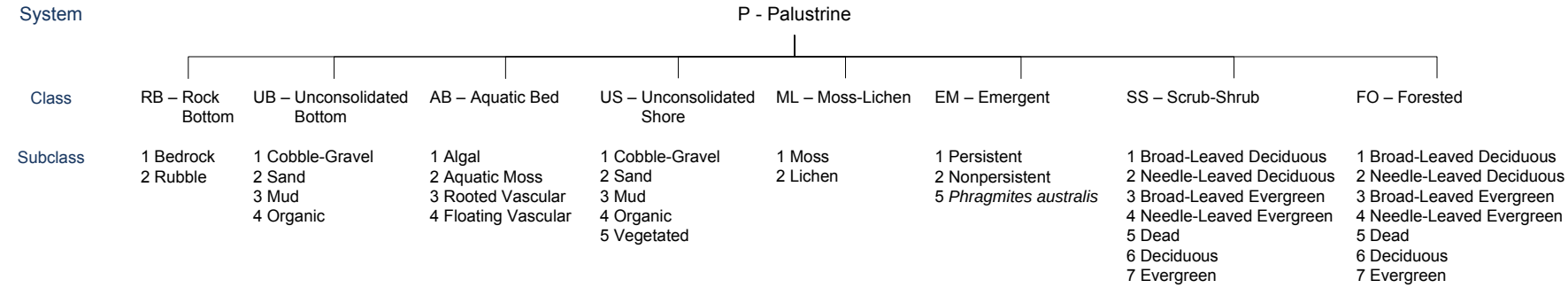
Subsystem	Class	Subclass
1 - Tidal	RB** – Rock Bottom	1 Bedrock 2 Rubble
	UB – Unconsolidated Bottom	1 Cobble-Gravel 2 Sand 3 Mud 4 Organic
	SB** – Streambed	1 Bedrock 2 Rubble 3 Cobble-Gravel 4 Sand 5 Mud 6 Organic 7 Vegetated
	AB – Aquatic Bed	1 Algal 2 Aquatic Moss 3 Rooted Vascular 4 Floating Vascular
	RS – Rocky Shore	1 Bedrock 2 Rubble
	US – Unconsolidated Shore	1 Cobble-Gravel 2 Sand 3 Mud 4 Organic 5 Vegetated
	EM – Emergent	2 Nonpersistent
2 – Lower Perennial		
3 – Upper Perennial		
4* - Intermittent		
5* – Unknown Perennial		

* **Intermittent** is limited to the **Streambed** Class;
Unknown Perennial is limited to **Unconsolidated Bottom** Class code **R5UB** only

** **Rock Bottom** is not permitted for the **Lower Perennial** Subsystem;
Streambed is limited to **Tidal** and **Intermittent** Subsystems

WETLANDS AND DEEPWATER HABITATS CLASSIFICATION





MODIFIERS

In order to more adequately describe the wetland and deepwater habitats, one or more of the water regime, water chemistry, soil, or special modifiers may be applied at the class or lower level in the hierarchy. The farmed modifier may also be applied to the ecological system.

Water Regime			Special Modifiers	Water Chemistry			Soil
Nontidal	**Saltwater Tidal**	**Freshwater Tidal**		**Coastal Halinity**	**Inland Salinity**	**pH Modifiers for all Fresh Water**	
A Temporarily Flooded	L Subtidal	S Temporarily Flooded-Tidal	b Beaver	1 Hyperhaline	7 Hypersaline	a Acid	g Organic
B Saturated	M Irregularly Exposed	R Seasonally Flooded-Tidal	d Partly Drained/Ditched	2 Euhaline	8 Eusaline	t Circumneutral	n Mineral
C Seasonally Flooded	N Regularly Flooded	T Semipermanently Flooded-Tidal	f Farmed	3 Mixohaline (Brackish)	9 Mixosaline	i Alkaline	
E Seasonally Flooded/ Saturated	P Irregularly Flooded	V Permanently Flooded-Tidal	h Diked/Impounded	4 Polyhaline	0 Fresh		
F Semipermanently Flooded			r Artificial	5 Mesohaline			
G Intermittently Exposed			s Spoil	6 Oligohaline			
H Permanently Flooded			x Excavated	0 Fresh			
J Intermittently Flooded							
K Artificially Flooded							

Appendix D
Photographs from August 13, 2012 Field Visit

Potential wetland area with phragmites and cottonwoods near test pit TP-1, facing east



Vegetation near test pit TP-1, facing west



Along existing train tracks near test pit TP-2, facing northwest



Vegetation near TP-3, facing northwest



Train tracks between test pits TP-3 and TP-4, facing northwest



Phragmites near intersection of 130th Street and Cottage Grove Avenue, facing northwest



Scientific name: *Daucus carota*
Common name: Queen Anne's lace





Scientific Name: *Phragmites australis*
Common Name: common reed





Scientific name: *Populous deltoides*
Common name: eastern cottonwood



Scientific name: *Prunus virginiana*
Common name: chokecherry



Scientific name: *Rhamnus cathartica*
Common name: common buckthorn



Scientific name: *Rhus typhina*
Common name: staghorn sumac





Scientific name: *Ulmus americana*
Common name: American elm



Appendix E
Soil Sample Summary

Sampling Point	**TP-1**
Location	UPRR Rail Alternative
City	Chicago
County	Cook
State	IL
Sampling Date	August 13, 2012
Is vegetation significantly disturbed?	Yes
Is soil significantly disturbed?	Yes
Is hydrology disturbed?	Yes
Is hydrophytic vegetation present?	Yes
Is hydric soil present?	Indeterminate/disturbed
Is wetland hydrology present?	Unknown/dry season

Vegetation

Type	Indicator Status
Populous deltoids (eastern cottonwood)	FAC+
Phragmites australis (phragmites)	FACW+
Daucus carota (Queen Anne's Lace)	--
Prunus virginiana (Chokecherry)	FAC-

Legend: OBL - Obligate Wetland; FACW - Facultative Wetland; FAC - Facultative;
FACU - Facultative Upland; UPL - Obligate Upland
(+) and (-) indicate regional frequency of occurrence in wetlands

Soil

0"-12" -- 2.5Y 2.5/1 (black)
uniformly same color to 12" below grade
50% small gravel, some fines including silts

Hydrology

No surface water present
No water table present
No saturation present
No obvious hydrology at the time of the field survey

Sampling Point	**TP-2**
Location	UPRR Rail Alternative
City	Chicago
County	Cook
State	IL
Sampling Date	August 13, 2012
Is vegetation significantly disturbed?	Yes
Is soil significantly disturbed?	Yes
Is hydrology disturbed?	Yes
Is hydrophytic vegetation present?	Yes
Is hydric soil present?	Indeterminate/disturbed
Is wetland hydrology present?	Unknown/dry season

Vegetation

Type	Indicator Status
Populous deltoids (eastern cottonwood)	FAC+
Daucus carota (Queen Anne's Lace)	--
Ulmus americana (American Elm)	FACW

Legend: OBL - Obligate Wetland; FACW - Facultative Wetland; FAC - Facultative;
FACU - Facultative Upland; UPL - Obligate Upland
(+) and (-) indicate regional frequency of occurrence in wetlands

Soil

0"-2" -- 10 YR 2/1 (black) organic
2"-7" -- 5 Y 3/1 (very dark gray) gravelly fill
7"-9" -- 5 Y 2.5/2 (black)

Hydrology

No surface water present
No water table present
No saturation present
No obvious hydrology at the time of the field survey

Sampling Point	**TP-3**
Location	UPRR Rail Alternative
City	Chicago
County	Cook
State	IL
Sampling Date	August 13, 2012
Is vegetation significantly disturbed?	Yes
Is soil significantly disturbed?	Yes
Is hydrology disturbed?	Yes
Is hydrophytic vegetation present?	Yes
Is hydric soil present?	Indeterminate/disturbed
Is wetland hydrology present?	Unknown/dry season

Vegetation

Type	Indicator Status
Populous deltoids (eastern cottonwood)	FAC+
Daucus carota (Queen Anne's Lace)	--
Rhus typhina (Staghorn sumac)	--

Legend: OBL - Obligate Wetland; FACW - Facultative Wetland; FAC - Facultative;
FACU - Facultative Upland; UPL - Obligate Upland
(+) and (-) indicate regional frequency of occurrence in wetlands

Soil

0"-3" -- organic

3"-12" -- 5 Y 4/1 (dark gray) compacted clay/silt; potentially fill; potentially hydric

Hydrology

No surface water present
No water table present
No saturation present
No obvious hydrology at the time of the field survey

Sampling Point	**TP-4**
Location	UPRR Rail Alternative
City	Chicago
County	Cook
State	IL
Sampling Date	August 13, 2012
Is vegetation significantly disturbed?	Yes
Is soil significantly disturbed?	Yes
Is hydrology disturbed?	Yes
Is hydrophytic vegetation present?	Yes
Is hydric soil present?	Indeterminate/disturbed
Is wetland hydrology present?	Unknown/dry season

Vegetation

Type	Indicator Status
Populous deltoids (eastern cottonwood)	FAC+
Daucus carota (Queen Anne's Lace)	--
Rhus typhina (Staghorn sumac)	--

Legend: OBL - Obligate Wetland; FACW - Facultative Wetland; FAC - Facultative;
FACU - Facultative Upland; UPL - Obligate Upland
(+) and (-) indicate regional frequency of occurrence in wetlands

Soil

0"-8" -- 10 YR 2/1 organic
8"-12" -- 10 YR 7/3 with red features (7.5 YR 5/8)

Hydrology

No surface water present
No water table present
No saturation present
No obvious hydrology at the time of the field survey

Appendix F
FEMA FIRM Summary

Map Number 17031C0655J

NOTES TO USERS

This map is for use in administering the National Flood Insurance Program. It does not necessarily identify all areas subject to flooding, particularly from local drainage sources of small size. The **community map repository** should be consulted for possible updated or additional flood hazard information.

To obtain more detailed information in areas where **Base Flood Elevations** (BFEs) and/or **floodways** have been determined, users are encouraged to consult the Flood Profiles and Floodway Data and/or Summary of Stillwater Elevations tables contained within the Flood Insurance Study (FIS) report that accompanies this FIRM. Users should be aware that BFEs shown on the FIRM represent rounded whole-foot elevations. These BFEs are intended for flood insurance rating purposes only and should not be used as the sole source of flood elevation information. Accordingly, flood elevation data presented in the FIS report should be utilized in conjunction with the FIRM for purposes of construction and/or floodplain management.

Coastal Base Flood Elevations shown on this map apply only landward of 0.0 North American Vertical Datum of 1988 (NAVD 88). Users of this FIRM should be aware that coastal flood elevations are also provided in the Summary of Stillwater Elevations table in the Flood Insurance Study report for this jurisdiction. Elevations shown in the Summary of Stillwater Elevations table should be used for construction and/or floodplain management purposes when they are higher than the elevations shown on this FIRM.

Boundaries of the **floodways** were computed at cross-sections and interpolated between cross-sections. The floodways were based on hydraulic considerations with regard to requirements of the National Flood Insurance Program. Floodway widths and other pertinent floodway data are provided in the Flood Insurance Study report for this jurisdiction.

In the State of Illinois, any portion of a riparian or watercourse that lies within the **Floodway Fringe** of a studied (AE) stream may have a state regulated floodway. The FIRM may not always these state-regulated floodways.

Floodways restricted by anthropogenic features such as bridges and culverts are drawn to reflect natural conditions and may not agree with the revised computer models listed in the Floodway Data table in the Flood Insurance Study report.

Multiple topographic sources may have been used in the delineation of Special Flood Hazard Areas. See Flood Insurance Study report for details on source resolution and geographic extent.

Certain areas not in Special Flood Hazard Areas may be protected by **flood control structures**. Refer to Section 2.4 "Flood Protection Measures" of the Flood Insurance Study report for information on flood control structures for this jurisdiction.

The **projection** used in the preparation of this map was Universal Transverse Mercator (UTM) zone 16. The **horizontal datum** was NAD 83, GRS80 spheroid. Differences in datum, spheroid, projection or UTM zones used in the production of FIRMs for adjacent jurisdictions may result in slight positional differences in map features across jurisdiction boundaries. These differences do not affect the accuracy of this FIRM.

Flood elevations on this map are referenced to the North American Vertical Datum of 1988. These flood elevations must be compared to structure and ground elevations referenced to the same **vertical datum**. For information regarding conversion between the National Geodetic Vertical Datum of 1929 and the North American Vertical Datum of 1988, visit the National Geodetic Survey website at www.ngs.noaa.gov or contact the National Geodetic Survey at the following address:

NGS Information Services, NOAA, N/NGS12
National Geodetic Survey SSMC-3, #9202
1315 East-West Highway
Silver Spring, Maryland 20910-3282
(301) 713-3242

To obtain current elevation, description, and/or location for **bench marks** shown on this map, please contact the Information Services Branch of the National Geodetic Survey at (301) 713-3242, or visit its website at www.ngs.noaa.gov.

Base map information shown on this FIRM was provided in digital format by the United States Geological Survey. Digital orthoimagery with a spatial resolution of 2.3 meter ground sample distance were photogrammetrically compiled from aerial photography acquired during the leaf-off period of spring 2003.

This map reflects more detailed and up-to-date **stream channel configurations** than those shown on the previous FIRM for this jurisdiction. The Special Flood Hazard Areas and floodways that were transferred from the previous FIRM may have been adjusted to conform to these new stream channel configurations. As a result, the Flood Profiles and Floodway Data tables in the Flood Insurance Study report (which contains authoritative hydraulic data) may reflect stream channel distances that differ from what is shown on this map.

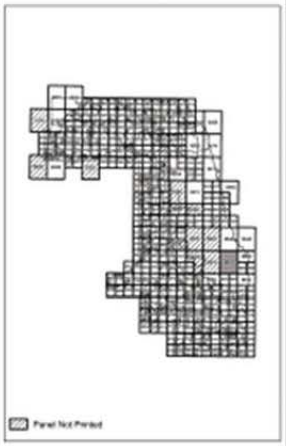
Corporate limits shown on this map are based on the best data available at the time of publication. Because changes due to annexations or de-annexations may have occurred after this map was published, map users should contact appropriate community officials to verify current corporate limit locations.

Please refer to the separately printed **Map Index** for an overview map of the county showing the layout of map panels; community map repository addresses; and a Listing of Communities table containing National Flood Insurance Program dates for each community as well as a listing of the panels on which each community is located.

Contact the **FEMA Map Service Center** at 1-800-358-9616 for information on available products associated with this FIRM. Available products may include previously issued Letters of Map Change, a Flood Insurance Study report, and/or digital versions of this map. The FEMA Map Service Center may also be reached by Fax at 1-800-358-9620 and its website at www.msc.fema.gov.

If you have **questions about this map** or questions concerning the National Flood Insurance Program in general, please call **1-877-FEMA MAP** (1-877-336-2627) or visit the FEMA website at www.fema.gov/business/nfip.

PANEL INDEX





LEGEND

SPECIAL FLOOD HAZARD AREAS (SFHAs) SUBJECT TO INUNDATION BY THE 1% ANNUAL CHANCE FLOOD

The 1% annual chance flood (100-year flood), also known as the base flood, is the flood that has a 1% chance of being equaled or exceeded in any given year. The Special Flood Hazard Area is the area subject to flooding by the 1% annual chance flood. Areas of Special Flood Hazard include Zones A, AE, AH, AO, AR, A1-A30, A99, V, and VE. The Base Flood Elevation is the water-surface elevation of the 1% annual chance flood.

ZONE A — No Base Flood Elevations determined.
ZONE AE — Base Flood Elevations determined.
ZONE AH — Flood depths of 1 to 3 feet (usually areas of ponding); Base Flood Elevations determined.
ZONE AO — Flood depths of 1 to 3 feet (usually sheet flow on sloping terrain); average depths determined. For areas of alluvial fan flooding, velocities also determined.
ZONE AR — Special Flood Hazard Area formerly protected from the 1% annual chance flood by a flood control system that was subsequently decertified. Zone AR indicates that the former flood control system is being restored to provide protection from the 1% annual chance or greater flood.
ZONE A99 — Area to be protected from 1% annual chance flood by a Federal flood protection system under construction; no Base Flood Elevations determined.
ZONE V — Coastal flood zone with velocity hazard (wave action); no Base Flood Elevations determined.
ZONE VE — Coastal flood zone with velocity hazard (wave action); Base Flood Elevations determined.

FLOODWAY AREAS IN ZONE AE

The floodway is the channel of a stream plus any adjacent floodplain areas that must be kept free of encroachment so that the 1% annual chance flood can be carried without substantial increases in flood heights.

OTHER FLOOD AREAS

ZONE X — Areas of 0.2% annual chance flood; areas of 1% annual chance flood with average depths of less than 1 foot or with drainage areas less than 1 square mile; and areas protected by levees from the 1% annual chance flood.

OTHER AREAS

ZONE X — Areas determined to be outside the 0.2% annual chance floodplain.
ZONE D — Areas in which flood hazards are undetermined, but possible.

COASTAL BARRIER RESOURCES SYSTEM (CBRS) AREAS

OTHERWISE PROTECTED AREAS (OPAs)

CBRS areas and OPAs are normally located within or adjacent to Special Flood Hazard Areas.

1% annual chance floodplain boundary
0.2% annual chance floodplain boundary
Floodway boundary
Zone D boundary
CBRS and OPA boundary
Boundary dividing Special Flood Hazard Zones of different Base Flood Elevations, flood depths or flood velocities.
Base Flood Elevation line and value; elevation in feet*
Base Flood Elevation value where uniform within zone; elevation in feet*

*Referenced to the North American Vertical Datum of 1988

Cross section line
Transect line
Geographic coordinates referenced to the North American Datum of 1983 (NAD 83)
1000-meter Universal Transverse Mercator grid values, zone 16
5000-foot ticks: Illinois State Plane Coordinate System, East Zone (FIPSZONE 1201), Transverse Mercator
Bench mark (see explanation in Notes to Users section of this FIRM panel)
Road Mile

MAP REPOSITORIES
Refer to Map Repositories listing in the Publication Info section.

EFFECTIVE DATE OF COUNTYWIDE FLOOD INSURANCE RATE MAP
SEPTEMBER 03, 2008

EFFECTIVE DATE(S) OF REVISION(S) TO THIS PANEL
December 22, 2010, February 17, 2016, June 2, 1900, December 19, 2018, November 16, 2018, and April 16, 2019

August 19, 2008 - to reflect updated topographic information, to update corporate limits, to add roadways, to incorporate previously issued Letters of Map Revision, to reflect updated County Flood Hazard Boundaries, and to change Zone designations.

For community map revision history prior to countywide mapping, refer to the Community Map History table located in the Flood Insurance Study report for this jurisdiction.

To determine if flood insurance is available in this community, contact your insurance agent or call the National Flood Insurance Program at 1-800-638-6620.

MAP SCALE 1" = 1000'
500 0 1000 2000 FEET
150 0 150 300 METERS

PANEL 0655J

NFIP

NATIONAL FLOOD INSURANCE PROGRAM

FIRM

FLOOD INSURANCE RATE MAP

COOK COUNTY, ILLINOIS AND INCORPORATED AREAS

PANEL 655 OF 832

(SEE MAP INDEX FOR FIRM PANEL LAYOUT)

CONTAINS:

COMMUNITY	NUMBER	PANEL	SUFFIX
CHICAGO, CITY OF	170074	0655	J

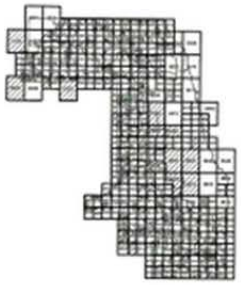
MAP NUMBER
17031C0655J
MAP REVISED
AUGUST 19, 2008

Federal Emergency Management Agency

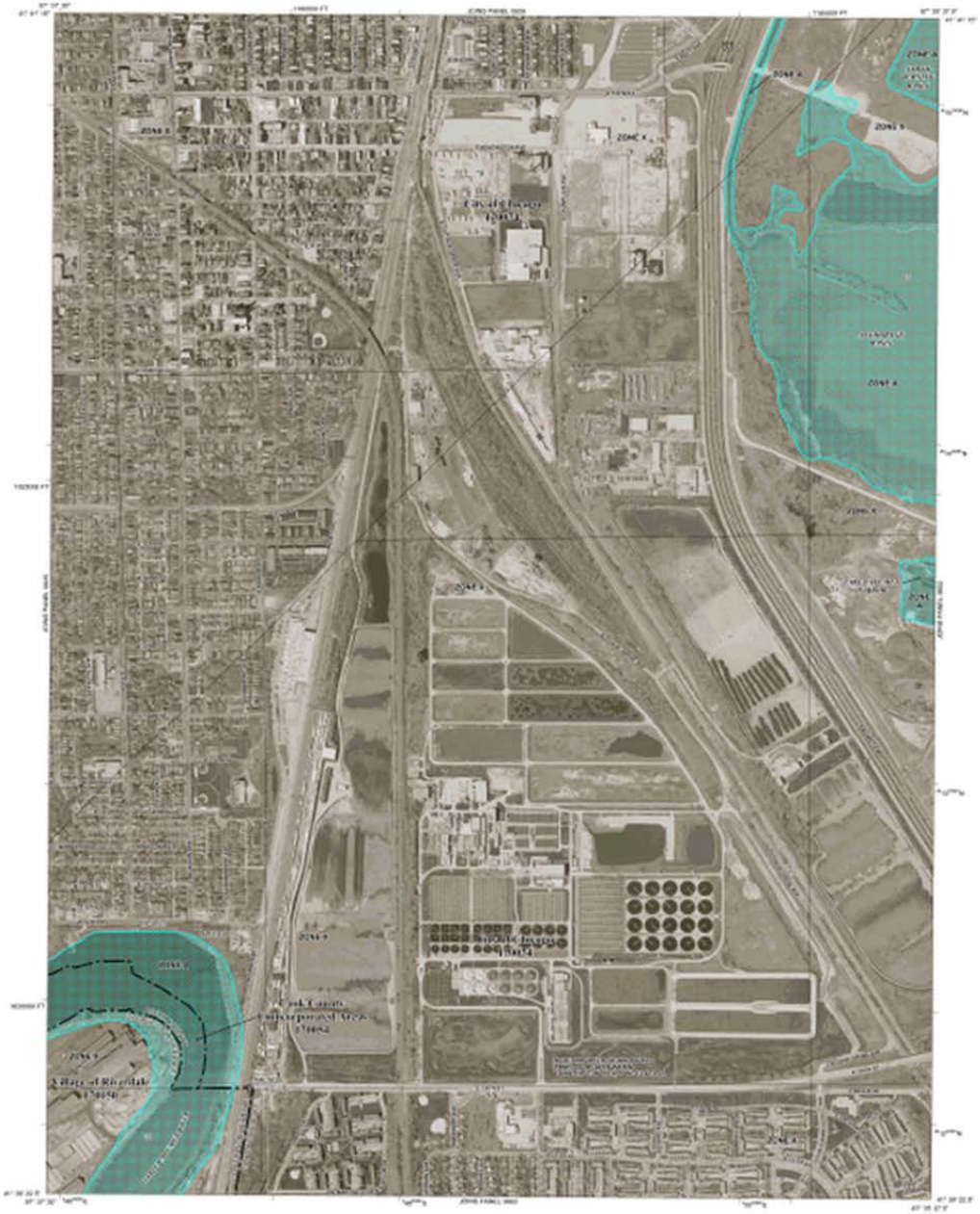
Map Number 17031C0661J

NOTES TO USERS

PANEL INDEX



Panel Not Printed



LEGEND

MAP SCALE 1" = 500'

NFIP

PANEL 0661J

FIRM

FLOOD INSURANCE RATE MAP

COOK COUNTY, ILLINOIS

AND INCORPORATED AREAS

PANEL 661 OF 832

(SEE MAP INDEX FOR FIRM PANEL LAYOUT)

MAP NUMBER 17031C0661J

MAP REVISED AUGUST 19, 2008

Federal Emergency Management Agency

NATIONAL FLOOD INSURANCE PROGRAM

Map Number 17031C0645J

NOTES TO USERS

This map is for use in administering the National Flood Insurance Program. It does not necessarily identify all areas subject to flooding, particularly from local drainage sources of small size. The **community map repository** should be consulted for possible updated or additional flood hazard information.

To obtain more detailed information in areas where **Base Flood Elevations** (BFEs) and/or **floodways** have been determined, users are encouraged to consult the Flood Profiles and Floodway Data and/or Summary of Stillwater Elevations tables contained within this Flood Insurance Study (FIS) report that accompanies this FIRM. Users should be aware that BFEs shown on the FIRM represent rounded whole-foot elevations. These BFEs are intended for flood insurance rating purposes only and should not be used as the sole source of flood elevation information. Accordingly, flood elevation data presented in this FIS report should be utilized in conjunction with the FIRM for purposes of construction and/or floodplain management.

Coastal Base Flood Elevations shown on this map apply only landward of 0.0' North American Vertical Datum of 1988 (NAVD 88). Users of this FIRM should be aware that coastal flood elevations are also provided in the Summary of Stillwater Elevations table in the Flood Insurance Study report for this jurisdiction. Elevations shown in the Summary of Stillwater Elevations table should be used for construction and/or floodplain management purposes when they are higher than the elevations shown on this FIRM.

Boundaries of the **floodways** were computed at cross sections and interpolated between cross sections. The floodways were based on hydraulic considerations with regard to requirements of the National Flood Insurance Program. Floodway widths and other pertinent floodway data are provided in the Flood Insurance Study report for this jurisdiction.

In the State of Illinois, any portion of a stream or watercourse that lies within the **floodway fringe** of a studied (AE) stream may have a state regulated floodzone. The FIRM may not always delineate state-regulated floodways.

Floodways crossed by underpassing features such as bridges and culverts are drawn to reflect natural conditions and may not agree with the model computed widths listed in the Floodway Data table in the Flood Insurance Study report.

Multiple **topographic sources** may have been used in the delineation of Special Flood Hazard Areas. See Flood Insurance Study report for details on source resolution and preparation dates.

Certain areas not in Special Flood Hazard Areas may be protected by **flood control structures**. Refer to Section 2.4 "Flood Protection Measures" of the Flood Insurance Study report for information on flood control structures for this jurisdiction.

The **projection** used in the preparation of this map was Universal Transverse Mercator (UTM) zone 16. The **horizontal datum** was NAD 83, GRS80 spheroid. Differences in datum, spheroid, projection or UTM zones used in the production of FIRMs for adjacent jurisdictions may result in slight positional differences in map features across jurisdiction boundaries. These differences do not affect the accuracy of this FIRM.

Flood elevations on this map are referenced to the North American Vertical Datum of 1988. These flood elevations must be compared to structure and ground elevations referenced to the same **vertical datum**. For information regarding conversion between the National Geodetic Vertical Datum of 1929 and the North American Vertical Datum of 1988, visit the National Geodetic Survey website at www.ngs.noaa.gov or contact the National Geodetic Survey at the following address:

NGS Information Services, NOAA, N/NGS12
National Geodetic Survey SSMC-3, #9202
1315 East-West Highway
Silver Spring, MD 20910-3282
(301) 713-3242

To obtain current elevation, description, and/or location for **bench marks** shown on this map, please contact the Information Services Branch of the National Geodetic Survey at (301) 713-3242, or visit its website at www.ngs.noaa.gov.

Base map information shown on this FIRM was provided in digital format by the United States Geological Survey. Digital orthoimagery with a spatial resolution of 2.3 meter ground sample distance were photogrammetrically compiled from aerial photography acquired during the leaf-off period of spring 2005.

This map reflects more detailed and up-to-date **stream channel configurations** than those shown on the previous FIRM for this jurisdiction. The Special Flood Hazard Areas and floodways that were transferred from the previous FIRM may have been adjusted to conform to these new stream channel configurations. As a result, the Flood Profiles and Floodway Data tables in the Flood Insurance Study report contain updated hydraulic data. Also, may reflect stream channels that differ from what is shown on this map.

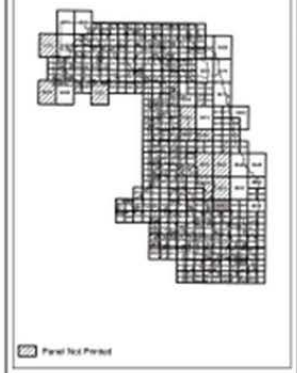
Corporate limits shown on this map are based on the best data available at the time of publication. Because changes due to annexations or de-annexations may have occurred after this map was published, map users should contact appropriate community officials to verify current corporate limit locations.

