

### Appendix S Water Resources Technical Memorandum





Chicago Red Line Extension Project

# Water Resources Technical Memorandum

January 22, 2013 *Updated July 28, 2015* 

*Prepared for:* Chicago Transit Authority 567 W. Lake Street Chicago, IL 60661

Prepared by:



125 S. Wacker Drive Suite 600 Chicago, IL 60606





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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
СТА	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





#### WATER RESOURCES **TECHNICAL MEMORANDUM**

	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 13oth 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
  - o Right-of-Way (ROW) Option
  - East Option
  - West Option
- Halsted Rail Alternative





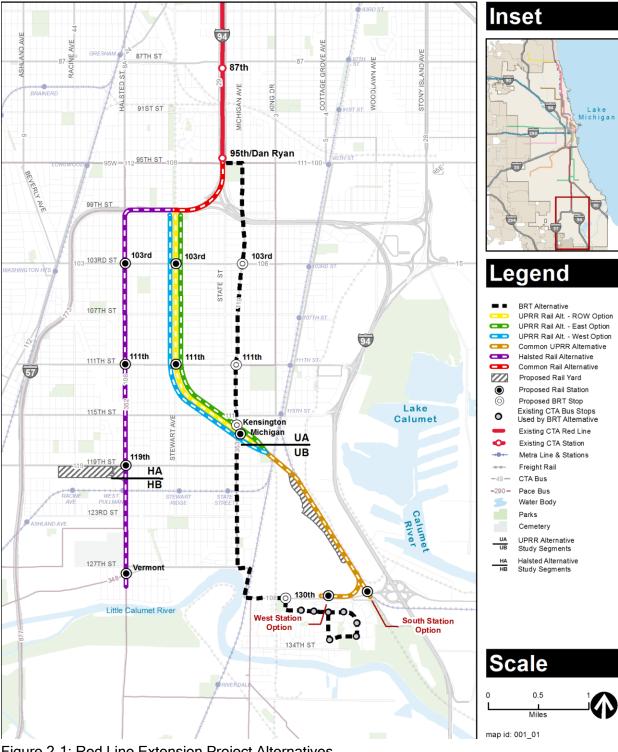


Figure 2-1: Red Line Extension Project Alternatives







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 multiuse trail, and preservation of historic facilities. The No Build Alternative includes regular maintenance 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, 11th 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, 11th 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.





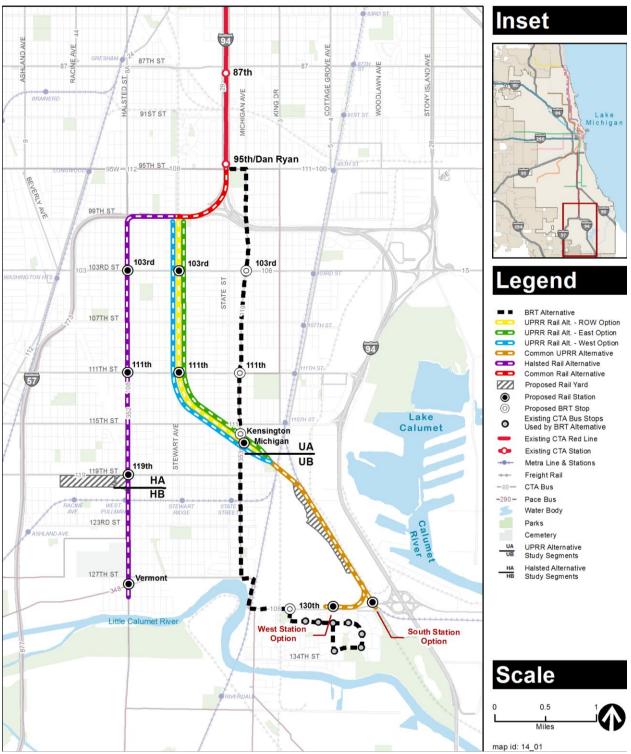


Figure 4-1: Project Area including Waterbodies





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:

#### <u>Aerial Photographs</u>

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.

■ <u>NWI</u>

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:

<u>Aerial Photographs</u>

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.

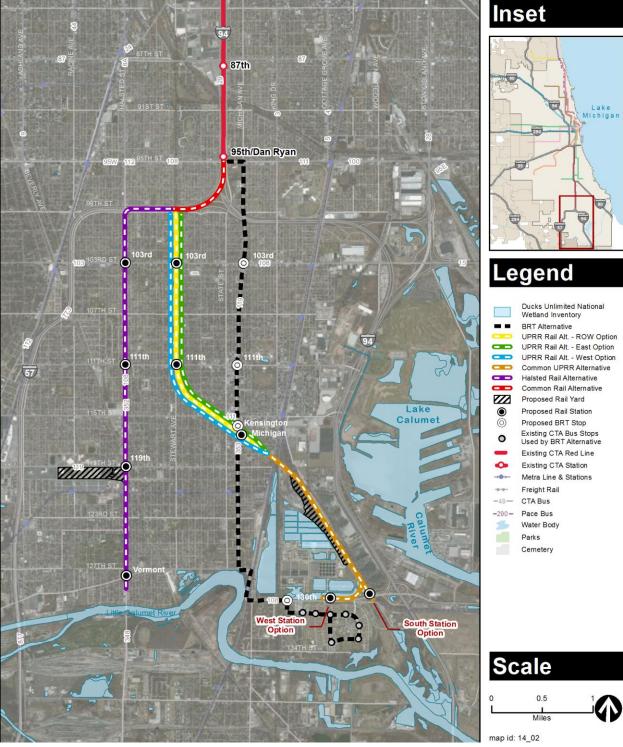
NRCS Soil

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.

■ <u>NWI</u>

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:

<u>Aerial Photographs</u>

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.

#### ■ <u>NWI</u>

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 nonwetland 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.





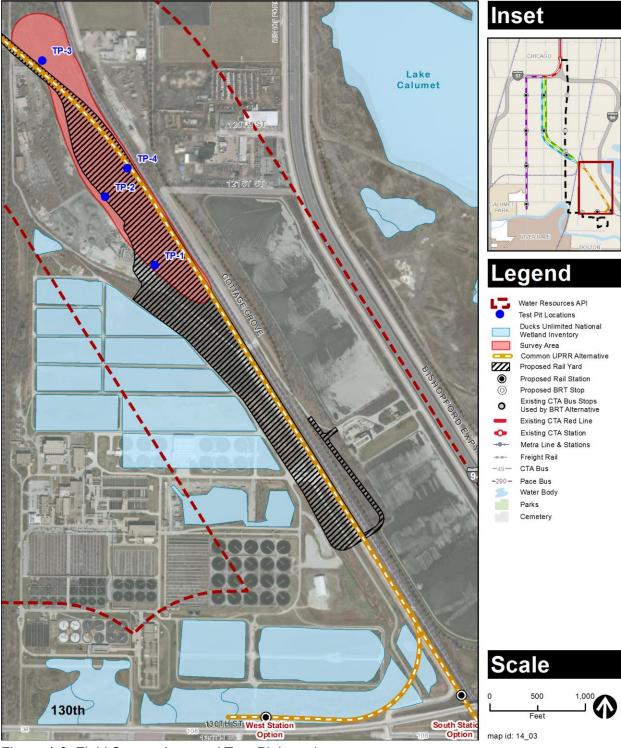


Figure 4-3: Field Survey Area and Test