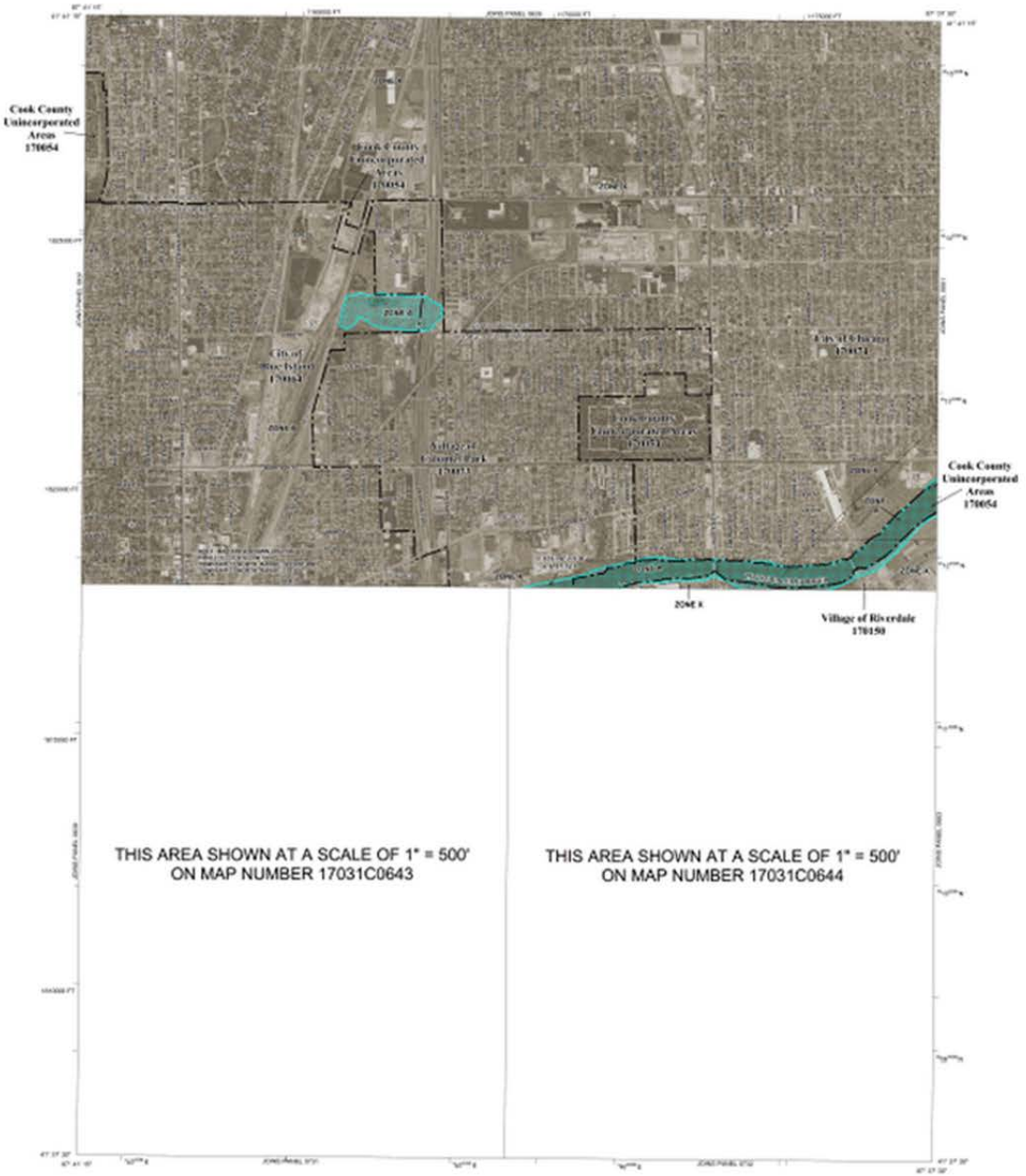
Please refer to the separately printed **Map Index** for an overview map of the county showing the layout of map panels; community map repository addresses; and a listing of Communities Table containing National Flood Insurance Program dates for each community as well as a listing of the panels on which each community is located.

Contact the **FEMA Map Service Center** at 1-800-358-9616 for information on available products associated with this FIRM. Available products may include previously issued Letters of Map Change, a Flood Insurance Study report, and/or digital version of this map. The FEMA Map Service Center may also be reached by Fax at 1-800-358-9620 and its website at www.msc.fema.gov.

If you have **questions about this map** or questions concerning the National Flood Insurance Program in general, please call **1-877-FEMA MAP** (1-877-336-2627) or visit the FEMA website at www.fema.gov/business/nfip.

PANEL INDEX





LEGEND

SPECIAL FLOOD HAZARD AREAS (SFHAs) SUBJECT TO INUNDATION BY THE 1% ANNUAL CHANCE FLOOD

The 1% annual chance flood (100-year flood), also known as the base flood, is the flood that has a 1% chance of being equaled or exceeded in any given year. The Special Flood Hazard Area is the area subject to flooding by the 1% annual chance flood. Areas of Special Flood Hazard include Zones A, AE, AH, AO, AR, A99, V, and VE. The Base Flood Elevation is the water-surface elevation of the 1% annual chance flood.

ZONE A — No Base Flood Elevations determined.
ZONE AE — Base Flood Elevations determined.
ZONE AH — Flood depths of 1 to 3 feet (usually areas of ponding); Base Flood Elevations determined.
ZONE AO — Flood depths of 1 to 3 feet (usually sheet flow on sloping terrain); average depths determined. For areas of alluvial fan flooding, velocities also determined.
ZONE AR — Special Flood Hazard Areas formerly protected from the 1% annual chance flood by a flood control system that was subsequently decertified. Zone AR indicates that the former flood control system is being restored to provide protection from the 1% annual chance or greater flood.
ZONE A99 — Area to be protected from 1% annual chance flood by a Federal flood protection system under construction; no Base Flood Elevations determined.
ZONE V — Coastal flood zone with velocity hazard (wave action); no Base Flood Elevations determined.
ZONE VE — Coastal flood zone with velocity hazard (wave action); Base Flood Elevations determined.

FLOODWAY AREAS IN ZONE AE

The floodway is the channel of a stream plus any adjacent floodplain areas that must be kept free of encroachment so that the 1% annual chance flood can be carried without substantial increases in flood heights.

OTHER FLOOD AREAS

ZONE X — Areas of 0.2% annual chance flood; areas of 1% annual chance flood with average depths of less than 1 foot or with drainage areas less than 1 square mile; and areas protected by levees from 1% annual chance flood.

OTHER AREAS

ZONE X — Areas determined to be outside the 0.2% annual chance floodplain.
ZONE D — Areas in which flood hazards are undetermined, but possible.

COASTAL BARRIER RESOURCES SYSTEM (CBRS) AREAS

OTHERWISE PROTECTED AREAS (OPAs)

CBRS areas and OPAs are normally located within or adjacent to Special Flood Hazard Areas.

- 1% annual chance floodplain boundary
- 0.2% annual chance floodplain boundary
- Floodway boundary
- Zone D boundary
- CBRS and OPA boundary
- Boundary dividing Special Flood Hazard Areas of different Base Flood Elevations, flood depths or flood velocities.
- Base Flood Elevation line and value; elevation in feet*
- (EL 987) Base Flood Elevation value where uniform within zone; elevation in feet*

*Referenced to the North American Vertical Datum of 1988

- Cross section line
- Transect line
- Geographic coordinates referenced to the North American Datum of 1983 (NAD 83)
- 600000 mE — 4930000 mN — Universal Transverse Mercator grid values, zone 16
- 5000-foot grid ticks: Illinois State Plane Coordinate System, (FIPS zone 1201) East, Transverse Mercator
- 1000000 FT — 500000 FT — Illinois State Plane grid values
- Bench mark (see explanation in Notes to Users section of this FIRM panel)
- River Mile

MAP REPOSITORIES
Refer to Map Repositories list on Index

EFFECTIVE DATE OF COUNTYWIDE FLOOD INSURANCE RATE MAP
EFFECTIVE DATE(S) OF REVISION(S) TO THIS PANEL

December 31, 2002, February 4, 2004, June 1, 2004, December 16, 2005, November 16, 2006, and April 16, 2007

August 19, 2008 - to reflect updated topographic information, to update corporate limits, to add and remove de-annexed areas, to reflect natural channel configurations, to change Base Flood Elevations, to add Special Flood Hazard Areas and Base Flood Elevations, and to change zone designations.

For community map revision history prior to countywide mapping, refer to the Community Map History table located in the Flood Insurance Study report for this jurisdiction.

To determine if flood insurance is available in this community, contact your insurance agent or call the National Flood Insurance Program at 1-800-638-6620.

MAP SCALE 1" = 1000'
500 0 1000 2000 FEET
150 0 300 600 METERS

NFIP
NATIONAL FLOOD INSURANCE PROGRAM

PANEL 0645J

FIRM
FLOOD INSURANCE RATE MAP
COUNTY,
ILLINOIS
AND INCORPORATED AREAS

PANEL 645 OF 832
(SEE MAP INDEX FOR FIRM PANEL LAYOUT)

CONTAINS:

COMMUNITY	NUMBER	PANEL	SUFFIX
BLUE ISLAND, CITY OF	170040	0645	J
CALUMET PARK, VILLAGE OF	170272	0645	J
CHICAGO, CITY OF	170074	0645	J
COOK COUNTY	170054	0645	J
DIXMOOR, VILLAGE OF	170074	0645	J

MAP NUMBER
17031C0645J
MAP REVISED
AUGUST 19, 2008

Federal Emergency Management Agency

Appendix G
2014-2015 Red Line Extension Project Update

2014–2015 Red Line Extension Project Update

From 2012-2014, CTA evaluated benefits and impacts of four alternatives: the No Build Alternative, the Bus Rapid Transit Alternative (along Michigan Avenue), the Union Pacific Railroad (UPRR) Rail Alternative, and the Halsted Alternative. CTA evaluated three options of the UPRR Rail Alternative: Right-of-Way Option, East Option, and West Option. CTA also evaluated two options of the UPRR Rail Alternative 130th Street station: a South Station Option and a West Station Option. Based on the project description provided in Section 2 of this technical memorandum, CTA analyzed the impacts of these alternatives and station options. The benefits and impacts are included in the technical memoranda prepared in 2012-2014.

In August 2014, based on the technical analysis and public input, CTA announced the NEPA Preferred Alternative—the UPRR Rail Alternative. Additional conceptual engineering was conducted on the UPRR Rail Alternative to refine the East and West Option alignments. In addition, CTA is considering only the South Station Option of the 130th Street Station.

In late 2014 and early 2015, CTA conducted additional engineering and revised assumptions on the East and West Options to refine the alignments. The refinement of the East and West Options consisted of the following items:

- For the segment of the alignment along I-57, CTA shifted the proposed alignment from the median of I-57 to the north side of I-57 within the existing expressway right-of-way. The construction would be less complex, safer for construction workers, and have a shorter duration. The shift would also allow for fewer impacts to Wendell Smith Park for the East Option, and would allow for no permanent impacts to Wendell Smith Park for the West Option.

- CTA modified the curve speeds as the alignment heads south from I-57 along the UPRR tracks. The curve speed for both the East and West Options would be 35 mph.

- CTA shifted the East Option alignment near 103rd Street station to minimize impacts to Block Park and the Roseland Pumping Station.

- CTA modified the curves south of 103rd Street for both the East and West Options to 55 mph to maximize the train speed.

- CTA refined the layout of the 120th Street yard and shop to optimize yard operations. The refined layout of the yard would accommodate 340 train cars.

The refinement of the East and West Option alignments minimizes potential impacts to parks while providing flexibility for future design phases. The Draft Environmental Impact Statement contains the benefits and impacts of the refined East and West Option alignments and supersedes information presented in other chapters of this technical memorandum

Water Resources

In August 2015, CTA completed a wetland delineation of the areas identified as containing potential wetlands and applied the general procedures detailed in the 1987 USACE *Wetland Delineation Manual* and the 2010 *Regional Supplement-Midwest Region*.

Based on the results of the wetland delineation, CTA identified 15 wetland areas totaling 15.34 acres of potentially affected wetlands at the site of the 130th Street station and the 120th Street yard and shop. All wetland areas throughout this area are of low floristic quality and wetland function.

The wetland delineation report is included with this appendix, and contains detailed information about the fieldwork and findings.

15-0218

WETLAND DELINEATION REPORT

CTA RED LINE EXTENSION – LAKE CALUMET

CHICAGO, COOK COUNTY, ILLINOIS

PREPARED FOR:

CDM Smith
14432 SE Eastgate Way, Suite 100
Bellevue, WA 98007

SEPTEMBER 16, 2015

Revised October 1, 2015

26575 W. COMMERCE DRIVE, SUITE 601, VOLO, ILLINOIS 60073
OFFICE (847) 740-0888 FAX (847) 740-2888

INTRODUCTION

A wetland delineation of the 78.9-acre permanent project envelope for the southern portion of the Chicago Transit Authority's Red Line Extension, near Lake Calumet was conducted on August 13 and 19, 2015. The site is located west of Interstate 94 (Bishop Ford Expressway), north of 130th Street, along the east side of the Metropolitan Water Reclamation District of Greater Chicago's (MWRD) Calumet Waste Water Treatment plant within the City of Chicago, Cook County, Illinois (Exhibit 1). The site is further located in Sections 22, 26, and 27, Township 37 North, Range 14 East. The project permanent envelope includes Cottage Grove Avenue, parts of the MWRD property, railroad lines, and other disturbed urban-industrial landscapes. The property has been disturbed by various grading, dumping, and filling activities over the past decades.

EXISTING DATA

The United States Geological Survey (USGS) topographic map indicates open water at the locations of the MWRD sewage lagoons and sludge drying beds (Exhibit 2), but does not indicate any wetlands or blue line streams within the defined project permanent envelope. The National Wetland Inventory (NWI) map similarly depicts the sewage lagoons and sludge drying beds, but also indicates the presence of wetlands within the project permanent envelope (Exhibit 3) that are designated PF01/EMCd (palustrine, forested, broad-leaved deciduous/emergent seasonally flooded, partially drained/ditched). The Flood Insurance Rate Map indicates no mapped floodplain or floodway within the project permanent envelope (Exhibit 4). The USGS Hydrologic Atlas indicates no flood of record waters within the project permanent envelope (Exhibit 5). The Cook County Soil Survey (Exhibit 6) shows six (6) different soil series of orthents, or urban land within the project permanent envelope.

WETLAND DELINEATION

Wetlands within the project permanent envelope were delineated by Vincent Mosca and Jeffrey Mengler, PWS of Hey and Associates, Inc. using procedures outlined in the 1987 Corps of Engineers' (Corps) Wetland Delineation Manual and the 2010 Regional Supplement: Midwest Region. The entire property was inspected, with areas supporting wetland plant species prioritized for investigation. If inspection revealed that wetland plant species comprised more than 50 percent of the plant cover, the suspected wetland was further examined for field indicators of hydric soil and hydrology. The Corps-accepted field indicators of hydric soil include: gleyed and low chroma matrix and mottle colors, and iron and manganese concretions. Necessary hydric soil indicators were field verified in the wetland area if possible. In most cases in this

project permanent envelope, the gravel and fill precluded investigation with hand tools, and the disturbed profiles would not have been illuminating. The Corps-approved field indicators of hydrology include: visual observation or photographic evidence of soil inundation or saturation during the growing season, oxidized channels associated with living roots and rhizomes, water marks, drift lines, waterborne sediment deposits, waterstained leaves, surface scoured areas and drainage patterns. Wetland hydrologic criteria were met in the areas delineated as wetland.

Lists of observed plant species in the wetland areas were compiled and data were gathered to complete Corps jurisdictional dataforms. A native vegetative quality rating was calculated for each wetland using the Floristic Quality Assessment (FQA) of Swink and Wilhelm as published in *Plants of the Chicago Region,* 1994. The FQA method assigns to plant species a rating that reflects the fundamental conservatism that the species exhibits for natural habitats. A native species that exhibits specific adaptations to a narrow spectrum of the environment is given a high rating. Conversely, a ubiquitous species that exhibits adaptations to a broad spectrum of environmental variables is given a low rating. Utilizing this method, a Floristic Quality Index (FQI) is derived for a given area. The FQI is an indication of native vegetative quality for an area: generally 1-19 indicates low vegetative quality, 20-35 indicates high vegetative quality and above 35 indicates "Natural Area" quality.

RESULTS

Fifteen (15) wetlands totaling 15.34 acres within the project permanent envelope were delineated on the property (Exhibit 7). The wetland boundaries shown on an aerial photograph in Exhibit 7 were recorded with sub-meter accuracy GPS unit in the field on August 13 and 19, 2015. Lists of the observed plant species for the wetland areas are given in Exhibit 8. The Corps' jurisdictional dataforms for upland and wetland areas are included as Exhibit 9. Georeferenced representative color photographs of the upland and wetland areas are provided in Exhibit 10.

Following is a table that summarizes the delineated wetlands. Wetland acreages were calculated based upon the sub-meter accuracy GPS data imported into a Geographical Information System (GIS).

Table 1. Summary of Wetlands within Project Limits.

Wetland	Area within Project Limits (acres)	Total Wetland Area (acres)	FQI[1]	Native Mean C[2]	HQAR[3]	Wetland Type	Dominant Vegetation
1 & 2	0.19	0.38	3.89	1.38	No	Drainage swale	Common reed (*Phragmites australis*)
3	0.83	0.83	6.36	4.5	No[4]	Marsh	Common reed and purple loosestrife (*Lythrum salicaria*)
4	0.07	1.85	6.43	2.43	No	Drainage swale	Common reed
5	2.73	2.73	4.95	1.75	No	Drainage swale	Common reed
6	2.26	2.26	11.13	2.43	No	Drainage swale & degraded wet prairie	Common reed
7	1.63	1.63	13.68	2.79	No	Drainage swale & degraded wet prairie	Common reed
8	1.61	1.77	6.43	2.43	No	Degraded marsh	Common reed
9	1.09	1.09	2.04	0.83	No	Drainage swale/marsh	Common reed
10	0.07	0.07	6.43	2.43	No	Drainage ditch	Common reed
11	0.05	n/a	3.00	1.50	No	Drainage ditch	Common reed
12	3.56	3.56	3.00	1.50	No	Degraded marsh	Common reed
13	0.53	0.66	2.86	1.17	No	Wooded	Box Elder (Acer negundo), Common reed (*Phragmites australis*)
14	0.20	0.88	4.00	1.33	No	Drainage swale	Common reed
15	0.52	n/a	2.00	1.00	No	Drainage swale	Common reed
TOTAL	15.34	17.71					

1 The Floristic Quality Index (FQI) is an indication of native vegetative quality for an area: generally 1-19 indicates low vegetative quality, 20-35 indicates high vegetative quality and above 35 indicates "Natural Area" quality.
2 The Native Mean C is an indication of native vegetative quality for an area. Areas with value of 3.5 or greater are considered high quality.
3 The Chicago District U.S. Army Corps of Engineers has designated various Waters of the United States to be high-quality aquatic resources (HQARs). This designation is based on the definitions found within the Regional Permit Program that became effective April 1, 2007.
4 While this area has a Native Mean C of greater than 3.5, it was based on the presence of only two native species. The remainder of the vegetation was comprised of non-native species and would not be considered high quality in any ecological assessment.

Wetlands 1 and 2 are both part of the same drainage swale along the east-west portion of South Cottage Grove Avenue, just north of 135th Street. It is dominated by common reed and defined on the south by the 135th Street embankment, on the north and west by the Cottage Grove Avenue entrance off 135th Street, and on the east by a railroad access road. It is of very low floristic quality and wetland function, and has debris and trash scattered throughout it.

Wetland 3 is on the north side of the east-west portion of South Cottage Grove Avenue, and is connected to Wetland areas 5 and 9. It is dominated by common reed. It is defined by a gravel road and fill on all sides. This was one of the few areas that had standing water during the August 2015 assessment. It is of

low quality and function. It should be noted that the mean C value is 4.5, which suggests a high quality area, but this mean C value is based on the only 2 native species observed – the other 4 species were all invasive non-native species.

Wetland 4 is another drainage swale that runs from the entrance to the MWRD Calumet Wastewater Treatment Plant (WWTP) west along 135th Street. It is entirely dominated by common reed. The north boundary is defined by a mowed embankment up to the WWTP facility fence, and the southern boundary is defined by 135th Street and shoulder. The mowed area was composed of typical upland turf and weed species and not hydrophytic species, indicating that the edge of mowing corresponded with the edge of wetland. Wetland 4 appears to receive drainage from 135th Street via several stormsewers that create the undulating southern boundary.

Wetland 5 is a drainage swale that runs along the west side of South Cottage Grove Avenue from Wetland 3 north to the entrance and gatehouse for the Calumet WWTP. It is dominated by common reed, with patches of sandbar willow (*Salix interior*) and cottonwood trees (*Populus deltoides*). The eastern boundary is defined by Cottage Grove Avenue and the western boundary is a chain-link fence and mowed turf grass within the MRWDGC property.

Wetland 6 is a wet prairie drainage swale along a Indiana Harbor Belt Railroad line that does not appear to have frequent use. It is generally bounded by the railroad ballast on the west side and higher ground dominated by common buckthorn (*Rhamnus cathartica*) on the east side. Dominant vegetation was common reed, though pockets of native plant species were observed.

Similarly, Wetland 7 is a drainage swale on the west side of the same Indiana Harbor Belt Railroad line through the site. It is also bounded by the railroad ballast and higher ground covered in common buckthorn. It is of moderate floristic quality when calculated to include the scattered native wet prairie species observed, but is largely dominated by the invasive common reed.

Wetland 8 is an area of degraded marsh inside the MWRD Calumet WWTP perimeter fence, located just southeast of the gatehouse and entrance. It is surrounded by areas of fill/gravel that are much higher in elevation than the ground in the wetland area. The embankments around this wetland pocket are very steep and eroded, often at a 1:1 slope or steeper. The vegetation was dominated by common reed. It is an area of very low quality.

Wetland 9 is connected to Wetland 3 and ultimately Wetland 5. At the southern end of Wetland 5, these 3 wetland areas form a u-shaped marsh swale around a gravel fill pad that is 3-4 feet higher in elevation. This

area is bounded by the MWRD Calumet WWTP entrance road and Cottage Grove Avenue. The vegetation was dominated by common reed, and it is of low quality.

Wetland 10 is a small drainage ditch that runs from the 135th Street bridge over the Indiana Harbor Belt Railroad/Metra South Shore rail lines, to Cottage Grove Avenue. It is generally lined by cottonwoods and dead green ash (*Fraxinus pennsylvanica*) with common reed dominant in the ditch. The ditch was also littered with old tires and other refuse.

Wetland 11 is a small part of a wet area between the gravel railroad access road, and the Metra South Shore rail line. Most of the wetland is outside of the project limits and is dominated by common reed.

Wetland 12 is a marsh area located just north of the MWRD Calumet WWTP gatehouse. It is bounded by gravel access roads on the east and west sides, and the entrance road on the south. On the north side the wetland gives way to higher ground dominated by common buckthorn and a variety of upland weeds. The marsh is dominated by common reed.

Wetland 13 is a small wetland drainage swale located between the Metra South Shore Electric railroad line and the Indiana Harbor Belt Railroad freight line. It is dominated by common reed and is bounded by railroad ballast.

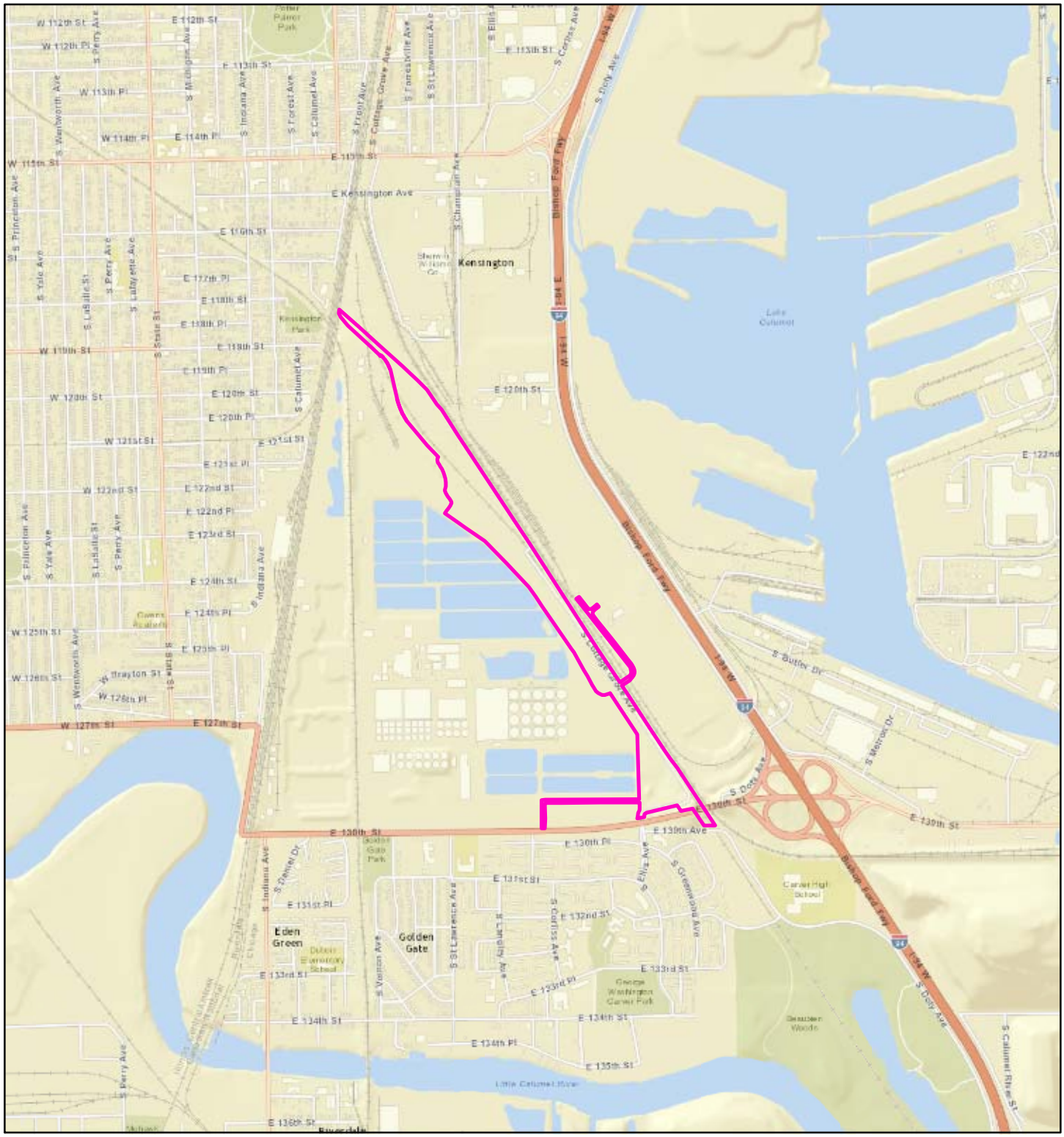
Wetland 14 is a swale located on the east side of the Indiana Harbor Belt Railroad/Metra South Shore line, but west of the MWRD fence around some sludge drying beds and other facilities. It is partially wooded by box elder and cottonwood but in open areas remains dominated by common reed.

Wetland 15 refers to a narrow drainage swale dominated by common reed located along a MWRD gravel access road in the northwest part of the project permanent envelope. It is of very low quality.

There are no High Quality Aquatic Resources on the subject property or mapped on adjacent properties. All wetlands observed were dominated by the invasive common reed, often in dense monotypic stands. The surrounding land is primarily developed urban or industrial landscapes.

SUMMARY AND CONCLUSIONS

The wetland delineation revealed 15 wetland areas totaling 15.34 acres within the project permanent envelope as depicted on Exhibit 7. All wetlands were of low quality and dominated by the invasive common reed. Most of the wetland boundaries are defined by fill and other manmade features. A jurisdictional determination will need to be requested from the U.S. Army Corps of Engineers to determine if the wetlands are under their Clean Water Act jurisdiction or if they are isolated wetlands of Cook County.



Scale:

0 2,000 Feet

Orientation:

Legend:

Project Permanent Envelope

Project Name:

CTA Red Line Extension

Prepared for:

CDM Smith

Project Number: 15-0218

Latest Revision: 10/1/2015

Location Information:

T.37N.-R.14E., Sections 22, 26 & 27

Prepared by:

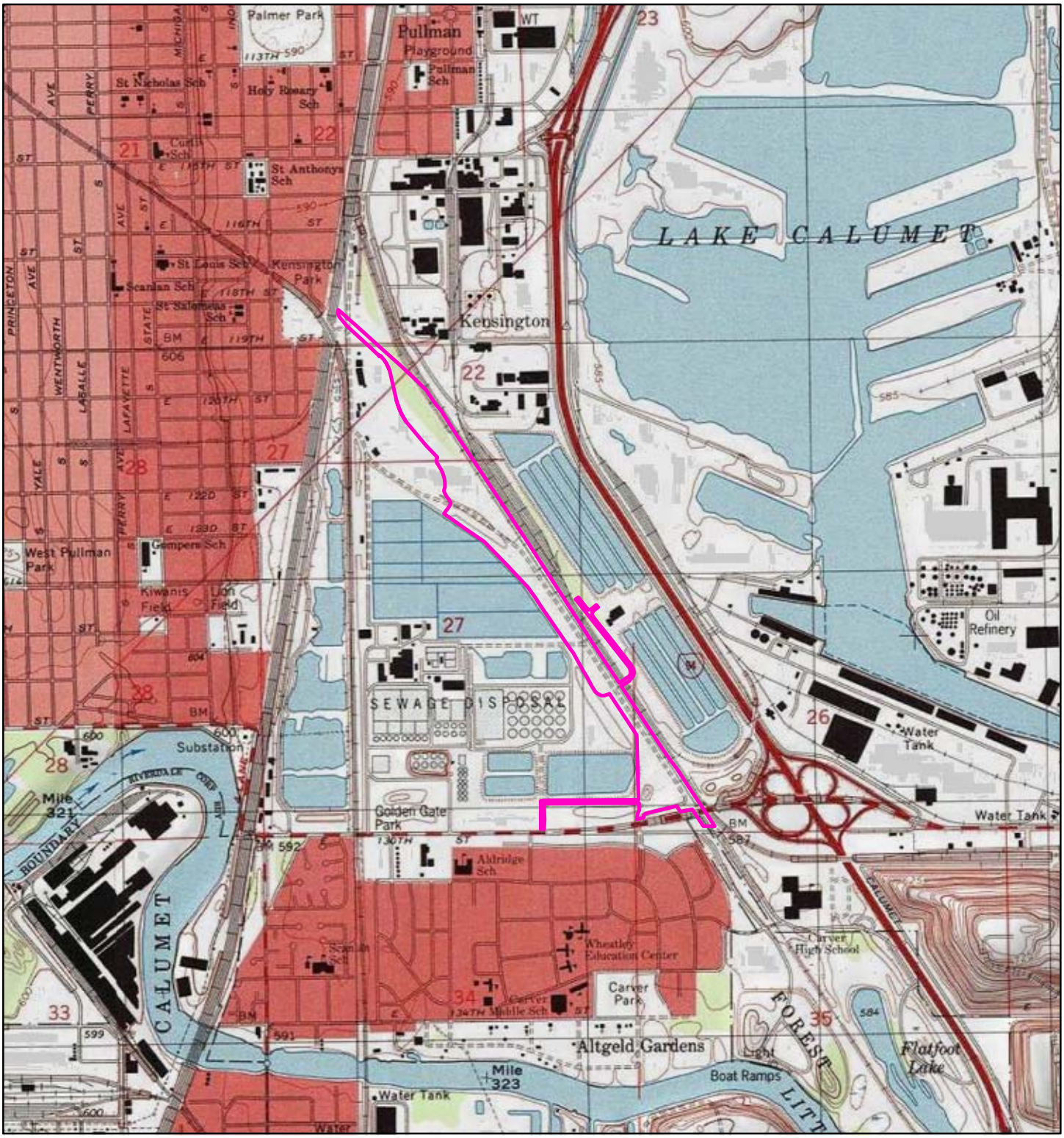
Hey and Associates, Inc.
Engineering, Ecology and Landscape Architecture

Exhibit Title:

Project Location

Exhibit:

1



Scale:

0 2,000 Feet

Orientation:

Legend:

Project Permanent Envelope

Project Name:

CTA Red Line Extension

Prepared for:

CDM Smith

Project Number: 15-0218

Latest Revision: 10/1/2015

Location Information:

Lake Calumet Quadrangle

Prepared by:

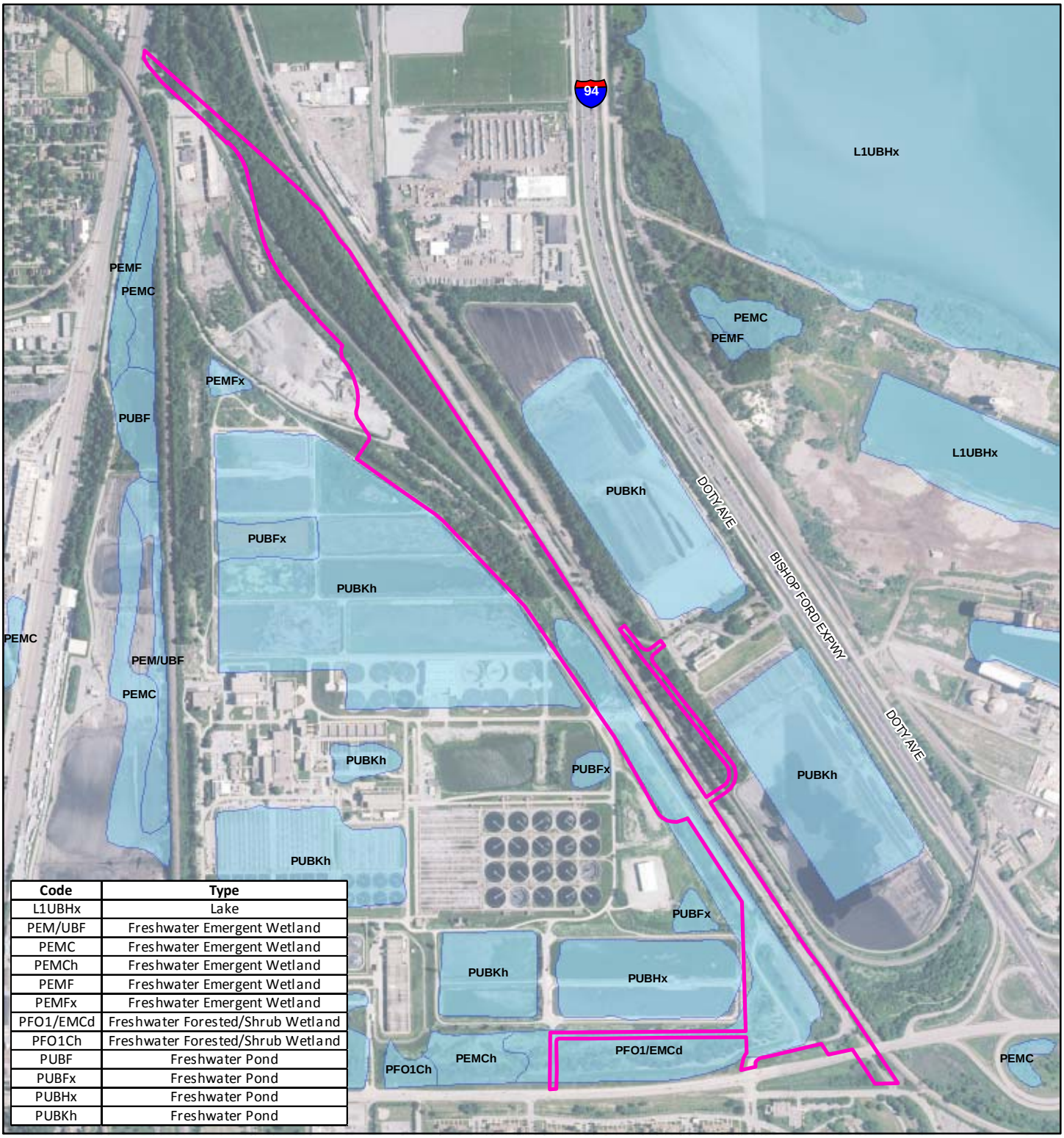
Hey and Associates, Inc.
Engineering, Ecology and Landscape Architecture

Exhibit Title:

U.S.G.S. Topographic Map

Exhibit:

2



Code	Type
L1UBHx	Lake
PEM/UBF	Freshwater Emergent Wetland
PEMC	Freshwater Emergent Wetland
PEMCh	Freshwater Emergent Wetland
PEMF	Freshwater Emergent Wetland
PEMFx	Freshwater Emergent Wetland
PFO1/EMCd	Freshwater Forested/Shrub Wetland
PFO1Ch	Freshwater Forested/Shrub Wetland
PUBF	Freshwater Pond
PUBFx	Freshwater Pond
PUBHx	Freshwater Pond
PUBKh	Freshwater Pond

Scale:

0 1,000 Feet

Orientation:

Legend:

National Wetland Inventory

Project Permanent Envelope

Project Name:

CTA Red Line Extension

Prepared for:

CDM Smith

Project Number: 15-0218

Latest Revision: 10/1/2015

NWI Date:

1981

Prepared by:

Hey and Associates, Inc.

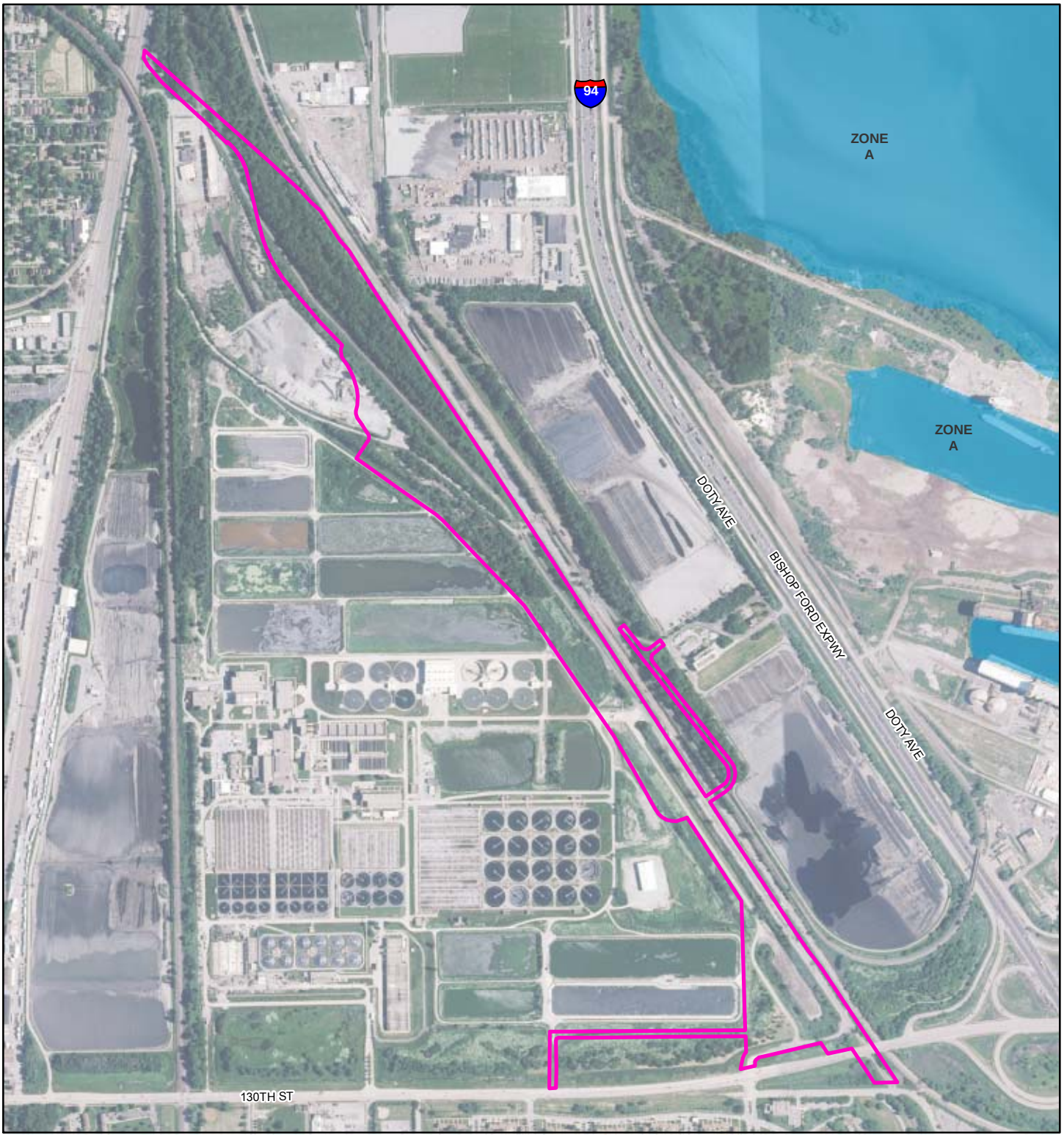
Engineering, Ecology and Landscape Architecture

Exhibit Title:

National Wetland Inventory

Exhibit:

3



Scale:

0 1,000 Feet

Orientation:

Legend:

100 Year Flood Zone

Project Permanent Envelope

Project Name:

CTA Red Line Extension

Prepared for:

CDM Smith

Project Number: 15-0218

Latest Revision: 10/1/2015

Panel #:

17031C0661J

Prepared by:

Hey and Associates, Inc.

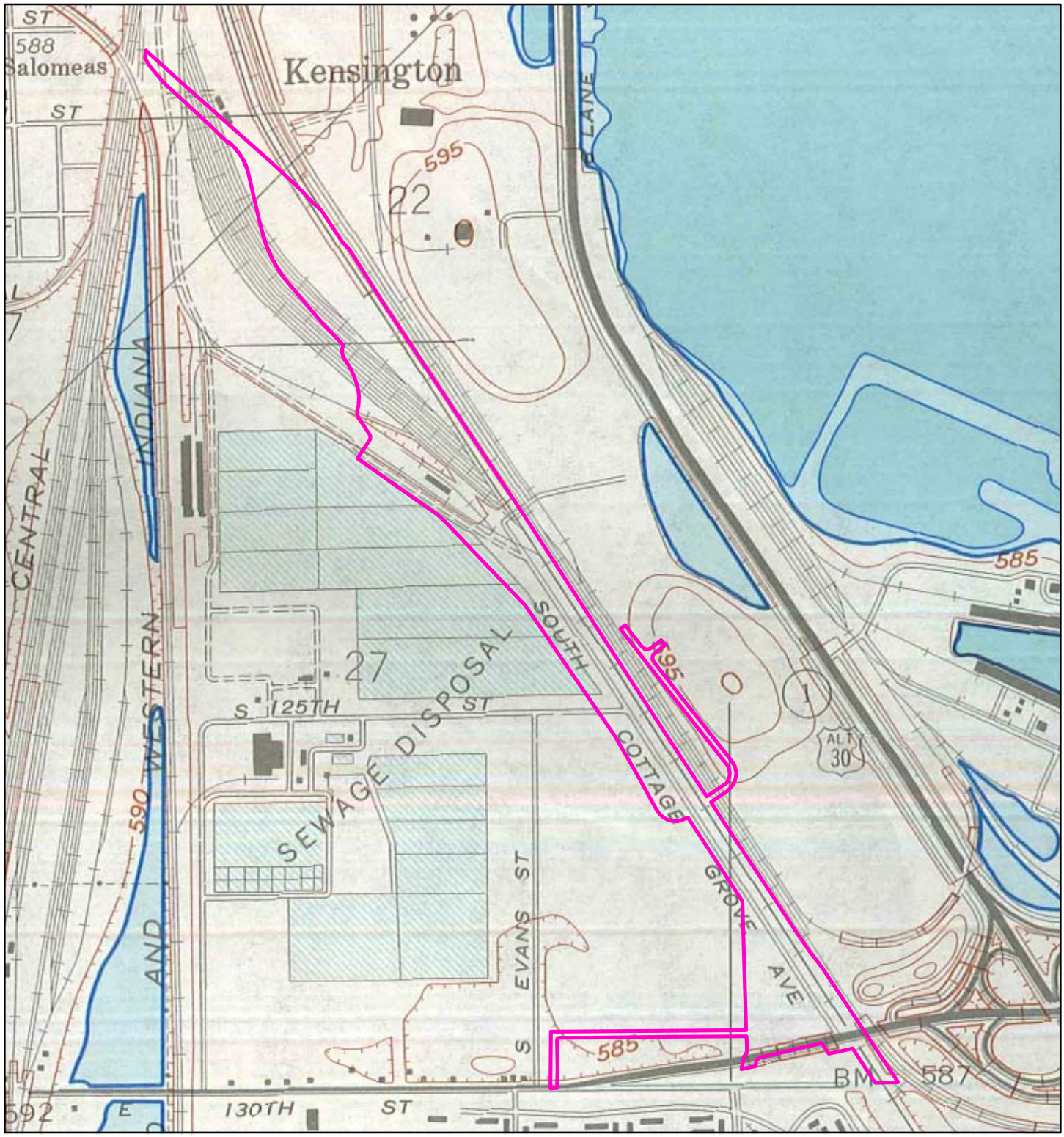
Engineering, Ecology and Landscape Architecture

Exhibit Title:

Flood Insurance Rate Map

Exhibit:

4



Scale:

0 1,000 Feet

Orientation:

Legend:

Project Permanent Envelope

Project Name:

CTA Red Line Extension

Prepared for:

CDM Smith

Project Number: 15-0218

Latest Revision: 10/1/2015

Prepared by:

Hydro Atlas Date:

1966

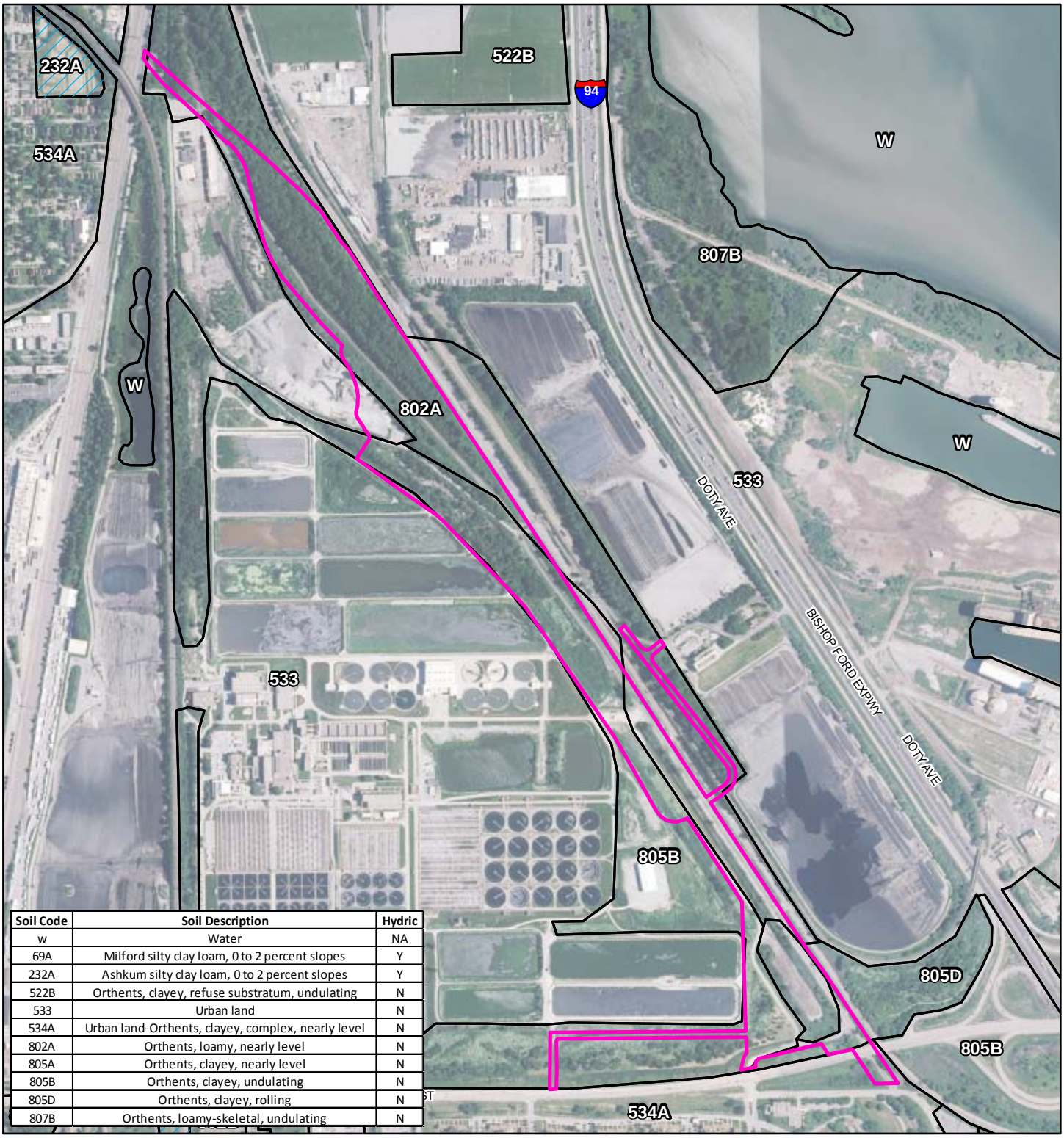
Hey and Associates, Inc.
Engineering, Ecology and Landscape Architecture

Exhibit Title:

U.S.G.S Hydrologic Atlas

Exhibit:

5



Soil Code	Soil Description	Hydric
w	Water	NA
69A	Milford silty clay loam, 0 to 2 percent slopes	Y
232A	Ashkum silty clay loam, 0 to 2 percent slopes	Y
522B	Orthents, clayey, refuse substratum, undulating	N
533	Urban land	N
534A	Urban land-Orthents, clayey, complex, nearly level	N
802A	Orthents, loamy, nearly level	N
805A	Orthents, clayey, nearly level	N
805B	Orthents, clayey, undulating	N
805D	Orthents, clayey, rolling	N
807B	Orthents, loamy-skeletal, undulating	N

Scale:

0 1,000 Feet

Orientation:

Legend:

Hydric Soils

Soil Units

Project Permanent Envelope

Project Name:

CTA Red Line Extension

Prepared for:

CDM Smith

Project Number: 15-0218

Latest Revision: 10/1/2015

Soil Survey Date:

2012

Prepared by:

Hey and Associates, Inc.

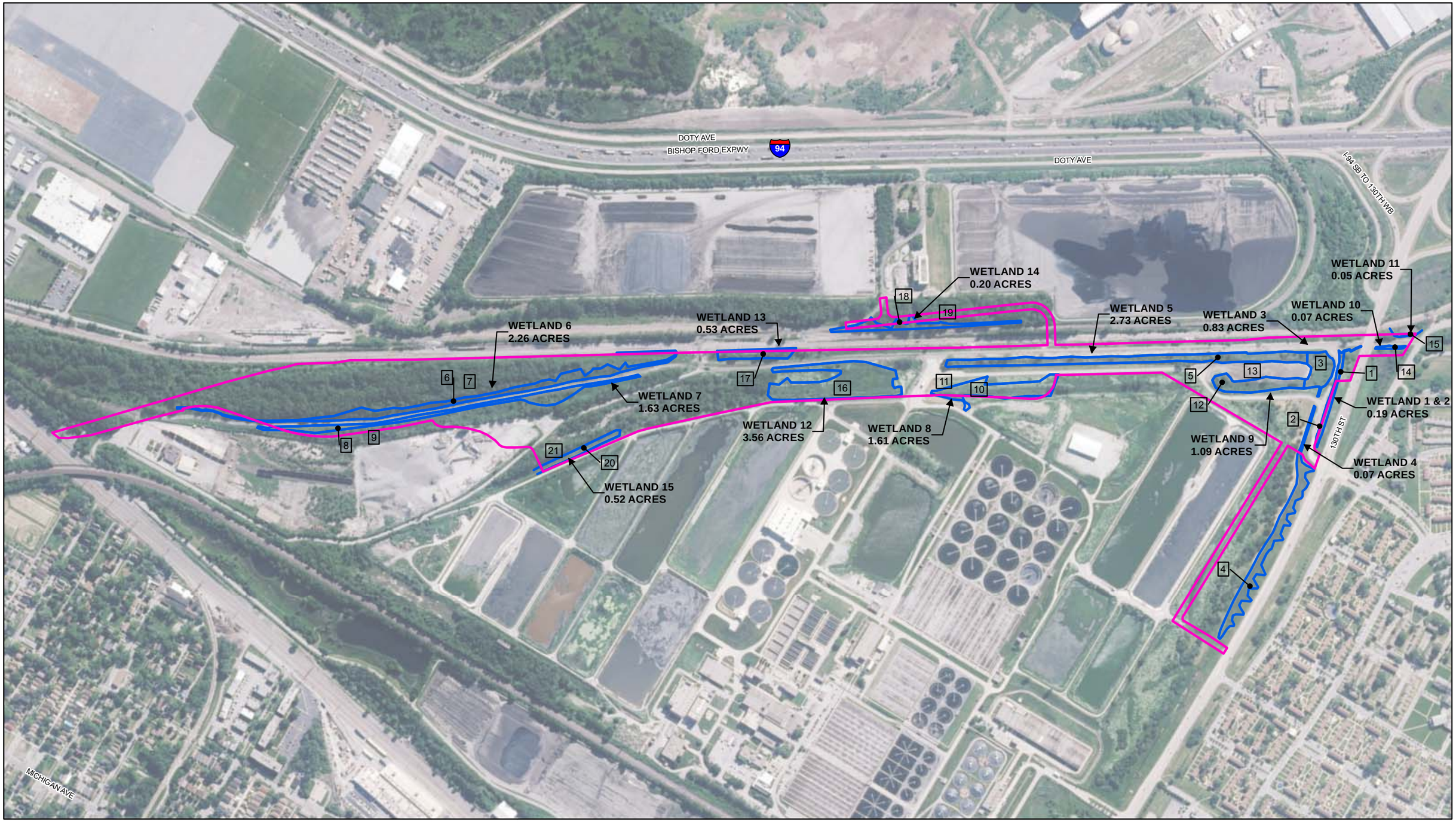
Engineering, Ecology and Landscape Architecture

Exhibit Title:

NRCS Soil Survey

Exhibit:

6



Prepared by:

Hey and Associates, Inc.
Engineering, Ecology and Landscape Architecture

Scale:
0 600 Feet
Project Number: 15-0218

Orientation:
Latest Revision: 10/1/2015

Legend:
- [x] Data Point
- Surveyed Wetland Boundary (Labled wetland acreages for area within Project Permanent Envelope only)
- Project Permanent Envelope

Project Name:
CTA Red Line Extension

Aerial Date:
2014

Prepared For:
CDM Smith

Exhibit Title:
Wetland Boundary

Exhibit:
7

The following floristic inventories, prepared by Hey and Associates, Inc., follow the nomenclature given in the National Wetland Plant List: (Lichvar, R. W., M. Butterwick, N.C. Melvin, and W. N. Kirchner 2014); The National Wetland Plant List 2014 Update of Wetland Ratings. (Phytoneuron 2014-41:1-42); and bio data/nomenclature follows Kartesz, J. T., 2013 *Floristic Synthesis of North America. Version 1.0 Biota of North American Program.* It also provides local synonymies based on Swink and Wilhelm's 1994 *Plants of the Chicago Region.*

Each species is listed with its database acronym and coefficient of conservatism (0 = weedy, 10 = conservative), and followed by its corresponding National Wetland Category (OBL = obligate wetland species, FACW = facultative wetland, FAC - facultative species, FACU = facultative upland, UPL = upland species), habit, duration, and nativity. Native taxa are those species believed to have been present in the Chicago region prior to European settlement.

The conservatism metric information above the species list provides analysis of the vegetative quality of the site. It shows the total number of species present (species richness), the mean coefficient of conservatism (Mean C), the floristic quality index (FQAI), and mean wetness; calculated separately for native species only and then including the adventive species (W/Adventives). The Mean C datum indicates the average coefficient of conservatism. The FQAI is derived by multiplying the Mean C by the square root of the number of species. If the FQAI of an area registers in the middle 30's or higher, one can be relatively certain that there is sufficient native character to be of rather profound environmental importance in terms of a regional natural area perspective. The wet indicator value indicates the mean or average wet indicator category for all species present, natives only and then with adventives – numbers less than 0 indicate hydrophytic vegetation, while numbers greater than 0 correspond to the upland vegetation categories. The table also provides the number of species in each physiognomic or habit class, native versus adventive along with their percentage of the total inventory.

Source: Herman, B., Sliwinski, R. and S. Whitaker. 2013. Chicago Region FQA (Floristic Quality Assessment) Calculator. U.S. Army Corps of Engineers, Chicago, IL. Version September 29, 2014

SITE: Wetland 1 & 2 - CTA Red Line Extension
LOCALE: Lake Calumet
BY: J Mengler, V Mosca
DATE: 8/13/2015

CONSERVATISM-BASED METRICS

MEAN C (NATIVE SPECIES)	**1.38**
MEAN C (ALL SPECIES)	0.85
MEAN C (NATIVE TREES)	1.50
MEAN C (NATIVE SHRUBS)	1.00
MEAN C (NATIVE HERBACEOUS)	1.00
FQAI (NATIVE SPECIES)	**3.89**
FQAI (ALL SPECIES)	3.05
ADJUSTED FQAI	10.79
% C VALUE 0	0.46
% C VALUE 1-3	0.54
% C VALUE 4-6	0.00
% C VALUE 7-10	0.00

ADDITIONAL METRICS

SPECIES RICHNESS (ALL)	13
SPECIES RICHNESS (NATIVE)	8
% NON-NATIVE	0.38
WET INDICATOR (ALL)	-0.23
WET INDICATOR (NATIVE)	-0.50
% HYDROPHYTE (MIDWEST)	0.77
% NATIVE PERENNIAL	0.62
% NATIVE ANNUAL	0.00
% ANNUAL	0.00
% PERENNIAL	0.92

SPECIES ACRONYM	SPECIES NAME (NWPL/ MOHLENBROCK)	SPECIES (SYNONYM)	COMMON NAME	C VALUE	MIDWEST WET INDICATOR	HABIT	DURATION	NATIVITY
acesai	*Acer saccharinum*	*Acer saccharinum*	Silver Maple	0	FACW	Tree	Perennial	Native
artvul	*Artemisia vulgaris*	*ARTEMISIA VULGARIS*	Common Mugwort	0	UPL	Forb	Perennial	Adventive
consep	*Calystegia sepium*	*Convolvulus sepium*	Hedge False Bindweed	1	FAC	Forb	Perennial	Native
diplac	*Dipsacus laciniatus*	*DIPSACUS LACINIATUS*	Cut-Leaf Teasel	0	UPL	Forb	Biennial	Adventive
frapen	*Fraxinus pennsylvanica*	*Fraxinus pennsylvanica subintegerrima*	Green Ash	1	FACW	Tree	Perennial	Native
lytsal	*Lythrum salicaria*	*LYTHRUM SALICARIA*	Purple Loosestrife	0	OBL	Forb	Perennial	Adventive
phrausu	*Phragmites australis ssp. australis*	*Phragmites australis*	Common Reed	0	FACW	Grass	Perennial	Adventive
popdel	*Populus deltoides*	*Populus deltoides*	Eastern Cottonwood	2	FAC	Tree	Perennial	Native
rhacat	*Rhamnus cathartica*	*RHAMNUS CATHARTICA*	European Buckthorn	0	FAC	Shrub	Perennial	Adventive
salint	*Salix interior*	*Salix interior*	Sandbar Willow	1	FACW	Shrub	Perennial	Native
solalt	*Solidago altissima*	*Solidago altissima*	Tall Goldenrod	1	FACU	Forb	Perennial	Native
ulmame	*Ulmus americana*	*Ulmus americana*	American Elm	3	FACW	Tree	Perennial	Native
vitrip	*Vitis riparia*	*Vitis riparia*	River-Bank Grape	2	FACW	Vine	Perennial	Native

SITE: Wetland 3 - CTA Red Line Extension
LOCALE: Lake Calumet
BY: J Mengler, V Mosca
DATE: 8/13/2015

CONSERVATISM-BASED METRICS

MEAN C (NATIVE SPECIES)	**4.50**
MEAN C (ALL SPECIES)	1.50
MEAN C (NATIVE TREES)	2.00
MEAN C (NATIVE SHRUBS)	7.00
MEAN C (NATIVE HERBACEOUS)	n/a
FQAI (NATIVE SPECIES)	**6.36**
FQAI (ALL SPECIES)	3.67
ADJUSTED FQAI	25.98
% C VALUE 0	0.67
% C VALUE 1-3	0.17
% C VALUE 4-6	0.00
% C VALUE 7-10	0.17

ADDITIONAL METRICS

SPECIES RICHNESS (ALL)	6
SPECIES RICHNESS (NATIVE)	2
% NON-NATIVE	0.67
WET INDICATOR (ALL)	-0.67
WET INDICATOR (NATIVE)	-0.50
% HYDROPHYTE (MIDWEST)	0.83
% NATIVE PERENNIAL	0.33
% NATIVE ANNUAL	0.00
% ANNUAL	0.00
% PERENNIAL	0.83

SPECIES ACRONYM	SPECIES NAME (NWPL/ MOHLENBROCK)	SPECIES (SYNONYM)	COMMON NAME	C VALUE	MIDWEST WET INDICATOR	HABIT	DURATION	NATIVITY
diplac	*Dipsacus laciniatus*	*DIPSACUS LACINIATUS*	Cut-Leaf Teasel	0	UPL	Forb	Biennial	Adventive
lytsal	*Lythrum salicaria*	*LYTHRUM SALICARIA*	Purple Loosestrife	0	OBL	Forb	Perennial	Adventive
phrausu	*Phragmites australis ssp. australis*	*Phragmites australis*	Common Reed	0	FACW	Grass	Perennial	Adventive
popdel	*Populus deltoides*	*Populus deltoides*	Eastern Cottonwood	2	FAC	Tree	Perennial	Native
ribame	*Ribes americanum*	*Ribes americanum*	Wild Black Currant	7	FACW	Shrub	Perennial	Native
typang	*Typha angustifolia*	*Typha angustifolia*	Narrow-Leaf Cat-Tail	0	OBL	Forb	Perennial	Adventive

SITE: Wetland 4 - CTA Red Line Extension
LOCALE: Lake Calumet
BY: J Mengler, V Mosca
DATE: 8/13/2015

CONSERVATISM-BASED METRICS

MEAN C (NATIVE SPECIES)	**2.43**
MEAN C (ALL SPECIES)	1.00
MEAN C (NATIVE TREES)	n/a
MEAN C (NATIVE SHRUBS)	n/a
MEAN C (NATIVE HERBACEOUS)	2.67
FQAI (NATIVE SPECIES)	**6.43**
FQAI (ALL SPECIES)	4.12
ADJUSTED FQAI	15.58
% C VALUE 0	0.59
% C VALUE 1-3	0.24
% C VALUE 4-6	0.18
% C VALUE 7-10	0.00

ADDITIONAL METRICS

SPECIES RICHNESS (ALL)	17
SPECIES RICHNESS (NATIVE)	7
% NON-NATIVE	0.59
WET INDICATOR (ALL)	-0.18
WET INDICATOR (NATIVE)	-0.43
% HYDROPHYTE (MIDWEST)	0.59
% NATIVE PERENNIAL	0.41
% NATIVE ANNUAL	0.00
% ANNUAL	0.00
% PERENNIAL	0.82

SPECIES ACRONYM	SPECIES NAME (NWPL/ MOHLENBROCK)	SPECIES (SYNONYM)	COMMON NAME	C VALUE	MIDWEST WET INDICATOR	HABIT	DURATION	NATIVITY
arcmin	*Arctium minus*	*ARCTIUM MINUS*	Lesser Burrdock	0	FACU	Forb	Biennial	Adventive
ascinc	*Asclepias incarnata*	*Asclepias incarnata*	Swamp Milkweed	4	OBL	Forb	Perennial	Native
consep	*Calystegia sepium*	*Convolvulus sepium*	Hedge False Bindweed	1	FAC	Forb	Perennial	Native
carnut	*Carduus nutans*	*CARDUUS NUTANS*	Nodding Plumeless-Thistle	0	FACU	Forb	Biennial	Adventive
cirarv	*Cirsium arvense*	*CIRSIUM ARVENSE*	Canadian Thistle	0	FACU	Forb	Perennial	Adventive
diplac	*Dipsacus laciniatus*	*DIPSACUS LACINIATUS*	Cut-Leaf Teasel	0	UPL	Forb	Biennial	Adventive
solgra	*Euthamia graminifolia*	*Solidago graminifolia nuttallii*	Flat-Top Goldentop	4	FACW	Forb	Perennial	Native
polsca	*Fallopia scandens*	*Polygonum scandens*	Climbing Black-Bindweed	1	FAC	Vine	Perennial	Native
lytsal	*Lythrum salicaria*	*LYTHRUM SALICARIA*	Purple Loosestrife	0	OBL	Forb	Perennial	Adventive
phrausu	*Phragmites australis ssp. australis*	*Phragmites australis*	Common Reed	0	FACW	Grass	Perennial	Adventive
phyame	*Phytolacca americana*	*Phytolacca americana*	American Pokeweed	1	FACU	Forb	Perennial	Native
scipun	*Schoenoplectus pungens*	*Scirpus pungens*	Three-Square	5	OBL	Sedge	Perennial	Native
soldul	*Solanum dulcamara*	*SOLANUM DULCAMARA*	Climbing Nightshade	0	FAC	Vine	Perennial	Adventive
solalt	*Solidago altissima*	*Solidago altissima*	Tall Goldenrod	1	FACU	Forb	Perennial	Native
solsem	*Solidago sempervirens*	*SOLIDAGO SEMPERVIRENS*	Seaside Goldenrod	0	FACW	Forb	Perennial	Adventive
sonuli	*Sonchus arvensis ssp. uliginosus*	*SONCHUS ULIGINOSUS*	Field Sow-Thistle	0	FACU	Forb	Perennial	Adventive
typang	*Typha angustifolia*	*Typha angustifolia*	Narrow-Leaf Cat-Tail	0	OBL	Forb	Perennial	Adventive

SITE: Wetland 5 - CTA Red Line Extension
LOCALE: Lake Calumet
BY: J Mengler, V Mosca
DATE: 8/13/2015

CONSERVATISM-BASED METRICS

MEAN C (NATIVE SPECIES)	**1.75**
MEAN C (ALL SPECIES)	1.08
MEAN C (NATIVE TREES)	2.00
MEAN C (NATIVE SHRUBS)	4.00
(NATIVE HERBACEOUS)	0.00
FQAI (NATIVE SPECIES)	**4.95**
FQAI (ALL SPECIES)	3.88
ADJUSTED FQAI	13.73
% C VALUE 0	0.62
% C VALUE 1-3	0.31
% C VALUE 4-6	0.00
% C VALUE 7-10	0.08

ADDITIONAL METRICS

SPECIES RICHNESS (ALL)	13
SPECIES RICHNESS (NATIVE)	8
% NON-NATIVE	0.38
WET INDICATOR (ALL)	-0.23
WET INDICATOR (NATIVE)	0.00
% HYDROPHYTE (MIDWEST)	0.69
% NATIVE PERENNIAL	0.38
% NATIVE ANNUAL	0.15
% ANNUAL	0.23
% PERENNIAL	0.69

SPECIES ACRONYM	SPECIES NAME (NWPL/ MOHLENBROCK)	SPECIES (SYNONYM)	COMMON NAME	C VALUE	MIDWEST WET INDICATOR	HABIT	DURATION	NATIVITY
ambart	*Ambrosia artemisiifolia*	*Ambrosia artemisiifolia elatior*	Annual Ragweed	0	FACU	Forb	Annual	Native
ambtri	*Ambrosia trifida*	*Ambrosia trifida*	Great Ragweed	0	FAC	Forb	Annual	Native
branig	*Brassica nigra*	*BRASSICA NIGRA*	Black Mustard	0	UPL	Forb	Annual	Adventive
lytsal	*Lythrum salicaria*	*LYTHRUM SALICARIA*	Purple Loosestrife	0	OBL	Forb	Perennial	Adventive
oenbie	*Oenothera biennis*	*Oenothera biennis*	Evening Primrose	0	FACU	Forb	Biennial	Native
parqui	*Parthenocissus quinquefolia*	*Parthenocissus quinquefolia*	Virginia-Creeper	2	FACU	Vine	Perennial	Native
phrausu	*Phragmites australis ssp. australis*	*Phragmites australis*	Common Reed	0	FACW	Grass	Perennial	Adventive
popdel	*Populus deltoides*	*Populus deltoides*	Eastern Cottonwood	2	FAC	Tree	Perennial	Native
rhacat	*Rhamnus cathartica*	*RHAMNUS CATHARTICA*	European Buckthorn	0	FAC	Shrub	Perennial	Adventive
ribame	*Ribes americanum*	*Ribes americanum*	Wild Black Currant	7	FACW	Shrub	Perennial	Native
salint	*Salix interior*	*Salix interior*	Sandbar Willow	1	FACW	Shrub	Perennial	Native
typang	*Typha angustifolia*	*Typha angustifolia*	Narrow-Leaf Cat-Tail	0	OBL	Forb	Perennial	Adventive
vitrip	*Vitis riparia*	*Vitis riparia*	River-Bank Grape	2	FACW	Vine	Perennial	Native

SITE: Wetland 6 - CTA Red Line Extension
LOCALE: Lake Calumet
BY: J Mengler, V Mosca
DATE: 8/13/2015

CONSERVATISM-BASED METRICS

MEAN C (NATIVE SPECIES)	**2.43**
MEAN C (ALL SPECIES)	1.59
MEAN C (NATIVE TREES)	1.00
MEAN C (NATIVE SHRUBS)	1.00
MEAN C (NATIVE HERBACEOUS)	2.76
FQAI (NATIVE SPECIES)	**11.13**
FQAI (ALL SPECIES)	9.02
ADJUSTED FQAI	19.67
% C VALUE 0	0.50
% C VALUE 1-3	0.25
% C VALUE 4-6	0.22
% C VALUE 7-10	0.03

ADDITIONAL METRICS

SPECIES RICHNESS (ALL)	32
SPECIES RICHNESS (NATIVE)	21
% NON-NATIVE	0.34
WET INDICATOR (ALL)	-0.06
WET INDICATOR (NATIVE)	-0.14
% HYDROPHYTE (MIDWEST)	0.66
% NATIVE PERENNIAL	0.53
% NATIVE ANNUAL	0.06
% ANNUAL	0.09
% PERENNIAL	0.78

SPECIES ACRONYM	SPECIES NAME (NWPL/ MOHLENBROCK)	SPECIES (SYNONYM)	COMMON NAME	C VALUE	MIDWEST WET INDICATOR	HABIT	DURATION	NATIVITY
aceneg	*Acer negundo*	*Acer negundo var. violaceum*	Box Elder	0	FAC	Tree	Perennial	Native
agralb	*Agrostis gigantea*	*AGROSTIS ALBA*	Red Top	0	FACW	Grass	Perennial	Adventive
acnalt	*Amaranthus tuberculatus*	*Acnida altissima*	Rough-Fruit Amaranth	0	OBL	Forb	Annual	Native
ambtri	*Ambrosia trifida*	*Ambrosia trifida*	Great Ragweed	0	FAC	Forb	Annual	Native
andger	*Andropogon gerardii*	*Andropogon gerardii*	Big Bluestem	5	FAC	Grass	Perennial	Native
arcmin	*Arctium minus*	*ARCTIUM MINUS*	Lesser Burrdock	0	FACU	Forb	Biennial	Adventive
artvul	*Artemisia vulgaris*	*ARTEMISIA VULGARIS*	Common Mugwort	0	UPL	Forb	Perennial	Adventive
ascinc	*Asclepias incarnata*	*Asclepias incarnata*	Swamp Milkweed	4	OBL	Forb	Perennial	Native
cirdis	*Cirsium discolor*	*Cirsium discolor*	Field Thistle	2	FACU	Forb	Biennial	Native
comcom	*Commelina communis*	*COMMELINA COMMUNIS*	Asiatic Dayflower	0	FACU	Forb	Annual	Adventive
cypstr	*Cyperus strigosus*	*Cyperus strigosus*	Straw-Color Flat Sedge	1	FACW	Sedge	Perennial	Native
daucar	*Daucus carota*	*DAUCUS CAROTA*	Queen Anne's Lace	0	UPL	Forb	Biennial	Adventive
eupalt	*Eupatorium altissimum*	*Eupatorium altissimum*	Tall Boneset	0	UPL	Forb	Perennial	Native
solgra	*Euthamia graminifolia*	*Solidago graminifolia nuttallii*	Flat-Top Goldentop	4	FACW	Forb	Perennial	Native
polsca	*Fallopia scandens*	*Polygonum scandens*	Climbing Black-Bindweed	1	FAC	Vine	Perennial	Native
gaubie	*Gaura biennis*	*Gaura biennis*	Biennial Beeblossom	2	FACU	Forb	Biennial	Native
helgro	*Helianthus grosseserratus*	*Helianthus grosseserratus*	Saw-Tooth Sunflower	2	FACW	Forb	Perennial	Native
hyppun	*Hypericum punctatum*	*Hypericum punctatum*	Spotted St. John's-Wort	4	FAC	Forb	Perennial	Native
liapyc	*Liatris pycnostachya*	*Liatris pycnostachya*	Priarie Blazing Star	8	FAC	Forb	Perennial	Native
lycame	*Lycopus americanus*	*Lycopus americanus*	Cut-Leaf Water-Horehound	5	OBL	Forb	Perennial	Native
lytsal	*Lythrum salicaria*	*LYTHRUM SALICARIA*	Purple Loosestrife	0	OBL	Forb	Perennial	Adventive
phrausu	*Phragmites australis ssp. australis*	*Phragmites australis*	Common Reed	0	FACW	Grass	Perennial	Adventive
physub	*Physalis subglabrata*	*Physalis subglabrata*	Smooth Ground Cherry	0	UPL	Forb	Perennial	Native
popdel	*Populus deltoides*	*Populus deltoides*	Eastern Cottonwood	2	FAC	Tree	Perennial	Native
rhacat	*Rhamnus cathartica*	*RHAMNUS CATHARTICA*	European Buckthorn	0	FAC	Shrub	Perennial	Adventive

SPECIES ACRONYM	SPECIES NAME (NWPL/ MOHLENBROCK)	SPECIES (SYNONYM)	COMMON NAME	C VALUE	MIDWEST WET INDICATOR	HABIT	DURATION	NATIVITY
samcan	*Sambucus nigra ssp. canadensis*	*Sambucus canadensis*	Elderberry	1	FACW	Shrub	Perennial	Native
sapoff	*Saponaria officinalis*	*SAPONARIA OFFICINALIS*	Bouncing-Bett	0	FACU	Forb	Perennial	Adventive
andsco	*Schizachyrium scoparium*	*Andropogon scoparius*	Little Bluestem	5	FACU	Grass	Perennial	Native
soldul	*Solanum dulcamara*	*SOLANUM DULCAMARA*	Climbing Nightshade	0	FAC	Vine	Perennial	Adventive
solalt	*Solidago altissima*	*Solidago altissima*	Tall Goldenrod	1	FACU	Forb	Perennial	Native
typang	*Typha angustifolia*	*Typha angustifolia*	Narrow-Leaf Cat-Tail	0	OBL	Forb	Perennial	Adventive
verhas	*Verbena hastata*	*Verbena hastata*	Blue Vervain	4	FACW	Forb	Perennial	Native

SITE: Wetland 7 - CTA Red Line Extension
LOCALE: Lake Calumet
BY: J Mengler, V Mosca
DATE: 8/13/2015

CONSERVATISM-BASED METRICS

MEAN C (NATIVE SPECIES)	**2.79**
MEAN C (ALL SPECIES)	2.03
MEAN C (NATIVE TREES)	n/a
MEAN C (NATIVE SHRUBS)	0.00
MEAN C (NATIVE HERBACEOUS)	2.79
FQAI (NATIVE SPECIES)	**13.68**
FQAI (ALL SPECIES)	11.66
ADJUSTED FQAI	23.81
% C VALUE 0	0.45
% C VALUE 1-3	0.18
% C VALUE 4-6	0.33
% C VALUE 7-10	0.03

ADDITIONAL METRICS

SPECIES RICHNESS (ALL)	33
SPECIES RICHNESS (NATIVE)	24
% NON-NATIVE	0.27
WET INDICATOR (ALL)	-0.18
WET INDICATOR (NATIVE)	-0.21
% HYDROPHYTE (MIDWEST)	0.67
% NATIVE PERENNIAL	0.52
% NATIVE ANNUAL	0.09
% ANNUAL	0.09
% PERENNIAL	0.76

SPECIES ACRONYM	SPECIES NAME (NWPL/ MOHLENBROCK)	SPECIES (SYNONYM)	COMMON NAME	C VALUE	MIDWEST WET INDICATOR	HABIT	DURATION	NATIVITY
achmil	*Achillea millefolium*	*ACHILLEA MILLEFOLIUM*	Common Yarrow	0	FACU	Forb	Perennial	Adventive
agralb	*Agrostis gigantea*	*AGROSTIS ALBA*	Red Top	0	FACW	Grass	Perennial	Adventive
andger	*Andropogon gerardii*	*Andropogon gerardii*	Big Bluestem	5	FAC	Grass	Perennial	Native
artvul	*Artemisia vulgaris*	*ARTEMISIA VULGARIS*	Common Mugwort	0	UPL	Forb	Perennial	Adventive
ascsyr	*Asclepias syriaca*	*Asclepias syriaca*	Common Milkweed	0	FACU	Forb	Perennial	Native
cirdis	*Cirsium discolor*	*Cirsium discolor*	Field Thistle	2	FACU	Forb	Biennial	Native
cypstr	*Cyperus strigosus*	*Cyperus strigosus*	Straw-Color Flat Sedge	1	FACW	Sedge	Perennial	Native
daucar	*Daucus carota*	*DAUCUS CAROTA*	Queen Anne's Lace	0	UPL	Forb	Biennial	Adventive
eriann	*Erigeron annuus*	*Erigeron annuus*	Eastern Daisy Fleabane	0	FACU	Forb	Biennial	Native
erican	*Erigeron canadensis*	*Erigeron canadensis*	Canadian Horseweed	0	FACU	Forb	Annual	Native
eupalt	*Eupatorium altissimum*	*Eupatorium altissimum*	Tall Boneset	0	UPL	Forb	Perennial	Native
eupper	*Eupatorium perfoliatum*	*Eupatorium perfoliatum*	Common Boneset	4	OBL	Forb	Perennial	Native
solgra	*Euthamia graminifolia*	*Solidago graminifolia nuttallii*	Flat-Top Goldentop	4	FACW	Forb	Perennial	Native
rhafra	*Frangula alnus*	*RHAMNUS FRANGULA*	Glossy Buckthorn	0	FACW	Shrub	Perennial	Adventive
helgro	*Helianthus grosseserratus*	*Helianthus grosseserratus*	Saw-Tooth Sunflower	2	FACW	Forb	Perennial	Native
hyppun	*Hypericum punctatum*	*Hypericum punctatum*	Spotted St. John's-Wort	4	FAC	Forb	Perennial	Native
jundud	*Juncus dudleyi*	*Juncus dudleyi*	Dudley's Rush	4	FACW	Forb	Perennial	Native
juntor	*Juncus torreyi*	*Juncus torreyi*	Torrey's Rush	4	FACW	Forb	Perennial	Native
laccan	*Lactuca canadensis*	*Lactuca canadensis*	Canadian Blue Lettuce	2	FACU	Forb	Biennial	Native
lycame	*Lycopus americanus*	*Lycopus americanus*	Cut-Leaf Water-Horehound	5	OBL	Forb	Perennial	Native
lytsal	*Lythrum salicaria*	*LYTHRUM SALICARIA*	Purple Loosestrife	0	OBL	Forb	Perennial	Adventive
muhglo	*Muhlenbergia glomerata*	*Muhlenbergia glomerata*	Spiked Muhly	10	FACW	Grass	Perennial	Native
oenbie	*Oenothera biennis*	*Oenothera biennis*	Evening Primrose	0	FACU	Forb	Biennial	Native
pancap	*Panicum capillare*	*Panicum capillare*	Common Panic Grass	1	FAC	Grass	Annual	Native

SPECIES ACRONYM	SPECIES NAME (NWPL/ MOHLENBROCK)	SPECIES (SYNONYM)	COMMON NAME	C VALUE	MIDWEST WET INDICATOR	HABIT	DURATION	NATIVITY
pandic	*Panicum dichotomiflorum*	*Panicum dichotomiflorum*	Fall Panic Grass	0	FACW	Grass	Annual	Native
panvir	*Panicum virgatum*	*Panicum virgatum*	Switch Grass	5	FAC	Grass	Perennial	Native
pendig	*Penstemon digitalis*	*Penstemon digitalis*	Foxglove Beardtongue	4	FAC	Forb	Perennial	Native
phrausu	*Phragmites australis ssp. australis*	*Phragmites australis*	Common Reed	0	FACW	Grass	Perennial	Adventive
scipen	*Scirpus pendulus*	*Scirpus pendulus*	Rufous Bulrush	4	OBL	Sedge	Perennial	Native
soldul	*Solanum dulcamara*	*SOLANUM DULCAMARA*	Climbing Nightshade	0	FAC	Vine	Perennial	Adventive
solsem	*Solidago sempervirens*	*SOLIDAGO SEMPERVIRENS*	Seaside Goldenrod	0	FACW	Forb	Perennial	Adventive
traohi	*Tradescantia ohiensis*	*Tradescantia ohiensis*	Spiderwort	2	FACU	Forb	Perennial	Native
verhas	*Verbena hastata*	*Verbena hastata*	Blue Vervain	4	FACW	Forb	Perennial	Native

SITE: Wetland 8 - CTA Red Line Extension
LOCALE: Lake Calumet
BY: J Mengler, V Mosca
DATE: 8/19/2015

CONSERVATISM-BASED METRICS

MEAN C (NATIVE SPECIES)	**2.43**
MEAN C (ALL SPECIES)	1.21
MEAN C (NATIVE TREES)	2.00
MEAN C (NATIVE SHRUBS)	1.00
MEAN C (NATIVE HERBACEOUS)	2.67
FQAI (NATIVE SPECIES)	**6.43**
FQAI (ALL SPECIES)	4.54
ADJUSTED FQAI	17.17
% C VALUE 0	0.57
% C VALUE 1-3	0.21
% C VALUE 4-6	0.21
% C VALUE 7-10	0.00

ADDITIONAL METRICS

SPECIES RICHNESS (ALL)	14
SPECIES RICHNESS (NATIVE)	7
% NON-NATIVE	0.50
WET INDICATOR (ALL)	-0.21
WET INDICATOR (NATIVE)	-0.57
% HYDROPHYTE (MIDWEST)	0.79
% NATIVE PERENNIAL	0.36
% NATIVE ANNUAL	0.14
% ANNUAL	0.14
% PERENNIAL	0.79

SPECIES ACRONYM	SPECIES NAME (NWPL/ MOHLENBROCK)	SPECIES (SYNONYM)	COMMON NAME	C VALUE	MIDWEST WET INDICATOR	HABIT	DURATION	NATIVITY
ambtri	*Ambrosia trifida*	*Ambrosia trifida*	Great Ragweed	0	FAC	Forb	Annual	Native
cirarv	*Cirsium arvense*	*CIRSIUM ARVENSE*	Canadian Thistle	0	FACU	Forb	Perennial	Adventive
diplac	*Dipsacus laciniatus*	*DIPSACUS LACINIATUS*	Cut-Leaf Teasel	0	UPL	Forb	Biennial	Adventive
echlob	*Echinocystis lobata*	*Echinocystis lobata*	Wild Cucumber	5	FACW	Vine	Annual	Native
polsca	*Fallopia scandens*	*Polygonum scandens*	Climbing Black-Bindweed	1	FAC	Vine	Perennial	Native
jundud	*Juncus dudleyi*	*Juncus dudleyi*	Dudley's Rush	4	FACW	Forb	Perennial	Native
juntor	*Juncus torreyi*	*Juncus torreyi*	Torrey's Rush	4	FACW	Forb	Perennial	Native
lytsal	*Lythrum salicaria*	*LYTHRUM SALICARIA*	Purple Loosestrife	0	OBL	Forb	Perennial	Adventive
phrausu	*Phragmites australis ssp. australis*	*Phragmites australis*	Common Reed	0	FACW	Grass	Perennial	Adventive
popdel	*Populus deltoides*	*Populus deltoides*	Eastern Cottonwood	2	FAC	Tree	Perennial	Native
salfra	*Salix fragilis*	*SALIX FRAGILIS*	Crack Willow	0	UPL	Tree	Perennial	Adventive
salint	*Salix interior*	*Salix interior*	Sandbar Willow	1	FACW	Shrub	Perennial	Native
soldul	*Solanum dulcamara*	*SOLANUM DULCAMARA*	Climbing Nightshade	0	FAC	Vine	Perennial	Adventive
solsem	*Solidago sempervirens*	*SOLIDAGO SEMPERVIRENS*	Seaside Goldenrod	0	FACW	Forb	Perennial	Adventive

SITE: Wetland 9 - CTA Red Line Extension
LOCALE: Lake Calumet
BY: J Mengler, V Mosca
DATE: 8/19/2015

CONSERVATISM-BASED METRICS

MEAN C (NATIVE SPECIES)	**0.83**
MEAN C (ALL SPECIES)	0.45
MEAN C (NATIVE TREES)	1.00
MEAN C (NATIVE SHRUBS)	n/a
MEAN C (NATIVE HERBACEOUS)	0.33
FQAI (NATIVE SPECIES)	**2.04**
FQAI (ALL SPECIES)	1.51
ADJUSTED FQAI	6.15
% C VALUE 0	0.73
% C VALUE 1-3	0.27
% C VALUE 4-6	0.00
% C VALUE 7-10	0.00

ADDITIONAL METRICS

SPECIES RICHNESS (ALL)	11
SPECIES RICHNESS (NATIVE)	6
% NON-NATIVE	0.45
WET INDICATOR (ALL)	-0.18
WET INDICATOR (NATIVE)	0.00
% HYDROPHYTE (MIDWEST)	0.82
% NATIVE PERENNIAL	0.36
% NATIVE ANNUAL	0.18
% ANNUAL	0.18
% PERENNIAL	0.82

SPECIES ACRONYM	SPECIES NAME (NWPL/ MOHLENBROCK)	SPECIES (SYNONYM)	COMMON NAME	C VALUE	MIDWEST WET INDICATOR	HABIT	DURATION	NATIVITY
aceneg	*Acer negundo*	*Acer negundo var. violaceum*	Box Elder	0	FAC	Tree	Perennial	Native
ambtri	*Ambrosia trifida*	*Ambrosia trifida*	Great Ragweed	0	FAC	Forb	Annual	Native
consep	*Calystegia sepium*	*Convolvulus sepium*	Hedge False Bindweed	1	FAC	Forb	Perennial	Native
erican	*Erigeron canadensis*	*Erigeron canadensis*	Canadian Horseweed	0	FACU	Forb	Annual	Native
lytsal	*Lythrum salicaria*	*LYTHRUM SALICARIA*	Purple Loosestrife	0	OBL	Forb	Perennial	Adventive
moralb	*Morus alba*	*MORUS ALBA*	White Mulberry	0	FAC	Tree	Perennial	Adventive
phaaru	*Phalaris arundinacea*	*PHALARIS ARUNDINACEA*	Reed Canary Grass	0	FACW	Grass	Perennial	Adventive
phrausu	*Phragmites australis ssp. australis*	*Phragmites australis*	Common Reed	0	FACW	Grass	Perennial	Adventive
popdel	*Populus deltoides*	*Populus deltoides*	Eastern Cottonwood	2	FAC	Tree	Perennial	Native
salfra	*Salix fragilis*	*SALIX FRAGILIS*	Crack Willow	0	UPL	Tree	Perennial	Adventive
vitrip	*Vitis riparia*	*Vitis riparia*	River-Bank Grape	2	FACW	Vine	Perennial	Native

SITE: Wetland 10 - CTA Red Line Extension
LOCALE: Lake Calumet
BY: J Mengler
DATE: 8/13/2015

CONSERVATISM-BASED METRICS

MEAN C (NATIVE SPECIES)	1.50
MEAN C (ALL SPECIES)	0.75
MEAN C (NATIVE TREES)	1.50
MEAN C (NATIVE SHRUBS)	n/a
MEAN C (NATIVE HERBACEOUS)	1.00
FQAI (NATIVE SPECIES)	3.00
FQAI (ALL SPECIES)	2.12
ADJUSTED FQAI	10.61
% C VALUE 0	0.50
% C VALUE 1-3	0.50
% C VALUE 4-6	0.00
% C VALUE 7-10	0.00

ADDITIONAL METRICS

SPECIES RICHNESS (ALL)	8
SPECIES RICHNESS (NATIVE)	4
% NON-NATIVE	0.50
WET INDICATOR (ALL)	-0.13
WET INDICATOR (NATIVE)	-0.25
% HYDROPHYTE (MIDWEST)	0.63
% NATIVE PERENNIAL	0.50
% NATIVE ANNUAL	0.00
% ANNUAL	0.00
% PERENNIAL	0.88

SPECIES ACRONYM	SPECIES NAME (NWPL/ MOHLENBROCK)	SPECIES (SYNONYM)	COMMON NAME	C VALUE	MIDWEST WET INDICATOR	HABIT	DURATION	NATIVITY
arcmin	*Arctium minus*	*ARCTIUM MINUS*	Lesser Burrdock	0	FACU	Forb	Biennial	Adventive
artvul	*Artemisia vulgaris*	*ARTEMISIA VULGARIS*	Common Mugwort	0	UPL	Forb	Perennial	Adventive
frapen	*Fraxinus pennsylvanica*	*Fraxinus pennsylvanica subintegerrima*	Green Ash	1	FACW	Tree	Perennial	Native
lytsal	*Lythrum salicaria*	*LYTHRUM SALICARIA*	Purple Loosestrife	0	OBL	Forb	Perennial	Adventive
phrausu	*Phragmites australis ssp. australis*	*Phragmites australis*	Common Reed	0	FACW	Grass	Perennial	Adventive
popdel	*Populus deltoides*	*Populus deltoides*	Eastern Cottonwood	2	FAC	Tree	Perennial	Native
solalt	*Solidago altissima*	*Solidago altissima*	Tall Goldenrod	1	FACU	Forb	Perennial	Native
vitrip	*Vitis riparia*	*Vitis riparia*	River-Bank Grape	2	FACW	Vine	Perennial	Native

SITE: Wetland 11 - CTA Red Line Extension
LOCALE: Lake Calumet
BY: J Mengler, V Mosca
DATE: 8/19/2015

CONSERVATISM-BASED METRICS

MEAN C (NATIVE SPECIES)	2.00
MEAN C (ALL SPECIES)	1.00
MEAN C (NATIVE TREES)	2.00
MEAN C (NATIVE SHRUBS)	n/a
MEAN C (NATIVE HERBACEOUS)	n/a
FQAI (NATIVE SPECIES)	2.83
FQAI (ALL SPECIES)	2.00
ADJUSTED FQAI	14.14
% C VALUE 0	0.50
% C VALUE 1-3	0.50
% C VALUE 4-6	0.00
% C VALUE 7-10	0.00

ADDITIONAL METRICS

SPECIES RICHNESS (ALL)	4
SPECIES RICHNESS (NATIVE)	2
% NON-NATIVE	0.50
WET INDICATOR (ALL)	-1.00
WET INDICATOR (NATIVE)	-0.50
% HYDROPHYTE (MIDWEST)	1.00
% NATIVE PERENNIAL	0.50
% NATIVE ANNUAL	0.00
% ANNUAL	0.00
% PERENNIAL	1.00

SPECIES ACRONYM	SPECIES NAME (NWPL/	SPECIES (SYNONYM)	COMMON NAME	C VALUE	MIDWEST WET INDICATOR	HABIT	DURATION	NATIVITY
lytsal	*Lythrum salicaria*	*LYTHRUM SALICARIA*	Purple Loosestrife	0	OBL	Forb	Perennial	Adventive
phrausu	*Phragmites australis ssp. australis*	*Phragmites australis*	Common Reed	0	FACW	Grass	Perennial	Adventive
popdel	*Populus deltoides*	*Populus deltoides*	Eastern Cottonwood	2	FAC	Tree	Perennial	Native
vitrip	*Vitis riparia*	*Vitis riparia*	River-Bank Grape	2	FACW	Vine	Perennial	Native

SITE: Wetland 12 - CTA Red Line Extension
LOCALE: Lake Calumet
BY: J Mengler, V Mosca
DATE: 8/13/2015

CONSERVATISM-BASED METRICS

MEAN C (NATIVE SPECIES)	1.50
MEAN C (ALL SPECIES)	0.67
MEAN C (NATIVE TREES)	1.50
MEAN C (NATIVE SHRUBS)	0.00
MEAN C (NATIVE HERBACEOUS)	1.00
FQAI (NATIVE SPECIES)	3.00
FQAI (ALL SPECIES)	2.00
ADJUSTED FQAI	10.00
% C VALUE 0	0.56
% C VALUE 1-3	0.44
% C VALUE 4-6	0.00
% C VALUE 7-10	0.00

ADDITIONAL METRICS

SPECIES RICHNESS (ALL)	9
SPECIES RICHNESS (NATIVE)	4
% NON-NATIVE	0.56
WET INDICATOR (ALL)	-0.11
WET INDICATOR (NATIVE)	-0.25
% HYDROPHYTE (MIDWEST)	0.67
% NATIVE PERENNIAL	0.44
% NATIVE ANNUAL	0.00
% ANNUAL	0.00
% PERENNIAL	0.89

SPECIES ACRONYM	SPECIES NAME (NWPL/ MOHLENBROCK)	SPECIES (SYNONYM)	COMMON NAME	C VALUE	MIDWEST WET INDICATOR	HABIT	DURATION	NATIVITY
arcmin	*Arctium minus*	*ARCTIUM MINUS*	Lesser Burrdock	0	FACU	Forb	Biennial	Adventive
artvul	*Artemisia vulgaris*	*ARTEMISIA VULGARIS*	Common Mugwort	0	UPL	Forb	Perennial	Adventive
Frapen	*Fraxinus pennsylvanica*	*Fraxinus pennsylvanica subintegerrima*	Green Ash	1	FACW	Tree	Perennial	Native
lytsal	*Lythrum salicaria*	*LYTHRUM SALICARIA*	Purple Loosestrife	0	OBL	Forb	Perennial	Adventive
phrausu	*Phragmites australis ssp. australis*	*Phragmites australis*	Common Reed	0	FACW	Grass	Perennial	Adventive
popdel	*Populus deltoides*	*Populus deltoides*	Eastern Cottonwood	2	FAC	Tree	Perennial	Native
rhacat	*Rhamnus cathartica*	*RHAMNUS CATHARTICA*	European Buckthorn	0	FAC	Shrub	Perennial	Adventive
solalt	*Solidago altissima*	*Solidago altissima*	Tall Goldenrod	1	FACU	Forb	Perennial	Native
vitrip	*Vitis riparia*	*Vitis riparia*	River-Bank Grape	2	FACW	Vine	Perennial	Native

SITE: Wetland 13 - CTA Red Line Extension
LOCALE: Lake Calumet
BY: J Mengler, V Mosca
DATE: 8/19/2015

CONSERVATISM-BASED METRICS

MEAN C (NATIVE SPECIES)	1.17
MEAN C (ALL SPECIES)	0.78
MEAN C (NATIVE TREES)	1.00
MEAN C (NATIVE SHRUBS)	1.00
MEAN C (NATIVE HERBACEOUS)	1.00
FQAI (NATIVE SPECIES)	2.86
FQAI (ALL SPECIES)	2.33
ADJUSTED FQAI	9.53
% C VALUE 0	0.44
% C VALUE 1-3	0.56
% C VALUE 4-6	0.00
% C VALUE 7-10	0.00

ADDITIONAL METRICS

SPECIES RICHNESS (ALL)	9
SPECIES RICHNESS (NATIVE)	6
% NON-NATIVE	0.33
WET INDICATOR (ALL)	-0.67
WET INDICATOR (NATIVE)	-0.17
% HYDROPHYTE (MIDWEST)	0.89
% NATIVE PERENNIAL	0.67
% NATIVE ANNUAL	0.00
% ANNUAL	0.00
% PERENNIAL	1.00

SPECIES ACRONYM	SPECIES NAME (NWPL/ MOHLENBROCK)	SPECIES (SYNONYM)	COMMON NAME	C VALUE	MIDWEST WET INDICATOR	HABIT	DURATION	NATIVITY
aceneg	*Acer negundo*	*Acer negundo var. violaceum*	Box Elder	0	FAC	Tree	Perennial	Native
consep	*Calystegia sepium*	*Convolvulus sepium*	Hedge False Bindweed	1	FAC	Forb	Perennial	Native
lytsal	*Lythrum salicaria*	*LYTHRUM SALICARIA*	Purple Loosestrife	0	OBL	Forb	Perennial	Adventive
phrausu	*Phragmites australis ssp. australis*	*Phragmites australis*	Common Reed	0	FACW	Grass	Perennial	Adventive
popdel	*Populus deltoides*	*Populus deltoides*	Eastern Cottonwood	2	FAC	Tree	Perennial	Native
samcan	*Sambucus nigra ssp. canadensis*	*Sambucus canadensis*	Black Elderberry	1	FACW	Shrub	Perennial	Native
solalt	*Solidago altissima*	*Solidago altissima*	Tall Goldenrod	1	FACU	Forb	Perennial	Native
typang	*Typha angustifolia*	*Typha angustifolia*	Narrow-Leaf Cat-Tail	0	OBL	Forb	Perennial	Adventive
vitrip	*Vitis riparia*	*Vitis riparia*	River-Bank Grape	2	FACW	Vine	Perennial	Native

SITE: Wetland 14 - CTA Red Line Extension
LOCALE: Lake Calumet
BY: J Mengler, V Mosca
DATE: 8/19/2015

CONSERVATISM-BASED METRICS

MEAN C (NATIVE SPECIES)	1.33
MEAN C (ALL SPECIES)	0.86
MEAN C (NATIVE TREES)	1.67
MEAN C (NATIVE SHRUBS)	0.00
MEAN C (NATIVE HERBACEOUS)	1.00
FQAI (NATIVE SPECIES)	4.00
FQAI (ALL SPECIES)	3.21
ADJUSTED FQAI	10.69
% C VALUE 0	0.50
% C VALUE 1-3	0.50
% C VALUE 4-6	0.00
% C VALUE 7-10	0.00

ADDITIONAL METRICS

SPECIES RICHNESS (ALL)	14
SPECIES RICHNESS (NATIVE)	9
% NON-NATIVE	0.36
WET INDICATOR (ALL)	-0.29
WET INDICATOR (NATIVE)	-0.44
% HYDROPHYTE (MIDWEST)	0.79
% NATIVE PERENNIAL	0.57
% NATIVE ANNUAL	0.07
% ANNUAL	0.07
% PERENNIAL	0.86

SPECIES ACRONYM	SPECIES NAME (NWPL/ MOHLENBROCK)	SPECIES (SYNONYM)	COMMON NAME	C VALUE	MIDWEST WET INDICATOR	HABIT	DURATION	NATIVITY
aceneg	*Acer negundo*	*Acer negundo var. violaceum*	Box Elder	0	FAC	Tree	Perennial	Native
ambtri	*Ambrosia trifida*	*Ambrosia trifida*	Great Ragweed	0	FAC	Forb	Annual	Native
arcmin	*Arctium minus*	*ARCTIUM MINUS*	Lesser Burrdock	0	FACU	Forb	Biennial	Adventive
consep	*Calystegia sepium*	*Convolvulus sepium*	Hedge False Bindweed	1	FAC	Forb	Perennial	Native
phaaru	*Phalaris arundinacea*	*PHALARIS ARUNDINACEA*	Reed Canary Grass	0	FACW	Grass	Perennial	Adventive
phrausu	*Phragmites australis ssp. australis*	*Phragmites australis*	Common Reed	0	FACW	Grass	Perennial	Adventive
popdel	*Populus deltoides*	*Populus deltoides*	Eastern Cottonwood	2	FAC	Tree	Perennial	Native
rhacat	*Rhamnus cathartica*	*RHAMNUS CATHARTICA*	European Buckthorn	0	FAC	Shrub	Perennial	Adventive
solalt	*Solidago altissima*	*Solidago altissima*	Tall Goldenrod	1	FACU	Forb	Perennial	Native
sonuli	*Sonchus arvensis ssp. uliginosus*	*SONCHUS ULIGINOSUS*	Field Sow-Thistle	0	FACU	Forb	Perennial	Adventive
typlat	*Typha latifolia*	*Typha latifolia*	Broad-Leaf Cat-Tail	1	OBL	Forb	Perennial	Native
ulmame	*Ulmus americana*	*Ulmus americana*	American Elm	3	FACW	Tree	Perennial	Native
urtpro	*Urtica dioica ssp. gracilis*	*Urtica procera*	Tall Nettle	2	FACW	Forb	Perennial	Native
vitrip	*Vitis riparia*	*Vitis riparia*	River-Bank Grape	2	FACW	Vine	Perennial	Native

SITE: Wetland 15 - CTA Red Line Extension
LOCALE: Lake Calumet
BY: J Mengler, V Mosca
DATE: 8/19/2015

CONSERVATISM-BASED METRICS

MEAN C (NATIVE SPECIES)	1.00
MEAN C (ALL SPECIES)	0.50
MEAN C (NATIVE TREES)	0.00
MEAN C (NATIVE SHRUBS)	0.00
MEAN C (NATIVE HERBACEOUS)	1.00
FQAI (NATIVE SPECIES)	2.00
FQAI (ALL SPECIES)	1.41
ADJUSTED FQAI	7.07
% C VALUE 0	0.63
% C VALUE 1-3	0.38
% C VALUE 4-6	0.00
% C VALUE 7-10	0.00

ADDITIONAL METRICS

SPECIES RICHNESS (ALL)	8
SPECIES RICHNESS (NATIVE)	4
% NON-NATIVE	0.50
WET INDICATOR (ALL)	-0.63
WET INDICATOR (NATIVE)	0.00
% HYDROPHYTE (MIDWEST)	0.88
% NATIVE PERENNIAL	0.50
% NATIVE ANNUAL	0.00
% ANNUAL	0.00
% PERENNIAL	1.00

SPECIES ACRONYM	SPECIES NAME (NWPL/ MOHLENBROCK)	SPECIES (SYNONYM)	COMMON NAME	C VALUE	MIDWEST WET INDICATOR	HABIT	DURATION	NATIVITY
aceneg	*Acer negundo*	*Acer negundo var. violaceum*	Box Elder	0	FAC	Tree	Perennial	Native
consep	*Calystegia sepium*	*Convolvulus sepium*	Hedge False Bindweed	1	FAC	Forb	Perennial	Native
lytsal	*Lythrum salicaria*	*LYTHRUM SALICARIA*	Purple Loosestrife	0	OBL	Forb	Perennial	Adventive
phrausu	*Phragmites australis ssp. australis*	*Phragmites australis*	Common Reed	0	FACW	Grass	Perennial	Adventive
rhacat	*Rhamnus cathartica*	*RHAMNUS CATHARTICA*	European Buckthorn	0	FAC	Shrub	Perennial	Adventive
solalt	*Solidago altissima*	*Solidago altissima*	Tall Goldenrod	1	FACU	Forb	Perennial	Native
typang	*Typha angustifolia*	*Typha angustifolia*	Narrow-Leaf Cat-Tail	0	OBL	Forb	Perennial	Adventive
vitrip	*Vitis riparia*	*Vitis riparia*	River-Bank Grape	2	FACW	Vine	Perennial	Native

WETLAND DETERMINATION DATA FORM - Midwest Region

Project/Site: Lake Calumet CTA Red Line Extension | City/County: Cook | Sampling Date: 8/13/2015

Applicant/Owner: CTA/MWRD | State: Illinois | Sampling Point: 1

Investigator(s): J Mengler, V Mosca | Section, Township, Range: T34N R14E S26

Landform (hillslope, terrace, etc.): ditch | Local relief (concave, convex, none): ditch

Slope (%): | Lat: 41.660019 | Long: -87.595429 | Datum:

Soil Map Unit Name: urban land-orthents clayey complex, nearly level | NWI Classification: none

Are climatic/hydrologic conditions of the site typical for this time of the year? Y (If no, explain in remarks)

Are vegetation , soil Y , or hydrology significantly disturbed? Y Are "normal circumstances"

Are vegetation , soil , or hydrology naturally problematic? N present? Y

SUMMARY OF FINDINGS

(If needed, explain any answers in remarks.)

Hydrophytic vegetation present?	Y		
Hydric soil present?		**Is the sampled area within a wetland?**	Y
Wetland hydrology present?	Y	If yes, optional wetland site ID:	Wetland 1

Remarks: (Explain alternative procedures here or in a separate report.)

Relied primarily upon vegetation and landscape position due to dry time of season, and mostly urbanland/fill for substrate.

VEGETATION -- Use scientific names of plants.

Tree Stratum (Plot size: 9 m)	Absolute % Cover	Dominant Species	Indicator Status
1 *Populus deltoides*	20	Y	FAC
2 *Acer saccharinum*	20	Y	FACW
3 *Ulmus americana*	5	N	FACW
4			
5			
	45	= Total Cover	

Sapling/Shrub stratum (Plot size: 4.6 m)			
1 *Salix interior*	15	Y	FACW
2 *Populus deltoides*	10	Y	FAC
3 *Fraxinus pennsylvanica*	5	N	FACW
4			
5			
	30	= Total Cover	

Herb stratum (Plot size: 1 m sq)			
1 *Phragmites australis*	95	Y	FACW
2			
3			
4			
5			
6			
7			
8			
9			
10			
	95	= Total Cover	

Woody vine stratum (Plot size: 1 m sq)			
1			
2			
	0	= Total Cover	

Dominance Test Worksheet

Number of Dominant Species that are OBL, FACW, or FAC: 5 (A)

Total Number of Dominant Species Across all Strata: 5 (B)

Percent of Dominant Species that are OBL, FACW, or FAC: 100.00% (A/B)

Prevalence Index Worksheet

Total % Cover of:

OBL species	0	x 1 =	0
FACW species	140	x 2 =	280
FAC species	30	x 3 =	90
FACU species	0	x 4 =	0
UPL species	0	x 5 =	0
Column totals	170 (A)		370 (B)

Prevalence Index = B/A = 2.18

Hydrophytic Vegetation Indicators:

- Rapid test for hydrophytic vegetation
- X Dominance test is >50%
- X Prevalence index is ≤3.0*
- Morphological adaptations* (provide supporting data in Remarks or on a separate sheet)
- Problematic hydrophytic vegetation* (explain)

*Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic

Hydrophytic vegetation present? Y

Remarks: (Include photo numbers here or on a separate sheet)

SOIL **Sampling Point:** 1

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (Inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type*	Loc**	Texture	Remarks

*Type: C = Concentration, D = Depletion, RM = Reduced Matrix, MS = Masked Sand Grains. **Location: PL = Pore Lining, M = Matrix

Hydric Soil Indicators:

- ___ Histisol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ 2 cm Muck (A10)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ 5 cm Mucky Peat or Peat (S3)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils:

- ___ Coast Prairie Redox (A16) (**LRR K, L, R**)
- ___ Dark Surface (S7) (**LRR K, L)**
- ___ 5 cm Mucky Peat or Peat (S3) (**LRR K, L, R**)
- ___ Iron-Manganese Masses (F12) (**LRR K, L, R**)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (explain in remarks)

*Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic

Restrictive Layer (if observed):
Type: gravel, ballast, fill
Depth (inches): not determined

Hydric soil present? ___

Remarks:

Area mapped as urban land, and located along road at base of another road embankment. Probe refusal within 2-4 inches due to gravel and fill.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- X Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- X Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- X Sparsely Vegetated Concave Surface (B8)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ True Aquatic Plants (B14)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Gauge or Well Data (D9)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- X Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ___ Geomorphic Position (D2)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface water present?	Yes		No	X	Depth (inches):	
Water table present?	Yes		No	X	Depth (inches):	
Saturation present? (includes capillary fringe)	Yes	X	No		Depth (inches):	0

Wetland hydrology present? Y

Describe recorded data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

Saturation within ditch channel lined by hydrophytes.

WETLAND DETERMINATION DATA FORM - Midwest Region

Project/Site: Lake Calumet CTA Red Line Extension | City/County: Cook | Sampling Date: 8/13/2015

Applicant/Owner: CTA/MWRD | State: Illinois | Sampling Point: 2

Investigator(s): J Mengler, V Mosca | Section, Township, Range: T37N, R14E, S26

Landform (hillslope, terrace, etc.): ditch | Local relief (concave, convex, none): ditch

Slope (%): | Lat: 41.6906323 | Long: -87.6205465 | Datum:

Soil Map Unit Name: urban land-orthents clayey complex, nearly level | NWI Classification: none

Are climatic/hydrologic conditions of the site typical for this time of the year? Y (If no, explain in remarks)

Are vegetation , soil Y , or hydrology significantly disturbed? Y Are "normal circumstances"

Are vegetation , soil , or hydrology naturally problematic? N present? Y

SUMMARY OF FINDINGS

(If needed, explain any answers in remarks.)

Hydrophytic vegetation present?	Y		
Hydric soil present?		**Is the sampled area within a wetland?**	Y
Wetland hydrology present?	Y	If yes, optional wetland site ID:	Wetland 2

Remarks: (Explain alternative procedures here or in a separate report.)

Relied primarily upon vegetation and landscape position due to dry time of season, and mostly urbanland/fill for substrate.

VEGETATION -- Use scientific names of plants.

Tree Stratum (Plot size: 9 m)	Absolute % Cover	Dominant Species	Indicator Status
1			
2			
3			
4			
5			
	0 = Total Cover		
Sapling/Shrub stratum (Plot size: 4.6 m)			
1			
2			
3			
4			
5			
	0 = Total Cover		
Herb stratum (Plot size: 1 m sq)			
1 *Phragmites australis*	95	Y	FACW
2			
3			
4			
5			
6			
7			
8			
9			
10			
	95 = Total Cover		
Woody vine stratum (Plot size: 1 m sq)			
1			
2			
	0 = Total Cover		

Dominance Test Worksheet

Number of Dominant Species that are OBL, FACW, or FAC: 1 (A)

Total Number of Dominant Species Across all Strata: 1 (B)

Percent of Dominant Species that are OBL, FACW, or FAC: 100.00% (A/B)

Prevalence Index Worksheet

Total % Cover of:

OBL species	0	x 1 =	0
FACW species	95	x 2 =	190
FAC species	0	x 3 =	0
FACU species	0	x 4 =	0
UPL species	0	x 5 =	0
Column totals	95 (A)		190 (B)

Prevalence Index = B/A = 2.00

Hydrophytic Vegetation Indicators:

- Rapid test for hydrophytic vegetation
- X Dominance test is >50%
- X Prevalence index is ≤3.0*
- Morphological adaptations* (provide supporting data in Remarks or on a separate sheet)
- Problematic hydrophytic vegetation* (explain)

*Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic

Hydrophytic vegetation present? Y

Remarks: (Include photo numbers here or on a separate sheet)

SOIL

Sampling Point: 2

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (Inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type*	Loc**	Texture	Remarks

*Type: C = Concentration, D = Depletion, RM = Reduced Matrix, MS = Masked Sand Grains. **Location: PL = Pore Lining, M = Matrix

Hydric Soil Indicators:

- ___ Histisol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ 2 cm Muck (A10)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ 5 cm Mucky Peat or Peat (S3)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils:

- ___ Coast Prairie Redox (A16) (**LRR K, L, R**)
- ___ Dark Surface (S7) (**LRR K, L)**
- ___ 5 cm Mucky Peat or Peat (S3) (**LRR K, L, R**)
- ___ Iron-Manganese Masses (F12) (**LRR K, L, R**)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (explain in remarks)

*Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic

Restrictive Layer (if observed):

Type: gravel, ballast, fill

Depth (inches): not determined

Hydric soil present? ___

Remarks:

Area mapped as urban land, and located along road at base of another road embankment. Probe refusal within 2-4 inches due to gravel and fill.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- X Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- X Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- X Sparsely Vegetated Concave Surface (B8)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ True Aquatic Plants (B14)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Gauge or Well Data (D9)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- X Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ___ Geomorphic Position (D2)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface water present?	Yes		No	X	Depth (inches):	0-Jan
Water table present?	Yes		No	X	Depth (inches):	
Saturation present? (includes capillary fringe)	Yes	X	No		Depth (inches):	0

Wetland hydrology present? Y

Describe recorded data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

Saturation within ditch channel lined by hydrophytes.

WETLAND DETERMINATION DATA FORM - Midwest Region

Project/Site: Lake Calumet CTA Red Line Extension | City/County: Cook | Sampling Date: 8/13/2015

Applicant/Owner: CTA/MWRD | State: Illinois | Sampling Point: 3

Investigator(s): J Mengler, V Mosca | Section, Township, Range: T37N, R14E, S26

Landform (hillslope, terrace, etc.): ditch | Local relief (concave, convex, none): ditch

Slope (%): | Lat: 41.660463 | Long: -87.59576 | Datum:

Soil Map Unit Name: urban land-orthents clayey complex, nearly level | NWI Classification: none

Are climatic/hydrologic conditions of the site typical for this time of the year? Y (If no, explain in remarks)

Are vegetation , soil Y , or hydrology significantly disturbed? Y Are "normal circumstances"

Are vegetation , soil , or hydrology naturally problematic? N present? Y

SUMMARY OF FINDINGS

(If needed, explain any answers in remarks.)

Hydrophytic vegetation present?	Y		
Hydric soil present?		**Is the sampled area within a wetland?**	Y
Wetland hydrology present?	Y	If yes, optional wetland site ID:	Wetland 3

Remarks: (Explain alternative procedures here or in a separate report.)

Relied primarily upon vegetation and landscape position due to dry time of season, and mostly urbanland/fill for substrate.

VEGETATION -- Use scientific names of plants.

Tree Stratum (Plot size: 9 m)	Absolute % Cover	Dominant Species	Indicator Status
1			
2			
3			
4			
5			
	0	= Total Cover	

Sapling/Shrub stratum (Plot size: 4.6 m)			
1			
2			
3			
4			
5			
	0	= Total Cover	

Herb stratum (Plot size: 1 m sq)			
1 *Phragmites australis*	95	Y	FACW
2 *Lythrum salicaria*	10	N	OBL
3			
4			
5			
6			
7			
8			
9			
10			
	105	= Total Cover	

Woody vine stratum (Plot size: 1 m sq)			
1			
2			
	0	= Total Cover	

Dominance Test Worksheet

Number of Dominant Species that are OBL, FACW, or FAC: 1 (A)

Total Number of Dominant Species Across all Strata: 1 (B)

Percent of Dominant Species that are OBL, FACW, or FAC: 100.00% (A/B)

Prevalence Index Worksheet

Total % Cover of:

OBL species	10	x 1 =	10
FACW species	95	x 2 =	190
FAC species	0	x 3 =	0
FACU species	0	x 4 =	0
UPL species	0	x 5 =	0
Column totals	105 (A)		200 (B)

Prevalence Index = B/A = 1.90

Hydrophytic Vegetation Indicators:

- Rapid test for hydrophytic vegetation
- X Dominance test is >50%
- X Prevalence index is ≤3.0*
- Morphological adaptations* (provide supporting data in Remarks or on a separate sheet)
- Problematic hydrophytic vegetation* (explain)

*Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic

Hydrophytic vegetation present? Y

Remarks: (Include photo numbers here or on a separate sheet)

SOIL **Sampling Point:** 3

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (Inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type*	Loc**	Texture	Remarks

*Type: C = Concentration, D = Depletion, RM = Reduced Matrix, MS = Masked Sand Grains. **Location: PL = Pore Lining, M = Matrix

Hydric Soil Indicators:

- ___ Histisol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ 2 cm Muck (A10)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ 5 cm Mucky Peat or Peat (S3)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils:

- ___ Coast Prairie Redox (A16) (**LRR K, L, R**)
- ___ Dark Surface (S7) (**LRR K, L)**
- ___ 5 cm Mucky Peat or Peat (S3) (**LRR K, L, R**)
- ___ Iron-Manganese Masses (F12) (**LRR K, L, R**)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (explain in remarks)

*Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic

Restrictive Layer (if observed):
Type: gravel, ballast, fill
Depth (inches): not determined

Hydric soil present? ___

Remarks:

Area mapped as urban land, and located between gravel parking lot and gravel road. Probe refusal within 2-4 inches due to gravel and fill.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- X Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- X Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ True Aquatic Plants (B14)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Gauge or Well Data (D9)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- X Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ___ Geomorphic Position (D2)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface water present?	Yes		No	X	Depth (inches):	
Water table present?	Yes		No	X	Depth (inches):	
Saturation present? (includes capillary fringe)	Yes	X	No		Depth (inches):	0

Wetland hydrology present? Y

Describe recorded data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

Saturation within ditch/swale channel at lowest point in local landscape.

WETLAND DETERMINATION DATA FORM - Midwest Region

Project/Site: Lake Calumet CTA Red Line Extension | City/County: Cook | Sampling Date: 8/13/2015

Applicant/Owner: CTA/MWRD | State: Illinois | Sampling Point: 4

Investigator(s): J Mengler, V Mosca | Section, Township, Range: T37N, R14E, S27

Landform (hillslope, terrace, etc.): swale at toe of slope | Local relief (concave, convex, none): swale

Slope (%): | Lat: 41.659641 | Long: -87.599965 | Datum:

Soil Map Unit Name: orthents, clayey undulating | NWI Classification: PF01/EMCd

Are climatic/hydrologic conditions of the site typical for this time of the year? Y (If no, explain in remarks)

Are vegetation , soil Y , or hydrology significantly disturbed? Y Are "normal circumstances"

Are vegetation , soil , or hydrology naturally problematic? N present? Y

SUMMARY OF FINDINGS

(If needed, explain any answers in remarks.)

Hydrophytic vegetation present?	Y		
Hydric soil present?		**Is the sampled area within a wetland?**	Y
Wetland hydrology present?	Y	If yes, optional wetland site ID:	Wetland 4

Remarks: (Explain alternative procedures here or in a separate report.)

Relied primarily upon vegetation and landscape position due to dry time of season, and mostly urbanland/fill for substrate.

VEGETATION -- Use scientific names of plants.

Tree Stratum (Plot size: 9 m)	Absolute % Cover	Dominant Species	Indicator Status
1			
2			
3			
4			
5			
	0	= Total Cover	

Sapling/Shrub stratum (Plot size: 4.6 m)			
1			
2			
3			
4			
5			
	0	= Total Cover	

Herb stratum (Plot size: 1 m sq)			
1 *Phragmites australis*	100	Y	FACW
2 *Lythrum salicaria*	20	N	OBL
3			
4			
5			
6			
7			
8			
9			
10			
	120	= Total Cover	

Woody vine stratum (Plot size: 1 m sq)			
1			
2			
	0	= Total Cover	

Dominance Test Worksheet

Number of Dominant Species that are OBL, FACW, or FAC: 1 (A)

Total Number of Dominant Species Across all Strata: 1 (B)

Percent of Dominant Species that are OBL, FACW, or FAC: 100.00% (A/B)

Prevalence Index Worksheet

Total % Cover of:

OBL species	20	x 1 =	20	
FACW species	100	x 2 =	200	
FAC species	0	x 3 =	0	
FACU species	0	x 4 =	0	
UPL species	0	x 5 =	0	
Column totals	120	(A)	220	(B)

Prevalence Index = B/A = 1.83

Hydrophytic Vegetation Indicators:

- Rapid test for hydrophytic vegetation
- X Dominance test is >50%
- X Prevalence index is ≤3.0*
- Morphological adaptations* (provide supporting data in Remarks or on a separate sheet)
- Problematic hydrophytic vegetation* (explain)

*Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic

Hydrophytic vegetation present? Y

Remarks: (Include photo numbers here or on a separate sheet)

SOIL

Sampling Point: 4

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (Inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type*	Loc**	Texture	Remarks

*Type: C = Concentration, D = Depletion, RM = Reduced Matrix, MS = Masked Sand Grains. **Location: PL = Pore Lining, M = Matrix

Hydric Soil Indicators:

- ___ Histisol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ 2 cm Muck (A10)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ 5 cm Mucky Peat or Peat (S3)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils:

- ___ Coast Prairie Redox (A16) (**LRR K, L, R**)
- ___ Dark Surface (S7) (**LRR K, L)**
- ___ 5 cm Mucky Peat or Peat (S3) (**LRR K, L, R**)
- ___ Iron-Manganese Masses (F12) (**LRR K, L, R**)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (explain in remarks)

*Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic

Restrictive Layer (if observed):

Type: gravel, ballast, fill

Depth (inches): not determined

Hydric soil present? ___

Remarks:

Area mapped as urban land, and located road and berm around sewage lagoons.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- X Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- X Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ True Aquatic Plants (B14)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Gauge or Well Data (D9)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- X Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ___ Geomorphic Position (D2)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface water present?	Yes		No	X	Depth (inches):	
Water table present?	Yes		No	X	Depth (inches):	
Saturation present? (includes capillary fringe)	Yes	X	No		Depth (inches):	0

Wetland hydrology present? Y

Describe recorded data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

Saturation within swale channel at lowest point in local landscape.

WETLAND DETERMINATION DATA FORM - Midwest Region

Project/Site: Lake Calumet CTA Red Line Extension | City/County: Cook | Sampling Date: 8/13/2015

Applicant/Owner: CTA/MWRD | State: Illinois | Sampling Point: 5

Investigator(s): J Mengler, V Mosca | Section, Township, Range: T37N, R14E, S26 & 27

Landform (hillslope, terrace, etc.): swale | Local relief (concave, convex, none): swale

Slope (%): | Lat: 41.663596 | Long: -87.598043 | Datum:

Soil Map Unit Name: orthents, loamy, nearly level | NWI Classification: none

Are climatic/hydrologic conditions of the site typical for this time of the year? Y (If no, explain in remarks)

Are vegetation , soil Y , or hydrology significantly disturbed? Y Are "normal circumstances"

Are vegetation , soil , or hydrology naturally problematic? N present? Y

SUMMARY OF FINDINGS

(If needed, explain any answers in remarks.)

Hydrophytic vegetation present?	Y		
Hydric soil present?		**Is the sampled area within a wetland?**	Y
Wetland hydrology present?	Y	If yes, optional wetland site ID:	Wetland 5

Remarks: (Explain alternative procedures here or in a separate report.)

Relied primarily upon vegetation and landscape position due to dry time of season, and mostly urbanland/fill for substrate.

VEGETATION -- Use scientific names of plants.

Tree Stratum (Plot size: 9 m)	Absolute % Cover	Dominant Species	Indicator Status
1			
2			
3			
4			
5			
	0	= Total Cover	

Sapling/Shrub stratum (Plot size: 4.6 m)			
1			
2			
3			
4			
5			
	0	= Total Cover	

Herb stratum (Plot size: 1 m sq)			
1 *Phragmites australis*	100	Y	FACW
2			
3			
4			
5			
6			
7			
8			
9			
10			
	100	= Total Cover	

Woody vine stratum (Plot size: 1 m sq)			
1			
2			
	0	= Total Cover	

Dominance Test Worksheet

Number of Dominant Species that are OBL, FACW, or FAC: 1 (A)

Total Number of Dominant Species Across all Strata: 1 (B)

Percent of Dominant Species that are OBL, FACW, or FAC: 100.00% (A/B)

Prevalence Index Worksheet

Total % Cover of:

OBL species	0	x 1 =	0
FACW species	100	x 2 =	200
FAC species	0	x 3 =	0
FACU species	0	x 4 =	0
UPL species	0	x 5 =	0
Column totals	100 (A)		200 (B)

Prevalence Index = B/A = 2.00

Hydrophytic Vegetation Indicators:

- Rapid test for hydrophytic vegetation
- X Dominance test is >50%
- X Prevalence index is ≤3.0*
- Morphological adaptations* (provide supporting data in Remarks or on a separate sheet)
- Problematic hydrophytic vegetation* (explain)

*Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic

Hydrophytic vegetation present? Y

Remarks: (Include photo numbers here or on a separate sheet)

SOIL **Sampling Point:** 5

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (Inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type*	Loc**	Texture	Remarks

*Type: C = Concentration, D = Depletion, RM = Reduced Matrix, MS = Masked Sand Grains. **Location: PL = Pore Lining, M = Matrix

Hydric Soil Indicators:

- ___ Histisol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ 2 cm Muck (A10)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ 5 cm Mucky Peat or Peat (S3)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils:

- ___ Coast Prairie Redox (A16) (**LRR K, L, R**)
- ___ Dark Surface (S7) (**LRR K, L)**
- ___ 5 cm Mucky Peat or Peat (S3) (**LRR K, L, R**)
- ___ Iron-Manganese Masses (F12) (**LRR K, L, R**)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (explain in remarks)

*Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic

Restrictive Layer (if observed):

Type: gravel, ballast, fill

Depth (inches): not determined

Hydric soil present? ___

Remarks:

Area mapped as urban land, and located between roads

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- X Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- X Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ True Aquatic Plants (B14)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Gauge or Well Data (D9)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- X Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ___ Geomorphic Position (D2)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface water present?	Yes		No	X	Depth (inches):	
Water table present?	Yes		No	X	Depth (inches):	
Saturation present? (includes capillary fringe)	Yes	X	No		Depth (inches):	0

Wetland hydrology present? Y

Describe recorded data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

Saturation within drainage swale along road.

WETLAND DETERMINATION DATA FORM - Midwest Region

Project/Site: Lake Calumet CTA Red Line Extension | City/County: Cook | Sampling Date: 8/13/2015

Applicant/Owner: CTA/MWRD | State: Illinois | Sampling Point: 6

Investigator(s): J Mengler, V Mosca | Section, Township, Range: T37N, R14E, S27

Landform (hillslope, terrace, etc.): swale | Local relief (concave, convex, none): swale

Slope (%): | Lat: 41.669077 | Long: -87.601542 | Datum:

Soil Map Unit Name: orthents, loamy, nearly level | NWI Classification: none

Are climatic/hydrologic conditions of the site typical for this time of the year? Y (If no, explain in remarks)

Are vegetation , soil Y , or hydrology significantly disturbed? Y Are "normal circumstances"

Are vegetation , soil , or hydrology naturally problematic? N present? Y

SUMMARY OF FINDINGS

(If needed, explain any answers in remarks.)

Hydrophytic vegetation present?	Y		
Hydric soil present?		**Is the sampled area within a wetland?**	Y
Wetland hydrology present?	Y	If yes, optional wetland site ID:	Wetland 6

Remarks: (Explain alternative procedures here or in a separate report.)

Relied primarily upon vegetation and landscape position due to dry time of season, and mostly urbanland/fill for substrate.

VEGETATION -- Use scientific names of plants.

Tree Stratum (Plot size: 9 m)	Absolute % Cover	Dominant Species	Indicator Status
1			
2			
3			
4			
5			
	0	= Total Cover	
Sapling/Shrub stratum (Plot size: 4.6 m)			
1			
2			
3			
4			
5			
	0	= Total Cover	
Herb stratum (Plot size: 1 m sq)			
1 *Phragmites australis*	80	Y	FACW
2 *Lythrum salicaria*	10	N	OBL
3 *Typha angustifolia*	10	N	OBL
4 *Helianthus grosseserratus*	2	N	FACW
5 *Verbena hastata*	2	N	FACW
6			
7			
8			
9			
10			
	104	= Total Cover	
Woody vine stratum (Plot size: 1 m sq)			
1			
2			
	0	= Total Cover	

Dominance Test Worksheet

Number of Dominant Species that are OBL, FACW, or FAC: 1 (A)

Total Number of Dominant Species Across all Strata: 1 (B)

Percent of Dominant Species that are OBL, FACW, or FAC: 100.00% (A/B)

Prevalence Index Worksheet

Total % Cover of:

OBL species	20	x 1 =	20	
FACW species	84	x 2 =	168	
FAC species	0	x 3 =	0	
FACU species	0	x 4 =	0	
UPL species	0	x 5 =	0	
Column totals	104	(A)	188	(B)

Prevalence Index = B/A = 1.81

Hydrophytic Vegetation Indicators:

- Rapid test for hydrophytic vegetation
- X Dominance test is >50%
- X Prevalence index is ≤3.0*
- Morphological adaptations* (provide supporting data in Remarks or on a separate sheet)
- Problematic hydrophytic vegetation* (explain)

*Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic

Hydrophytic vegetation present? Y

Remarks: (Include photo numbers here or on a separate sheet)

SOIL

Sampling Point: 6

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (Inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type*	Loc**	Texture	Remarks

*Type: C = Concentration, D = Depletion, RM = Reduced Matrix, MS = Masked Sand Grains. **Location: PL = Pore Lining, M = Matrix

Hydric Soil Indicators:

- ___ Histisol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ 2 cm Muck (A10)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ 5 cm Mucky Peat or Peat (S3)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils:

- ___ Coast Prairie Redox (A16) (**LRR K, L, R**)
- ___ Dark Surface (S7) (**LRR K, L)**
- ___ 5 cm Mucky Peat or Peat (S3) (**LRR K, L, R**)
- ___ Iron-Manganese Masses (F12) (**LRR K, L, R**)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (explain in remarks)

*Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic

Restrictive Layer (if observed):

Type: gravel, ballast, fill

Depth (inches): not determined

Hydric soil present? ___

Remarks:

Area mapped as urban land, and located between road and railroad.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- X Water Marks (B1)
- X Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- X Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- X Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ True Aquatic Plants (B14)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Gauge or Well Data (D9)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- X Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ___ Geomorphic Position (D2)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface water present?	Yes		No	X	Depth (inches):	
Water table present?	Yes		No	X	Depth (inches):	
Saturation present? (includes capillary fringe)	Yes	X	No		Depth (inches):	0

Wetland hydrology present? Y

Describe recorded data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

Saturation within drainage swale along railroad.

WETLAND DETERMINATION DATA FORM - Midwest Region

Project/Site: Lake Calumet CTA Red Line Extension | City/County: Cook | Sampling Date: 8/13/2015

Applicant/Owner: CTA/MWRD | State: Illinois | Sampling Point: 7

Investigator(s): J Mengler, V Mosca | Section, Township, Range: T37N, R14E, S27

Landform (hillslope, terrace, etc.): swale | Local relief (concave, convex, none): swale

Slope (%): | Lat: 41.669077 | Long: -87.601542 | Datum:

Soil Map Unit Name: orthents, loamy, nearly level | NWI Classification: none

Are climatic/hydrologic conditions of the site typical for this time of the year? Y (If no, explain in remarks)

Are vegetation , soil Y , or hydrology significantly disturbed? Y Are "normal circumstances"

Are vegetation , soil , or hydrology naturally problematic? N present? Y

SUMMARY OF FINDINGS

(If needed, explain any answers in remarks.)

Hydrophytic vegetation present?	Y		
Hydric soil present?		**Is the sampled area within a wetland?**	N
Wetland hydrology present?	N	If yes, optional wetland site ID:	

Remarks: (Explain alternative procedures here or in a separate report.)

Relied primarily upon vegetation and landscape position due to dry time of season, and mostly urbanland/fill for substrate.

VEGETATION -- Use scientific names of plants.

Tree Stratum (Plot size: 9 m)	Absolute % Cover	Dominant Species	Indicator Status
1			
2			
3			
4			
5			
	0	= Total Cover	
Sapling/Shrub stratum (Plot size: 4.6 m)			
1 *Rhamnus cathartica*	100	Y	FAC
2			
3			
4			
5			
	100	= Total Cover	
Herb stratum (Plot size: 1 m sq)			
1	80	Y	
2	10	N	
3	10	N	
4	2	N	
5	2	N	
6			
7			
8			
9			
10			
	104	= Total Cover	
Woody vine stratum (Plot size: 1 m sq)			
1			
2			
	0	= Total Cover	

Dominance Test Worksheet

Number of Dominant Species that are OBL, FACW, or FAC: 1 (A)

Total Number of Dominant Species Across all Strata: 2 (B)

Percent of Dominant Species that are OBL, FACW, or FAC: 50.00% (A/B)

Prevalence Index Worksheet

Total % Cover of:			
OBL species	0	x 1 =	0
FACW species	0	x 2 =	0
FAC species	100	x 3 =	300
FACU species	0	x 4 =	0
UPL species	0	x 5 =	0
Column totals	100 (A)		300 (B)

Prevalence Index = B/A = 3.00

Hydrophytic Vegetation Indicators:

- Rapid test for hydrophytic vegetation
- Dominance test is >50%
- X Prevalence index is ≤3.0*
- Morphological adaptations* (provide supporting data in Remarks or on a separate sheet)
- Problematic hydrophytic vegetation* (explain)

*Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic

Hydrophytic vegetation present? Y

Remarks: (Include photo numbers here or on a separate sheet)

SOIL

Sampling Point: 7

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (Inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type*	Loc**	Texture	Remarks

*Type: C = Concentration, D = Depletion, RM = Reduced Matrix, MS = Masked Sand Grains. **Location: PL = Pore Lining, M = Matrix

Hydric Soil Indicators:

- ___ Histisol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ 2 cm Muck (A10)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ 5 cm Mucky Peat or Peat (S3)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils:

- ___ Coast Prairie Redox (A16) (**LRR K, L, R**)
- ___ Dark Surface (S7) (**LRR K, L)**
- ___ 5 cm Mucky Peat or Peat (S3) (**LRR K, L, R**)
- ___ Iron-Manganese Masses (F12) (**LRR K, L, R**)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (explain in remarks)

*Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic

Restrictive Layer (if observed):

Type: gravel, ballast, fill

Depth (inches): not determined

Hydric soil present? ___

Remarks:

Area mapped as urban land, and 2-3 feet higher in elevation than adjacent wetland swales.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ True Aquatic Plants (B14)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Gauge or Well Data (D9)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ___ Geomorphic Position (D2)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface water present?	Yes	___	No	X	Depth (inches):	___
Water table present?	Yes	___	No	X	Depth (inches):	___
Saturation present? (includes capillary fringe)	Yes	___	No	X	Depth (inches):	0

Wetland hydrology present? N

Describe recorded data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

2-3 feet higher in elevation than adjacent wetland swales with no evidence of hydrology

WETLAND DETERMINATION DATA FORM - Midwest Region

Project/Site: Lake Calumet CTA Red Line Extension | City/County: Cook | Sampling Date: 8/13/2015

Applicant/Owner: CTA/MWRD | State: Illinois | Sampling Point: 8

Investigator(s): J Mengler, V Mosca | Section, Township, Range: T37N, R14E, S22 & 27

Landform (hillslope, terrace, etc.): swale | Local relief (concave, convex, none): swale

Slope (%): | Lat: 41.672876 | Long: -87.607044 | Datum:

Soil Map Unit Name: orthents, loamy, nearly level | NWI Classification: none

Are climatic/hydrologic conditions of the site typical for this time of the year? Y (If no, explain in remarks)

Are vegetation , soil Y , or hydrology significantly disturbed? Y Are "normal circumstances"

Are vegetation , soil , or hydrology naturally problematic? N present? Y

SUMMARY OF FINDINGS

(If needed, explain any answers in remarks.)

Hydrophytic vegetation present?	Y		
Hydric soil present?		**Is the sampled area within a wetland?**	Y
Wetland hydrology present?	Y	If yes, optional wetland site ID:	Wetland 7

Remarks: (Explain alternative procedures here or in a separate report.)

Relied primarily upon vegetation and landscape position due to dry time of season, and mostly urbanland/fill for substrate.

VEGETATION -- Use scientific names of plants.

Tree Stratum (Plot size: 9 m)	Absolute % Cover	Dominant Species	Indicator Status
1			
2			
3			
4			
5			
	0	= Total Cover	
Sapling/Shrub stratum (Plot size: 4.6 m)			
1			
2			
3			
4			
5			
	0	= Total Cover	
Herb stratum (Plot size: 1 m sq)			
1 *Phragmites australis*	80	Y	FACW
2 *Lythrum salicaria*	10	N	OBL
3 *Solidago graminifolia*	10	N	FACW
4 *Helianthus grosseserratus*	2	N	FACW
5 *Verbena hastata*	2	N	FACW
6			
7			
8			
9			
10			
	104	= Total Cover	
Woody vine stratum (Plot size: 1 m sq)			
1			
2			
	0	= Total Cover	

Dominance Test Worksheet

Number of Dominant Species that are OBL, FACW, or FAC: 1 (A)

Total Number of Dominant Species Across all Strata: 1 (B)

Percent of Dominant Species that are OBL, FACW, or FAC: 100.00% (A/B)

Prevalence Index Worksheet

Total % Cover of:

OBL species	10	x 1 =	10	
FACW species	94	x 2 =	188	
FAC species	0	x 3 =	0	
FACU species	0	x 4 =	0	
UPL species	0	x 5 =	0	
Column totals	104	(A)	198	(B)

Prevalence Index = B/A = 1.90

Hydrophytic Vegetation Indicators:

- Rapid test for hydrophytic vegetation
- X Dominance test is >50%
- X Prevalence index is ≤3.0*
- Morphological adaptations* (provide supporting data in Remarks or on a separate sheet)
- Problematic hydrophytic vegetation* (explain)

*Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic

Hydrophytic vegetation present? Y

Remarks: (Include photo numbers here or on a separate sheet)

SOIL

Sampling Point: 8

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (Inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type*	Loc**	Texture	Remarks

*Type: C = Concentration, D = Depletion, RM = Reduced Matrix, MS = Masked Sand Grains. **Location: PL = Pore Lining, M = Matrix

Hydric Soil Indicators:

- ___ Histisol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ 2 cm Muck (A10)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ 5 cm Mucky Peat or Peat (S3)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils:

- ___ Coast Prairie Redox (A16) (**LRR K, L, R**)
- ___ Dark Surface (S7) (**LRR K, L)**
- ___ 5 cm Mucky Peat or Peat (S3) (**LRR K, L, R**)
- ___ Iron-Manganese Masses (F12) (**LRR K, L, R**)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (explain in remarks)

*Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic

Restrictive Layer (if observed):

Type: gravel, ballast, fill

Depth (inches): not determined

Hydric soil present? ___

Remarks:

Area mapped as urban land, and located between railroad and gravel contractor yard.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- X Water Marks (B1)
- X Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- X Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- X Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ True Aquatic Plants (B14)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Gauge or Well Data (D9)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- X Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ___ Geomorphic Position (D2)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface water present?	Yes		No	X	Depth (inches):	
Water table present?	Yes		No	X	Depth (inches):	
Saturation present? (includes capillary fringe)	Yes	X	No		Depth (inches):	0

Wetland hydrology present? Y

Describe recorded data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

Saturation within drainage swale along railroad.

WETLAND DETERMINATION DATA FORM - Midwest Region

Project/Site: Lake Calumet CTA Red Line Extension | City/County: Cook | Sampling Date: 8/13/2015

Applicant/Owner: CTA/MWRD | State: Illinois | Sampling Point: 9

Investigator(s): J Mengler, V Mosca | Section, Township, Range: T37N, R14E, S27

Landform (hillslope, terrace, etc.): swale | Local relief (concave, convex, none): swale

Slope (%): | Lat: 41.669077 | Long: -87.601542 | Datum:

Soil Map Unit Name: orthents, loamy, nearly level | NWI Classification: none

Are climatic/hydrologic conditions of the site typical for this time of the year? Y (If no, explain in remarks)

Are vegetation , soil Y , or hydrology significantly disturbed? Y Are "normal circumstances"

Are vegetation , soil , or hydrology naturally problematic? N present? Y

SUMMARY OF FINDINGS

(If needed, explain any answers in remarks.)

Hydrophytic vegetation present?	Y		
Hydric soil present?		**Is the sampled area within a wetland?**	N
Wetland hydrology present?	N	If yes, optional wetland site ID:	

Remarks: (Explain alternative procedures here or in a separate report.)

Relied primarily upon vegetation and landscape position due to dry time of season, and mostly urbanland/fill for substrate.

VEGETATION -- Use scientific names of plants.

Tree Stratum (Plot size: 9 m)	Absolute % Cover	Dominant Species	Indicator Status
1			
2			
3			
4			
5			
	0	= Total Cover	
Sapling/Shrub stratum (Plot size: 4.6 m)			
1 *Rhamnus cathartica*	100	Y	FAC
2			
3			
4			
5			
	100	= Total Cover	
Herb stratum (Plot size: 1 m sq)			
1	80	Y	
2	10	N	
3	10	N	
4	2	N	
5	2	N	
6			
7			
8			
9			
10			
	104	= Total Cover	
Woody vine stratum (Plot size: 1 m sq)			
1			
2			
	0	= Total Cover	

Dominance Test Worksheet

Number of Dominant Species that are OBL, FACW, or FAC: 1 (A)

Total Number of Dominant Species Across all Strata: 2 (B)

Percent of Dominant Species that are OBL, FACW, or FAC: 50.00% (A/B)

Prevalence Index Worksheet

Total % Cover of:			
OBL species	0	x 1 =	0
FACW species	0	x 2 =	0
FAC species	100	x 3 =	300
FACU species	0	x 4 =	0
UPL species	0	x 5 =	0
Column totals	100 (A)		300 (B)

Prevalence Index = B/A = 3.00

Hydrophytic Vegetation Indicators:

- Rapid test for hydrophytic vegetation
- Dominance test is >50%
- X Prevalence index is ≤3.0*
- Morphological adaptations* (provide supporting data in Remarks or on a separate sheet)
- Problematic hydrophytic vegetation* (explain)

*Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic

Hydrophytic vegetation present? Y

Remarks: (Include photo numbers here or on a separate sheet)

SOIL **Sampling Point:** 9

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (Inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type*	Loc**	Texture	Remarks

*Type: C = Concentration, D = Depletion, RM = Reduced Matrix, MS = Masked Sand Grains. **Location: PL = Pore Lining, M = Matrix

Hydric Soil Indicators:

- ___ Histisol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ 2 cm Muck (A10)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ 5 cm Mucky Peat or Peat (S3)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils:

- ___ Coast Prairie Redox (A16) (**LRR K, L, R**)
- ___ Dark Surface (S7) (**LRR K, L)**
- ___ 5 cm Mucky Peat or Peat (S3) (**LRR K, L, R**)
- ___ Iron-Manganese Masses (F12) (**LRR K, L, R**)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (explain in remarks)

*Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic

Restrictive Layer (if observed):
Type: gravel, ballast, fill
Depth (inches): not determined

Hydric soil present? _____

Remarks:

Area mapped as urban land, and 2-3 feet higher in elevation than adjacent wetland swales.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ True Aquatic Plants (B14)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Gauge or Well Data (D9)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ___ Geomorphic Position (D2)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface water present?	Yes	_____	No	X	Depth (inches):	_____
Water table present?	Yes	_____	No	X	Depth (inches):	_____
Saturation present? (includes capillary fringe)	Yes	_____	No	X	Depth (inches):	0

Wetland hydrology present? N

Describe recorded data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

2-3 feet higher in elevation than adjacent wetland swales with no evidence of hydrology

WETLAND DETERMINATION DATA FORM - Midwest Region

Project/Site: Lake Calumet CTA Red Line Extension | City/County: Cook | Sampling Date: 8/19/2015

Applicant/Owner: CTA/MWRD | State: Illinois | Sampling Point: 10

Investigator(s): J Mengler, V Mosca | Section, Township, Range: T37N, R14E, S27

Landform (hillslope, terrace, etc.): swale | Local relief (concave, convex, none): swale

Slope (%): | Lat: 41.65712 | Long: -87.600738 | Datum:

Soil Map Unit Name: orthents, loamy, nearly level | NWI Classification: none

Are climatic/hydrologic conditions of the site typical for this time of the year? Y (If no, explain in remarks)

Are vegetation , soil Y , or hydrology significantly disturbed? Y Are "normal circumstances"

Are vegetation , soil , or hydrology naturally problematic? N present? Y

SUMMARY OF FINDINGS

(If needed, explain any answers in remarks.)

Hydrophytic vegetation present?	Y		
Hydric soil present?		**Is the sampled area within a wetland?**	Y
Wetland hydrology present?	Y	If yes, optional wetland site ID:	Wetland 8

Remarks: (Explain alternative procedures here or in a separate report.)

Relied primarily upon vegetation and landscape position due to dry time of season, and mostly urbanland/fill for substrate.

VEGETATION -- Use scientific names of plants.

Tree Stratum (Plot size: 9 m)	Absolute % Cover	Dominant Species	Indicator Status
1			
2			
3			
4			
5			
	0	= Total Cover	

Sapling/Shrub stratum (Plot size: 4.6 m)			
1			
2			
3			
4			
5			
	0	= Total Cover	

Herb stratum (Plot size: 1 m sq)			
1 *Phragmites australis*	100	Y	FACW
2			
3			
4			
5			
6			
7			
8			
9			
10			
	100	= Total Cover	

Woody vine stratum (Plot size: 1 m sq)			
1			
2			
	0	= Total Cover	

Dominance Test Worksheet

Number of Dominant Species that are OBL, FACW, or FAC: 1 (A)

Total Number of Dominant Species Across all Strata: 1 (B)

Percent of Dominant Species that are OBL, FACW, or FAC: 100.00% (A/B)

Prevalence Index Worksheet

Total % Cover of:

OBL species	0	x 1 =	0
FACW species	100	x 2 =	200
FAC species	0	x 3 =	0
FACU species	0	x 4 =	0
UPL species	0	x 5 =	0
Column totals	100 (A)		200 (B)

Prevalence Index = B/A = 2.00

Hydrophytic Vegetation Indicators:

- Rapid test for hydrophytic vegetation
- X Dominance test is >50%
- X Prevalence index is ≤3.0*
- Morphological adaptations* (provide supporting data in Remarks or on a separate sheet)
- Problematic hydrophytic vegetation* (explain)

*Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic

Hydrophytic vegetation present? Y

Remarks: (Include photo numbers here or on a separate sheet)

SOIL

Sampling Point: 10

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (Inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type*	Loc**	Texture	Remarks

*Type: C = Concentration, D = Depletion, RM = Reduced Matrix, MS = Masked Sand Grains. **Location: PL = Pore Lining, M = Matrix

Hydric Soil Indicators:

- ___ Histisol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ 2 cm Muck (A10)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ 5 cm Mucky Peat or Peat (S3)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils:

- ___ Coast Prairie Redox (A16) (**LRR K, L, R**)
- ___ Dark Surface (S7) (**LRR K, L)**
- ___ 5 cm Mucky Peat or Peat (S3) (**LRR K, L, R**)
- ___ Iron-Manganese Masses (F12) (**LRR K, L, R**)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (explain in remarks)

*Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic

Restrictive Layer (if observed):

Type: gravel, ballast, fill

Depth (inches): not determined

Hydric soil present? ___

Remarks:

Area mapped as urban land, and located between gravel roads.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- X Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ True Aquatic Plants (B14)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Gauge or Well Data (D9)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- X Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ___ Geomorphic Position (D2)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface water present?	Yes		No	X	Depth (inches):	
Water table present?	Yes		No	X	Depth (inches):	
Saturation present? (includes capillary fringe)	Yes	X	No		Depth (inches):	0

Wetland hydrology present? Y

Describe recorded data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

Saturation within drainage swale along roads.

WETLAND DETERMINATION DATA FORM - Midwest Region

Project/Site: Lake Calumet CTA Red Line Extension | City/County: Cook | Sampling Date: 8/19/2015

Applicant/Owner: CTA/MWRD | State: Illinois | Sampling Point: 11

Investigator(s): J Mengler, V Mosca | Section, Township, Range: T37N, R14E, S27

Landform (hillslope, terrace, etc.): swale | Local relief (concave, convex, none): swale

Slope (%): | Lat: 41.665712 | Long: -87.600738 | Datum:

Soil Map Unit Name: orthents, loamy, nearly level | NWI Classification: none

Are climatic/hydrologic conditions of the site typical for this time of the year? Y (If no, explain in remarks)

Are vegetation , soil Y , or hydrology significantly disturbed? Y Are "normal circumstances"

Are vegetation , soil , or hydrology naturally problematic? N present? Y

SUMMARY OF FINDINGS

(If needed, explain any answers in remarks.)

Hydrophytic vegetation present?	Y		
Hydric soil present?		**Is the sampled area within a wetland?**	N
Wetland hydrology present?	N	If yes, optional wetland site ID:	

Remarks: (Explain alternative procedures here or in a separate report.)

Relied primarily upon vegetation and landscape position due to dry time of season, and mostly urbanland/fill for substrate.

VEGETATION -- Use scientific names of plants.

Tree Stratum (Plot size: 9 m)	Absolute % Cover	Dominant Species	Indicator Status
1			
2			
3			
4			
5			
	0	= Total Cover	

Sapling/Shrub stratum (Plot size: 4.6 m)			
1			
2			
3			
4			
5			
	0	= Total Cover	

Herb stratum (Plot size: 1 m sq)			
1 *Ambrosia trifida*			FAC
2 *Artemisia vulgaris*			UPL
3 *Melilotus albus*			FACU
4 *Arctium minus*			FACU
5 *Lotus corniculata*			FACU
6			
7			
8			
9			
10			
	0	= Total Cover	

Woody vine stratum (Plot size: 1 m sq)			
1			
2			
	0	= Total Cover	

Dominance Test Worksheet

Number of Dominant Species that are OBL, FACW, or FAC: 0 (A)

Total Number of Dominant Species Across all Strata: 0 (B)

Percent of Dominant Species that are OBL, FACW, or FAC: 0.00% (A/B)

Prevalence Index Worksheet

Total % Cover of:

OBL species	0	x 1 =	0	
FACW species	0	x 2 =	0	
FAC species	0	x 3 =	0	
FACU species	0	x 4 =	0	
UPL species	0	x 5 =	0	
Column totals	0	(A)	0	(B)

Prevalence Index = B/A =

Hydrophytic Vegetation Indicators:

- Rapid test for hydrophytic vegetation
- Dominance test is >50%
- Prevalence index is ≤3.0*
- Morphological adaptations* (provide supporting data in Remarks or on a separate sheet)
- Problematic hydrophytic vegetation* (explain)

*Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic

Hydrophytic vegetation present? N

Remarks: (Include photo numbers here or on a separate sheet)

SOIL **Sampling Point:** 11

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (Inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type*	Loc**	Texture	Remarks

*Type: C = Concentration, D = Depletion, RM = Reduced Matrix, MS = Masked Sand Grains. **Location: PL = Pore Lining, M = Matrix

Hydric Soil Indicators:

- ___ Histisol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ 2 cm Muck (A10)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ 5 cm Mucky Peat or Peat (S3)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils:

- ___ Coast Prairie Redox (A16) (**LRR K, L, R**)
- ___ Dark Surface (S7) (**LRR K, L)**
- ___ 5 cm Mucky Peat or Peat (S3) (**LRR K, L, R**)
- ___ Iron-Manganese Masses (F12) (**LRR K, L, R**)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (explain in remarks)

*Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic

Restrictive Layer (if observed):
Type: gravel, ballast, fill
Depth (inches): not determined

Hydric soil present? ___

Remarks:

Area mapped as urban land, and 2-4 feet higher in elevation than adjacent wetland swales.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ True Aquatic Plants (B14)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Gauge or Well Data (D9)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ___ Geomorphic Position (D2)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface water present?	Yes	___	No	X	Depth (inches):	___
Water table present?	Yes	___	No	X	Depth (inches):	___
Saturation present? (includes capillary fringe)	Yes	___	No	X	Depth (inches):	0

Wetland hydrology present? N

Describe recorded data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

2-4 feet higher in elevation than adjacent wetland swales with no evidence of hydrology

WETLAND DETERMINATION DATA FORM - Midwest Region

Project/Site: Lake Calumet CTA Red Line Extension | City/County: Cook | Sampling Date: 8/19/2015

Applicant/Owner: CTA/MWRD | State: Illinois | Sampling Point: 12

Investigator(s): J Mengler, V Mosca | Section, Township, Range: T37N, R14E, S26

Landform (hillslope, terrace, etc.): swale | Local relief (concave, convex, none): swale

Slope (%): | Lat: 41.661704 | Long: -87.597341 | Datum:

Soil Map Unit Name: orthents, clayey, undulating | NWI Classification: PF01/EMCd

Are climatic/hydrologic conditions of the site typical for this time of the year? Y (If no, explain in remarks)

Are vegetation , soil Y , or hydrology significantly disturbed? Y Are "normal circumstances"

Are vegetation , soil , or hydrology naturally problematic? N present? Y

SUMMARY OF FINDINGS

(If needed, explain any answers in remarks.)

Hydrophytic vegetation present?	Y		
Hydric soil present?		**Is the sampled area within a wetland?**	Y
Wetland hydrology present?	Y	If yes, optional wetland site ID:	Wetland 9

Remarks: (Explain alternative procedures here or in a separate report.)

Relied primarily upon vegetation and landscape position due to dry time of season, and mostly urbanland/fill for substrate.

VEGETATION -- Use scientific names of plants.

Tree Stratum (Plot size: 9 m)	Absolute % Cover	Dominant Species	Indicator Status
1			
2			
3			
4			
5			
	0	= Total Cover	

Sapling/Shrub stratum (Plot size: 4.6 m)			
1			
2			
3			
4			
5			
	0	= Total Cover	

Herb stratum (Plot size: 1 m sq)			
1 *Phragmites australis*	100	Y	FACW
2			
3			
4			
5			
6			
7			
8			
9			
10			
	100	= Total Cover	

Woody vine stratum (Plot size: 1 m sq)			
1			
2			
	0	= Total Cover	

Dominance Test Worksheet

Number of Dominant Species that are OBL, FACW, or FAC: 1 (A)

Total Number of Dominant Species Across all Strata: 1 (B)

Percent of Dominant Species that are OBL, FACW, or FAC: 100.00% (A/B)

Prevalence Index Worksheet

Total % Cover of:

OBL species	0	x 1 =	0	
FACW species	100	x 2 =	200	
FAC species	0	x 3 =	0	
FACU species	0	x 4 =	0	
UPL species	0	x 5 =	0	
Column totals	100	(A)	200	(B)

Prevalence Index = B/A = 2.00

Hydrophytic Vegetation Indicators:

- Rapid test for hydrophytic vegetation
- X Dominance test is >50%
- X Prevalence index is ≤3.0*
- Morphological adaptations* (provide supporting data in Remarks or on a separate sheet)
- Problematic hydrophytic vegetation* (explain)

*Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic

Hydrophytic vegetation present? Y

Remarks: (Include photo numbers here or on a separate sheet)

SOIL

Sampling Point: 12

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (Inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type*	Loc**	Texture	Remarks

*Type: C = Concentration, D = Depletion, RM = Reduced Matrix, MS = Masked Sand Grains. **Location: PL = Pore Lining, M = Matrix

Hydric Soil Indicators:

- ___ Histisol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ 2 cm Muck (A10)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ 5 cm Mucky Peat or Peat (S3)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils:

- ___ Coast Prairie Redox (A16) (**LRR K, L, R**)
- ___ Dark Surface (S7) (**LRR K, L)**
- ___ 5 cm Mucky Peat or Peat (S3) (**LRR K, L, R**)
- ___ Iron-Manganese Masses (F12) (**LRR K, L, R**)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (explain in remarks)

*Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic

Restrictive Layer (if observed):

Type: gravel, ballast, fill

Depth (inches): not determined

Hydric soil present? ___

Remarks:

Area mapped as urban land, and located between gravel parking pad and road.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- X Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- X Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ True Aquatic Plants (B14)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Gauge or Well Data (D9)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- X Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ___ Geomorphic Position (D2)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface water present?	Yes		No	X	Depth (inches):	
Water table present?	Yes		No	X	Depth (inches):	
Saturation present? (includes capillary fringe)	Yes	X	No		Depth (inches):	0

Wetland hydrology present? Y

Describe recorded data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

Saturation within drainage swale along higher ground.

WETLAND DETERMINATION DATA FORM - Midwest Region

Project/Site: Lake Calumet CTA Red Line Extension | City/County: Cook | Sampling Date: 8/19/2015

Applicant/Owner: CTA/MWRD | State: Illinois | Sampling Point: 13

Investigator(s): J Mengler, V Mosca | Section, Township, Range: T37N, R14E, S26

Landform (hillslope, terrace, etc.): swale | Local relief (concave, convex, none): swale

Slope (%): | Lat: 41.661704 | Long: -87.597341 | Datum:

Soil Map Unit Name: orthents, loamy, nearly level | NWI Classification: none

Are climatic/hydrologic conditions of the site typical for this time of the year? Y (If no, explain in remarks)

Are vegetation , soil Y , or hydrology significantly disturbed? Y Are "normal circumstances"

Are vegetation , soil , or hydrology naturally problematic? N present? Y

SUMMARY OF FINDINGS

(If needed, explain any answers in remarks.)

Hydrophytic vegetation present?	Y		
Hydric soil present?		**Is the sampled area within a wetland?**	N
Wetland hydrology present?	N	If yes, optional wetland site ID:	

Remarks: (Explain alternative procedures here or in a separate report.)

Relied primarily upon vegetation and landscape position due to dry time of season, and mostly urbanland/fill for substrate.

VEGETATION -- Use scientific names of plants.

Tree Stratum (Plot size: 9 m)	Absolute % Cover	Dominant Species	Indicator Status
1			
2			
3			
4			
5			
	0	= Total Cover	
Sapling/Shrub stratum (Plot size: 4.6 m)			
1			
2			
3			
4			
5			
	0	= Total Cover	
Herb stratum (Plot size: 1 m sq)			
1 *Polygonum lapathifolium*	10	Y	FACW
2 *Carduus nutans*	10	Y	FACU
3 *Medicago lupulina*	10	Y	FACU
4 *Helianthus annuus*	10	Y	FACU
5 *Acnida altissima*	10	Y	OBL
6 *Lotus corniculata*	10	Y	FACU
7			
8			
9			
10			
	60	= Total Cover	
Woody vine stratum (Plot size: 1 m sq)			
1			
2			
	0	= Total Cover	

Dominance Test Worksheet

Number of Dominant Species that are OBL, FACW, or FAC: 2 (A)

Total Number of Dominant Species Across all Strata: 6 (B)

Percent of Dominant Species that are OBL, FACW, or FAC: 33.33% (A/B)

Prevalence Index Worksheet

Total % Cover of:

OBL species	10	x 1 =	10
FACW species	10	x 2 =	20
FAC species	0	x 3 =	0
FACU species	40	x 4 =	160
UPL species	0	x 5 =	0
Column totals	60 (A)		190 (B)

Prevalence Index = B/A = 3.17

Hydrophytic Vegetation Indicators:

- Rapid test for hydrophytic vegetation
- Dominance test is >50%
- Prevalence index is ≤3.0*
- Morphological adaptations* (provide supporting data in Remarks or on a separate sheet)
- Problematic hydrophytic vegetation* (explain)

*Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic

Hydrophytic vegetation present? N

Remarks: (Include photo numbers here or on a separate sheet)

SOIL

Sampling Point: 13

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (Inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type*	Loc**	Texture	Remarks

*Type: C = Concentration, D = Depletion, RM = Reduced Matrix, MS = Masked Sand Grains. **Location: PL = Pore Lining, M = Matrix

Hydric Soil Indicators:

- ___ Histisol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ 2 cm Muck (A10)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ 5 cm Mucky Peat or Peat (S3)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils:

- ___ Coast Prairie Redox (A16) (**LRR K, L, R**)
- ___ Dark Surface (S7) (**LRR K, L)**
- ___ 5 cm Mucky Peat or Peat (S3) (**LRR K, L, R**)
- ___ Iron-Manganese Masses (F12) (**LRR K, L, R**)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (explain in remarks)

*Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic

Restrictive Layer (if observed):

Type: gravel, ballast, fill

Depth (inches): not determined

Hydric soil present? _____

Remarks:

Area mapped as urban land, and a gravel parking pad 2-4 feet higher than surrounding wetland.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ True Aquatic Plants (B14)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Gauge or Well Data (D9)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ___ Geomorphic Position (D2)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface water present?	Yes	_____	No	X	Depth (inches):	_____
Water table present?	Yes	_____	No	X	Depth (inches):	_____
Saturation present? (includes capillary fringe)	Yes	_____	No	X	Depth (inches):	0

Wetland hydrology present? N

Describe recorded data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

2-4 feet higher in elevation than adjacent wetland swales with no evidence of hydrology

WETLAND DETERMINATION DATA FORM - Midwest Region

Project/Site: Lake Calumet CTA Red Line Extension | City/County: Cook | Sampling Date: 8/13/2015

Applicant/Owner: CTA/MWRD | State: Illinois | Sampling Point: 14

Investigator(s): J Mengler, V Mosca | Section, Township, Range: T37N, R14E, S26

Landform (hillslope, terrace, etc.): swale | Local relief (concave, convex, none): swale

Slope (%): | Lat: 41.659598 | Long: -87.594462 | Datum:

Soil Map Unit Name: urban land- orthents, clayey, complex, nearly level | NWI Classification: none

Are climatic/hydrologic conditions of the site typical for this time of the year? Y (If no, explain in remarks)

Are vegetation , soil Y , or hydrology significantly disturbed? Y Are "normal circumstances"

Are vegetation , soil , or hydrology naturally problematic? N present? Y

SUMMARY OF FINDINGS

(If needed, explain any answers in remarks.)

Hydrophytic vegetation present?	Y		
Hydric soil present?		**Is the sampled area within a wetland?**	Y
Wetland hydrology present?	Y	If yes, optional wetland site ID:	Wetland 10

Remarks: (Explain alternative procedures here or in a separate report.)

Relied primarily upon vegetation and landscape position due to dry time of season, and mostly urbanland/fill for substrate.

VEGETATION -- Use scientific names of plants.

Tree Stratum (Plot size: 9 m)	Absolute % Cover	Dominant Species	Indicator Status
1			
2			
3			
4			
5			
	0	= Total Cover	

Sapling/Shrub stratum (Plot size: 4.6 m)			
1			
2			
3			
4			
5			
	0	= Total Cover	

Herb stratum (Plot size: 1 m sq)			
1 *Phragmites australis*	100	Y	FACW
2			
3			
4			
5			
6			
7			
8			
9			
10			
	100	= Total Cover	

Woody vine stratum (Plot size: 1 m sq)			
1			
2			
	0	= Total Cover	

Dominance Test Worksheet

Number of Dominant Species that are OBL, FACW, or FAC: 1 (A)

Total Number of Dominant Species Across all Strata: 1 (B)

Percent of Dominant Species that are OBL, FACW, or FAC: 100.00% (A/B)

Prevalence Index Worksheet

Total % Cover of:

OBL species	0	x 1 =	0
FACW species	100	x 2 =	200
FAC species	0	x 3 =	0
FACU species	0	x 4 =	0
UPL species	0	x 5 =	0
Column totals	100 (A)		200 (B)

Prevalence Index = B/A = 2.00

Hydrophytic Vegetation Indicators:

- Rapid test for hydrophytic vegetation
- X Dominance test is >50%
- X Prevalence index is ≤3.0*
- Morphological adaptations* (provide supporting data in Remarks or on a separate sheet)
- Problematic hydrophytic vegetation* (explain)

*Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic

Hydrophytic vegetation present? Y

Remarks: (Include photo numbers here or on a separate sheet)

SOIL **Sampling Point:** 14

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (Inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type*	Loc**	Texture	Remarks

*Type: C = Concentration, D = Depletion, RM = Reduced Matrix, MS = Masked Sand Grains. **Location: PL = Pore Lining, M = Matrix

Hydric Soil Indicators:

- ___ Histisol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ 2 cm Muck (A10)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ 5 cm Mucky Peat or Peat (S3)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils:

- ___ Coast Prairie Redox (A16) (**LRR K, L, R**)
- ___ Dark Surface (S7) (**LRR K, L)**
- ___ 5 cm Mucky Peat or Peat (S3) (**LRR K, L, R**)
- ___ Iron-Manganese Masses (F12) (**LRR K, L, R**)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (explain in remarks)

*Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic

Restrictive Layer (if observed):
Type: gravel, ballast, fill
Depth (inches): not determined

Hydric soil present? ___

Remarks:

Area mapped as urban land, and located at base of roadway embankment and along railroad

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- X Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- X Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ True Aquatic Plants (B14)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Gauge or Well Data (D9)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- X Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ___ Geomorphic Position (D2)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface water present?	Yes		No	X	Depth (inches):	
Water table present?	Yes		No	X	Depth (inches):	
Saturation present? (includes capillary fringe)	Yes	X	No		Depth (inches):	0

Wetland hydrology present? Y

Describe recorded data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

Saturation within drainage swale along higher ground, wet mud among old tires.

WETLAND DETERMINATION DATA FORM - Midwest Region

Project/Site: Lake Calumet CTA Red Line Extension | City/County: Cook | Sampling Date: 8/19/2015

Applicant/Owner: CTA/MWRD | State: Illinois | Sampling Point: 15

Investigator(s): J Mengler, V Mosca | Section, Township, Range: T37N R14E S26

Landform (hillslope, terrace, etc.): ditch | Local relief (concave, convex, none): ditch

Slope (%): | Lat: 41.660019 | Long: -87.595429 | Datum:

Soil Map Unit Name: urban land-orthents clayey complex, nearly level | NWI Classification: none

Are climatic/hydrologic conditions of the site typical for this time of the year? Y (If no, explain in remarks)

Are vegetation , soil Y , or hydrology significantly disturbed? Y Are "normal circumstances"

Are vegetation , soil , or hydrology naturally problematic? N present? Y

SUMMARY OF FINDINGS

(If needed, explain any answers in remarks.)

Hydrophytic vegetation present?	Y		
Hydric soil present?		**Is the sampled area within a wetland?**	Y
Wetland hydrology present?	Y	If yes, optional wetland site ID:	Wetland 11

Remarks: (Explain alternative procedures here or in a separate report.)

Relied primarily upon vegetation and landscape position due to dry time of season, and mostly urbanland/fill for substrate.

VEGETATION -- Use scientific names of plants.

Tree Stratum (Plot size: 9 m)	Absolute % Cover	Dominant Species	Indicator Status
1			
2			
3			
4			
5			
	0	= Total Cover	

Sapling/Shrub stratum (Plot size: 4.6 m)			
1 *Salix interior*			FACW
2			
3			
4			
5			
	0	= Total Cover	

Herb stratum (Plot size: 1 m sq)			
1 *Phragmites australis*	100	Y	FACW
2			
3			
4			
5			
6			
7			
8			
9			
10			
	100	= Total Cover	

Woody vine stratum (Plot size: 1 m sq)			
1			
2			
	0	= Total Cover	

Dominance Test Worksheet

Number of Dominant Species that are OBL, FACW, or FAC: 1 (A)

Total Number of Dominant Species Across all Strata: 1 (B)

Percent of Dominant Species that are OBL, FACW, or FAC: 100.00% (A/B)

Prevalence Index Worksheet

Total % Cover of:

OBL species	0	x 1 =	0
FACW species	100	x 2 =	200
FAC species	0	x 3 =	0
FACU species	0	x 4 =	0
UPL species	0	x 5 =	0
Column totals	100 (A)		200 (B)

Prevalence Index = B/A = 2.00

Hydrophytic Vegetation Indicators:

- Rapid test for hydrophytic vegetation
- X Dominance test is >50%
- X Prevalence index is ≤3.0*
- Morphological adaptations* (provide supporting data in Remarks or on a separate sheet)
- Problematic hydrophytic vegetation* (explain)

*Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic

Hydrophytic vegetation present? Y

Remarks: (Include photo numbers here or on a separate sheet)

SOIL **Sampling Point:** 15

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (Inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type*	Loc**	Texture	Remarks

*Type: C = Concentration, D = Depletion, RM = Reduced Matrix, MS = Masked Sand Grains. **Location: PL = Pore Lining, M = Matrix

Hydric Soil Indicators:

- ___ Histisol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ 2 cm Muck (A10)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ 5 cm Mucky Peat or Peat (S3)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils:

- ___ Coast Prairie Redox (A16) (**LRR K, L, R**)
- ___ Dark Surface (S7) (**LRR K, L)**
- ___ 5 cm Mucky Peat or Peat (S3) (**LRR K, L, R**)
- ___ Iron-Manganese Masses (F12) (**LRR K, L, R**)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (explain in remarks)

*Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic

Restrictive Layer (if observed):
Type: gravel, ballast, fill
Depth (inches): not determined

Hydric soil present? ___

Remarks:

Area mapped as urban land, and located along road at base of a railroad embankment. Probe refusal within 2-4 inches due to gravel and fill.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- X Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ True Aquatic Plants (B14)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Gauge or Well Data (D9)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- X Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ___ Geomorphic Position (D2)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface water present?	Yes	___	No	X	Depth (inches):	___
Water table present?	Yes	___	No	X	Depth (inches):	___
Saturation present? (includes capillary fringe)	Yes	X	No	___	Depth (inches):	0

Wetland hydrology present? Y

Describe recorded data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

WETLAND DETERMINATION DATA FORM - Midwest Region

Project/Site: Lake Calumet CTA Red Line Extension | City/County: Cook | Sampling Date: 8/19/2015

Applicant/Owner: CTA/MWRD | State: Illinois | Sampling Point: 16

Investigator(s): J Mengler, V Mosca | Section, Township, Range: T37N R14E S27

Landform (hillslope, terrace, etc.): ditch | Local relief (concave, convex, none): ditch

Slope (%): | Lat: 41.667542 | Long: -87.602091 | Datum:

Soil Map Unit Name: urban land-orthents clayey complex, nearly level | NWI Classification: none

Are climatic/hydrologic conditions of the site typical for this time of the year? Y (If no, explain in remarks)

Are vegetation , soil Y , or hydrology significantly disturbed? Y Are "normal circumstances"

Are vegetation , soil , or hydrology naturally problematic? N present? Y

SUMMARY OF FINDINGS

(If needed, explain any answers in remarks.)

Hydrophytic vegetation present?	Y		
Hydric soil present?		**Is the sampled area within a wetland?**	Y
Wetland hydrology present?	Y	If yes, optional wetland site ID:	Wetland 12

Remarks: (Explain alternative procedures here or in a separate report.)

Relied primarily upon vegetation and landscape position due to dry time of season, and mostly urbanland/fill for substrate.

VEGETATION -- Use scientific names of plants.

Tree Stratum (Plot size: 9 m)	Absolute % Cover	Dominant Species	Indicator Status
1			
2			
3			
4			
5			
	0	= Total Cover	

Sapling/Shrub stratum (Plot size: 4.6 m)			
1			
2			
3			
4			
5			
	0	= Total Cover	

Herb stratum (Plot size: 1 m sq)			
1 *Phragmites australis*	100	Y	FACW
2			
3			
4			
5			
6			
7			
8			
9			
10			
	100	= Total Cover	

Woody vine stratum (Plot size: 1 m sq)			
1			
2			
	0	= Total Cover	

Dominance Test Worksheet

Number of Dominant Species that are OBL, FACW, or FAC: 1 (A)

Total Number of Dominant Species Across all Strata: 1 (B)

Percent of Dominant Species that are OBL, FACW, or FAC: 100.00% (A/B)

Prevalence Index Worksheet

Total % Cover of:

OBL species	0	x 1 =	0
FACW species	100	x 2 =	200
FAC species	0	x 3 =	0
FACU species	0	x 4 =	0
UPL species	0	x 5 =	0
Column totals	100 (A)		200 (B)

Prevalence Index = B/A = 2.00

Hydrophytic Vegetation Indicators:

- Rapid test for hydrophytic vegetation
- X Dominance test is >50%
- X Prevalence index is ≤3.0*
- Morphological adaptations* (provide supporting data in Remarks or on a separate sheet)
- Problematic hydrophytic vegetation* (explain)

*Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic

Hydrophytic vegetation present? Y

Remarks: (Include photo numbers here or on a separate sheet)

SOIL

Sampling Point: 16

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (Inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type*	Loc**	Texture	Remarks

*Type: C = Concentration, D = Depletion, RM = Reduced Matrix, MS = Masked Sand Grains. **Location: PL = Pore Lining, M = Matrix

Hydric Soil Indicators:

- ___ Histisol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ 2 cm Muck (A10)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ 5 cm Mucky Peat or Peat (S3)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils:

- ___ Coast Prairie Redox (A16) (**LRR K, L, R**)
- ___ Dark Surface (S7) (**LRR K, L)**
- ___ 5 cm Mucky Peat or Peat (S3) (**LRR K, L, R**)
- ___ Iron-Manganese Masses (F12) (**LRR K, L, R**)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (explain in remarks)

*Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic

Restrictive Layer (if observed):

Type: gravel, ballast, fill

Depth (inches): not determined

Hydric soil present? ___

Remarks:

Area mapped as urban land, and located along road at base of a road embankment. Probe refusal within 2-4 inches due to gravel and fill.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- X Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ True Aquatic Plants (B14)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Gauge or Well Data (D9)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- X Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ___ Geomorphic Position (D2)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface water present?	Yes	X	No		Depth (inches):	0-2
Water table present?	Yes		No	X	Depth (inches):	
Saturation present? (includes capillary fringe)	Yes	X	No		Depth (inches):	0

Wetland hydrology present? Y

Describe recorded data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

WETLAND DETERMINATION DATA FORM - Midwest Region

Project/Site: Lake Calumet CTA Red Line Extension | City/County: Cook | Sampling Date: 8/19/2015

Applicant/Owner: CTA/MWRD | State: Illinois | Sampling Point: 17

Investigator(s): J Mengler, V Mosca | Section, Township, Range: T37N R14E S27

Landform (hillslope, terrace, etc.): ditch | Local relief (concave, convex, none): ditch

Slope (%): | Lat: 41.669078 | Long: -87.602444 | Datum:

Soil Map Unit Name: urban land-orthents clayey complex, nearly level | NWI Classification: none

Are climatic/hydrologic conditions of the site typical for this time of the year? Y (If no, explain in remarks)

Are vegetation , soil Y , or hydrology significantly disturbed? Y Are "normal circumstances"

Are vegetation , soil , or hydrology naturally problematic? N present? Y

SUMMARY OF FINDINGS

(If needed, explain any answers in remarks.)

Hydrophytic vegetation present?	Y		
Hydric soil present?		**Is the sampled area within a wetland?**	Y
Wetland hydrology present?	Y	If yes, optional wetland site ID:	Wetland 13

Remarks: (Explain alternative procedures here or in a separate report.)

Relied primarily upon vegetation and landscape position due to dry time of season, and mostly urbanland/fill for substrate.

VEGETATION -- Use scientific names of plants.

Tree Stratum (Plot size: 9 m)	Absolute % Cover	Dominant Species	Indicator Status
1			
2			
3			
4			
5			
	0	= Total Cover	

Sapling/Shrub stratum (Plot size: 4.6 m)			
1			
2			
3			
4			
5			
	0	= Total Cover	

Herb stratum (Plot size: 1 m sq)			
1 *Phragmites australis*	100	Y	FACW
2			
3			
4			
5			
6			
7			
8			
9			
10			
	100	= Total Cover	

Woody vine stratum (Plot size: 1 m sq)			
1			
2			
	0	= Total Cover	

Dominance Test Worksheet

Number of Dominant Species that are OBL, FACW, or FAC: 1 (A)

Total Number of Dominant Species Across all Strata: 1 (B)

Percent of Dominant Species that are OBL, FACW, or FAC: 100.00% (A/B)

Prevalence Index Worksheet

Total % Cover of:

OBL species	0	x 1 =	0
FACW species	100	x 2 =	200
FAC species	0	x 3 =	0
FACU species	0	x 4 =	0
UPL species	0	x 5 =	0
Column totals	100 (A)		200 (B)

Prevalence Index = B/A = 2.00

Hydrophytic Vegetation Indicators:

- Rapid test for hydrophytic vegetation
- X Dominance test is >50%
- X Prevalence index is ≤3.0*
- Morphological adaptations* (provide supporting data in Remarks or on a separate sheet)
- Problematic hydrophytic vegetation* (explain)

*Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic

Hydrophytic vegetation present? Y

Remarks: (Include photo numbers here or on a separate sheet)

SOIL

Sampling Point: 17

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (Inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type*	Loc**	Texture	Remarks

*Type: C = Concentration, D = Depletion, RM = Reduced Matrix, MS = Masked Sand Grains. **Location: PL = Pore Lining, M = Matrix

Hydric Soil Indicators:

- ___ Histisol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ 2 cm Muck (A10)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ 5 cm Mucky Peat or Peat (S3)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils:

- ___ Coast Prairie Redox (A16) (**LRR K, L, R**)
- ___ Dark Surface (S7) (**LRR K, L)**
- ___ 5 cm Mucky Peat or Peat (S3) (**LRR K, L, R**)
- ___ Iron-Manganese Masses (F12) (**LRR K, L, R**)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (explain in remarks)

*Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic

Restrictive Layer (if observed):

Type: gravel, ballast, fill

Depth (inches): not determined

Hydric soil present? ___

Remarks:

Area mapped as urban land, and located along railroad embankment. Probe refusal within 2-4 inches due to gravel and fill.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- X Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ True Aquatic Plants (B14)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Gauge or Well Data (D9)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- X Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ___ Geomorphic Position (D2)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface water present?	Yes	X	No		Depth (inches):	0-2
Water table present?	Yes		No	X	Depth (inches):	
Saturation present? (includes capillary fringe)	Yes	X	No		Depth (inches):	0

Wetland hydrology present? Y

Describe recorded data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

WETLAND DETERMINATION DATA FORM - Midwest Region

Project/Site: Lake Calumet CTA Red Line Extension | City/County: Cook | Sampling Date: 8/19/2015

Applicant/Owner: CTA/MWRD | State: Illinois | Sampling Point: 18

Investigator(s): J Mengler, V Mosca | Section, Township, Range: T37N R14E S27

Landform (hillslope, terrace, etc.): ditch | Local relief (concave, convex, none): ditch

Slope (%): | Lat: 41.667289 | Long: -87.600100 | Datum:

Soil Map Unit Name: urban land-orthents clayey complex, nearly level | NWI Classification: none

Are climatic/hydrologic conditions of the site typical for this time of the year? Y (If no, explain in remarks)

Are vegetation , soil Y , or hydrology significantly disturbed? Y Are "normal circumstances"

Are vegetation , soil , or hydrology naturally problematic? N present? Y

SUMMARY OF FINDINGS

(If needed, explain any answers in remarks.)

Hydrophytic vegetation present?	Y		
Hydric soil present?		**Is the sampled area within a wetland?**	Y
Wetland hydrology present?	Y	If yes, optional wetland site ID:	Wetland 14

Remarks: (Explain alternative procedures here or in a separate report.)

Relied primarily upon vegetation and landscape position due to dry time of season, and mostly urbanland/fill for substrate.

VEGETATION -- Use scientific names of plants.

Tree Stratum (Plot size: 9 m)	Absolute % Cover	Dominant Species	Indicator Status
1			
2			
3			
4			
5			
	0	= Total Cover	
Sapling/Shrub stratum (Plot size: 4.6 m)			
1			
2			
3			
4			
5			
	0	= Total Cover	
Herb stratum (Plot size: 1 m sq)			
1 *Phragmites australis*	100	Y	FACW
2			
3			
4			
5			
6			
7			
8			
9			
10			
	100	= Total Cover	
Woody vine stratum (Plot size: 1 m sq)			
1 *Vitis riparia*	20	Y	FACW
2 *Convolvulus sepium*	15	Y	FAC
	35	= Total Cover	

Dominance Test Worksheet

Number of Dominant Species that are OBL, FACW, or FAC: 3 (A)

Total Number of Dominant Species Across all Strata: 3 (B)

Percent of Dominant Species that are OBL, FACW, or FAC: 100.00% (A/B)

Prevalence Index Worksheet

Total % Cover of:

OBL species	0	x 1 =	0
FACW species	100	x 2 =	200
FAC species	0	x 3 =	0
FACU species	0	x 4 =	0
UPL species	0	x 5 =	0
Column totals	100 (A)		200 (B)

Prevalence Index = B/A = 2.00

Hydrophytic Vegetation Indicators:

- Rapid test for hydrophytic vegetation
- X Dominance test is >50%
- X Prevalence index is ≤3.0*
- Morphological adaptations* (provide supporting data in Remarks or on a separate sheet)
- Problematic hydrophytic vegetation* (explain)

*Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic

Hydrophytic vegetation present? Y

Remarks: (Include photo numbers here or on a separate sheet)

SOIL

Sampling Point: 18

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (Inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type*	Loc**	Texture	Remarks

*Type: C = Concentration, D = Depletion, RM = Reduced Matrix, MS = Masked Sand Grains. **Location: PL = Pore Lining, M = Matrix

Hydric Soil Indicators:

- ___ Histisol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ 2 cm Muck (A10)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ 5 cm Mucky Peat or Peat (S3)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils:

- ___ Coast Prairie Redox (A16) (**LRR K, L, R**)
- ___ Dark Surface (S7) (**LRR K, L)**
- ___ 5 cm Mucky Peat or Peat (S3) (**LRR K, L, R**)
- ___ Iron-Manganese Masses (F12) (**LRR K, L, R**)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (explain in remarks)

*Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic

Restrictive Layer (if observed):

Type: gravel, ballast, fill

Depth (inches): not determined

Hydric soil present? ___

Remarks:

Area mapped as urban land, and located between gravel roads. Probe refusal within 2-4 inches due to gravel and fill.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- X Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ True Aquatic Plants (B14)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Gauge or Well Data (D9)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- X Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ___ Geomorphic Position (D2)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface water present?	Yes	X	No		Depth (inches):	0-2
Water table present?	Yes		No	X	Depth (inches):	
Saturation present? (includes capillary fringe)	Yes	X	No		Depth (inches):	0

Wetland hydrology present? Y

Describe recorded data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

WETLAND DETERMINATION DATA FORM - Midwest Region

Project/Site: Lake Calumet CTA Red Line Extension | City/County: Cook | Sampling Date: 8/19/2015

Applicant/Owner: CTA/MWRD | State: Illinois | Sampling Point: 19

Investigator(s): J Mengler, V Mosca | Section, Township, Range: T37N R14E S27

Landform (hillslope, terrace, etc.): ditch | Local relief (concave, convex, none): ditch

Slope (%): | Lat: 41.667289 | Long: -87.600100 | Datum:

Soil Map Unit Name: urban land-orthents clayey complex, nearly level | NWI Classification: none

Are climatic/hydrologic conditions of the site typical for this time of the year? Y (If no, explain in remarks)

Are vegetation , soil Y , or hydrology significantly disturbed? Y Are "normal circumstances"

Are vegetation , soil , or hydrology naturally problematic? N present? Y

SUMMARY OF FINDINGS

(If needed, explain any answers in remarks.)

Hydrophytic vegetation present?	N		
Hydric soil present?		**Is the sampled area within a wetland?**	N
Wetland hydrology present?	N	If yes, optional wetland site ID:	

Remarks: (Explain alternative procedures here or in a separate report.)

Relied primarily upon vegetation and landscape position due to dry time of season, and mostly urbanland/fill for substrate.

VEGETATION -- Use scientific names of plants.

	Absolute % Cover	Dominant Species	Indicator Status
Tree Stratum (Plot size: 9 m)			
1 *Morus alba*	40	Y	FAC
2 *Acer negundo*	20	Y	FAC
3			
4			
5			
	60	= Total Cover	
Sapling/Shrub stratum (Plot size: 4.6 m)			
1 *Prunus serotina*	15	Y	FACU
2			
3			
4			
5			
	15	= Total Cover	
Herb stratum (Plot size: 1 m sq)			
1 *Eupatorium rugosum*	10	Y	FACU
2 *Arctium minus*	10	Y	FACU
3 *Geum laciniatum*	5	Y	FACW
4			
5			
6			
7			
8			
9			
10			
	25	= Total Cover	
Woody vine stratum (Plot size: 1 m sq)			
1			
2			
	0	= Total Cover	

Dominance Test Worksheet

Number of Dominant Species that are OBL, FACW, or FAC: 3 (A)

Total Number of Dominant Species Across all Strata: 6 (B)

Percent of Dominant Species that are OBL, FACW, or FAC: 50.00% (A/B)

Prevalence Index Worksheet

Total % Cover of:

OBL species	0	x 1 =	0
FACW species	5	x 2 =	10
FAC species	60	x 3 =	180
FACU species	35	x 4 =	140
UPL species	0	x 5 =	0
Column totals	100 (A)		330 (B)

Prevalence Index = B/A = 3.30

Hydrophytic Vegetation Indicators:

- Rapid test for hydrophytic vegetation
- Dominance test is >50%
- Prevalence index is ≤3.0*
- Morphological adaptations* (provide supporting data in Remarks or on a separate sheet)
- Problematic hydrophytic vegetation* (explain)

*Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic

Hydrophytic vegetation present? N

Remarks: (Include photo numbers here or on a separate sheet)

SOIL **Sampling Point:** 19

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (Inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type*	Loc**	Texture	Remarks

*Type: C = Concentration, D = Depletion, RM = Reduced Matrix, MS = Masked Sand Grains. **Location: PL = Pore Lining, M = Matrix

Hydric Soil Indicators:

- ___ Histisol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ 2 cm Muck (A10)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ 5 cm Mucky Peat or Peat (S3)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils:

- ___ Coast Prairie Redox (A16) (**LRR K, L, R**)
- ___ Dark Surface (S7) (**LRR K, L)**
- ___ 5 cm Mucky Peat or Peat (S3) (**LRR K, L, R**)
- ___ Iron-Manganese Masses (F12) (**LRR K, L, R**)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (explain in remarks)

*Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic

Restrictive Layer (if observed):
Type: gravel, ballast, fill
Depth (inches): not determined

Hydric soil present? _____

Remarks:

Area mapped as urban land, and located between gravel roads. Probe refusal within 2-4 inches due to gravel and fill.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ True Aquatic Plants (B14)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Gauge or Well Data (D9)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ___ Geomorphic Position (D2)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface water present?	Yes	_____	No	X	Depth (inches):	_____
Water table present?	Yes	_____	No	X	Depth (inches):	_____
Saturation present? (includes capillary fringe)	Yes	_____	No	X	Depth (inches):	_____

Wetland hydrology present? N

Describe recorded data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

No evidence of hydrology observed, Ground cover mostly dry undisturbed leaf litter.

WETLAND DETERMINATION DATA FORM - Midwest Region

Project/Site: Lake Calumet CTA Red Line Extension | City/County: Cook | Sampling Date: 8/19/2015

Applicant/Owner: CTA/MWRD | State: Illinois | Sampling Point: 20

Investigator(s): J Mengler, V Mosca | Section, Township, Range: T37N R14E S27

Landform (hillslope, terrace, etc.): ditch | Local relief (concave, convex, none): ditch

Slope (%): | Lat: 41.671562 | Long: -87.607147 | Datum:

Soil Map Unit Name: urban land-orthents clayey complex, nearly level | NWI Classification: none

Are climatic/hydrologic conditions of the site typical for this time of the year? Y (If no, explain in remarks)

Are vegetation , soil Y , or hydrology significantly disturbed? Y Are "normal circumstances"

Are vegetation , soil , or hydrology naturally problematic? N present? Y

SUMMARY OF FINDINGS

(If needed, explain any answers in remarks.)

Hydrophytic vegetation present?	Y		
Hydric soil present?		**Is the sampled area within a wetland?**	Y
Wetland hydrology present?	Y	If yes, optional wetland site ID:	Wetland 15

Remarks: (Explain alternative procedures here or in a separate report.)

Relied primarily upon vegetation and landscape position due to dry time of season, and mostly urbanland/fill for substrate.

VEGETATION -- Use scientific names of plants.

Tree Stratum (Plot size: 9 m)	Absolute % Cover	Dominant Species	Indicator Status
1			
2			
3			
4			
5			
	0	= Total Cover	

Sapling/Shrub stratum (Plot size: 4.6 m)			
1			
2			
3			
4			
5			
	0	= Total Cover	

Herb stratum (Plot size: 1 m sq)			
1 *Phragmites australis*	100	Y	FACW
2			
3			
4			
5			
6			
7			
8			
9			
10			
	100	= Total Cover	

Woody vine stratum (Plot size: 1 m sq)			
1			
2			
	0	= Total Cover	

Dominance Test Worksheet

Number of Dominant Species that are OBL, FACW, or FAC: 1 (A)

Total Number of Dominant Species Across all Strata: 1 (B)

Percent of Dominant Species that are OBL, FACW, or FAC: 100.00% (A/B)

Prevalence Index Worksheet

Total % Cover of:

OBL species	0	x 1 =	0
FACW species	100	x 2 =	200
FAC species	0	x 3 =	0
FACU species	0	x 4 =	0
UPL species	0	x 5 =	0
Column totals	100 (A)		200 (B)

Prevalence Index = B/A = 2.00

Hydrophytic Vegetation Indicators:

- Rapid test for hydrophytic vegetation
- X Dominance test is >50%
- X Prevalence index is ≤3.0*
- Morphological adaptations* (provide supporting data in Remarks or on a separate sheet)
- Problematic hydrophytic vegetation* (explain)

*Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic

Hydrophytic vegetation present? Y

Remarks: (Include photo numbers here or on a separate sheet)

SOIL **Sampling Point:** 20

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (Inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type*	Loc**	Texture	Remarks

*Type: C = Concentration, D = Depletion, RM = Reduced Matrix, MS = Masked Sand Grains. **Location: PL = Pore Lining, M = Matrix

Hydric Soil Indicators:

- ___ Histisol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ 2 cm Muck (A10)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ 5 cm Mucky Peat or Peat (S3)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils:

- ___ Coast Prairie Redox (A16) (**LRR K, L, R**)
- ___ Dark Surface (S7) (**LRR K, L)**
- ___ 5 cm Mucky Peat or Peat (S3) (**LRR K, L, R**)
- ___ Iron-Manganese Masses (F12) (**LRR K, L, R**)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (explain in remarks)

*Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic

Restrictive Layer (if observed):
Type: gravel, ballast, fill
Depth (inches): not determined

Hydric soil present? ___

Remarks:

Area mapped as urban land, and along steep road embankment. Probe refusal within 2-4 inches due to gravel and fill.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- X Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ True Aquatic Plants (B14)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Gauge or Well Data (D9)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- X Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ___ Geomorphic Position (D2)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface water present?	Yes	___	No	X	Depth (inches):	___
Water table present?	Yes	___	No	X	Depth (inches):	___
Saturation present? (includes capillary fringe)	Yes	X	No	___	Depth (inches):	0

Wetland hydrology present? Y

Describe recorded data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

WETLAND DETERMINATION DATA FORM - Midwest Region

Project/Site: Lake Calumet CTA Red Line Extension | City/County: Cook | Sampling Date: 8/19/2015

Applicant/Owner: CTA/MWRD | State: Illinois | Sampling Point: 21

Investigator(s): J Mengler, V Mosca | Section, Township, Range: T37N R14E S27

Landform (hillslope, terrace, etc.): ditch | Local relief (concave, convex, none): ditch

Slope (%): | Lat: 41.671562 | Long: -87.607147 | Datum:

Soil Map Unit Name: urban land-orthents clayey complex, nearly level | NWI Classification: none

Are climatic/hydrologic conditions of the site typical for this time of the year? Y (If no, explain in remarks)

Are vegetation , soil Y , or hydrology significantly disturbed? Y Are "normal circumstances"

Are vegetation , soil , or hydrology naturally problematic? N present? Y

SUMMARY OF FINDINGS

(If needed, explain any answers in remarks.)

Hydrophytic vegetation present?	N		
Hydric soil present?		**Is the sampled area within a wetland?**	N
Wetland hydrology present?	N	If yes, optional wetland site ID:	

Remarks: (Explain alternative procedures here or in a separate report.)

Relied primarily upon vegetation and landscape position due to dry time of season, and mostly urbanland/fill for substrate.

VEGETATION -- Use scientific names of plants.

Tree Stratum (Plot size: 9 m)	Absolute % Cover	Dominant Species	Indicator Status
1			
2			
3			
4			
5			
	0	= Total Cover	
Sapling/Shrub stratum (Plot size: 4.6 m)			
1 *Rhamnus cathartica*	80	Y	FAC
2 *Morus alba*	20	Y	FAC
3			
4			
5			
	100	= Total Cover	
Herb stratum (Plot size: 1 m sq)			
1 *Glechoma hederacea*	15	Y	FACU
2 *Arctium minus*	15	Y	FACU
3			
4			
5			
6			
7			
8			
9			
10			
	30	= Total Cover	
Woody vine stratum (Plot size: 1 m sq)			
1			
2			
	0	= Total Cover	

Dominance Test Worksheet

Number of Dominant Species that are OBL, FACW, or FAC: 2 (A)

Total Number of Dominant Species Across all Strata: 4 (B)

Percent of Dominant Species that are OBL, FACW, or FAC: 50.00% (A/B)

Prevalence Index Worksheet

Total % Cover of:

OBL species	0	x 1 =	0
FACW species	0	x 2 =	0
FAC species	100	x 3 =	300
FACU species	30	x 4 =	120
UPL species	0	x 5 =	0
Column totals	130 (A)		420 (B)

Prevalence Index = B/A = 3.23

Hydrophytic Vegetation Indicators:

- Rapid test for hydrophytic vegetation
- Dominance test is >50%
- Prevalence index is ≤3.0*
- Morphological adaptations* (provide supporting data in Remarks or on a separate sheet)
- Problematic hydrophytic vegetation* (explain)

*Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic

Hydrophytic vegetation present? N

Remarks: (Include photo numbers here or on a separate sheet)

SOIL **Sampling Point:** 21

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (Inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type*	Loc**	Texture	Remarks

*Type: C = Concentration, D = Depletion, RM = Reduced Matrix, MS = Masked Sand Grains. **Location: PL = Pore Lining, M = Matrix

Hydric Soil Indicators:

- ___ Histisol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ 2 cm Muck (A10)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ 5 cm Mucky Peat or Peat (S3)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils:

- ___ Coast Prairie Redox (A16) (**LRR K, L, R**)
- ___ Dark Surface (S7) (**LRR K, L)**
- ___ 5 cm Mucky Peat or Peat (S3) (**LRR K, L, R**)
- ___ Iron-Manganese Masses (F12) (**LRR K, L, R**)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (explain in remarks)

*Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic

Restrictive Layer (if observed):
Type: gravel, ballast, fill
Depth (inches): not determined

Hydric soil present? _____

Remarks:

Area mapped as urban land, and along steep road embankment. Probe refusal within 2-4 inches due to gravel and fill.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ True Aquatic Plants (B14)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Gauge or Well Data (D9)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ___ Geomorphic Position (D2)
- ___ FAC-Neutral Test (D5)

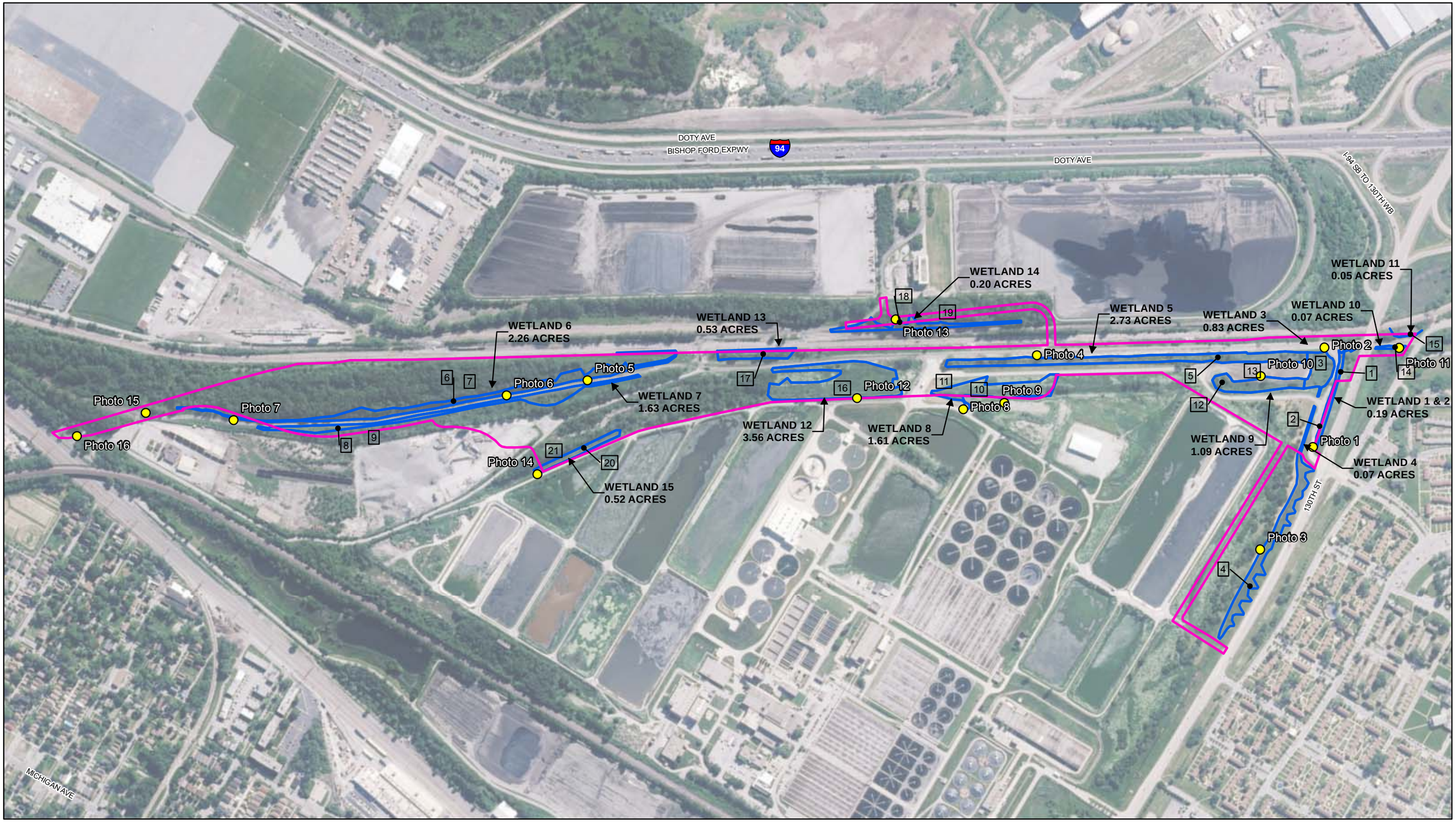
Field Observations:

Surface water present?	Yes	_____	No	X	Depth (inches):	_____
Water table present?	Yes	_____	No	X	Depth (inches):	_____
Saturation present? (includes capillary fringe)	Yes	_____	No	X	Depth (inches):	_____

Wetland hydrology present? N

Describe recorded data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:



Prepared by:

Hey and Associates, Inc.
Engineering, Ecology and Landscape Architecture

Scale:
0 600 Feet
Project Number: 15-0218

Orientation:
Latest Revision: 10/5/2015

Legend:
- Data Point
- Photo Locations
- Surveyed Wetland Boundary (Labled wetland acreas for Project Permanent Envelope only)
- Project Permanent Envelope

Project Name:
CTA Red Line Extension

Aerial Date:
2014

Prepared For:
CDM Smith

Exhibit Title:
Photograph Locations

Exhibit:
10



Photograph 1:

Wetland 1 looking east from west end.



Photograph 2:

Existing fly dumping piles along Cottage Grove Road and edge of Wetland 3.



Photograph 3:

North edge of Wetland 4 looking west – mostly out of project area.



Photograph 4:

Edge of Wetland 5 along Cottage Grove Road looking south.



Photograph 5:

Wetland 6 along railroad looking south.



Photograph 6:

Evidence of hydrology along railroad and edge of Wetland 6.



Photograph 7:

Remnant prairie plants in Wetland 7 along railroad.



Photograph 8:

Mowed edge of Wetland 8.



Photograph 9:

Existing upland gravel area next to Wetland 8.



Photograph 10:

Wetland 9.



Photograph 11:

Existing trash piles in Wetland 10.



Photograph 12:

Wetland 12.



Photograph 13:

Wetland 14.



Photograph 14:

Wetland 15.



Photograph 15:

Upland in northwest finger of project area looking north.



Photograph 16:

Northwest extent of project area.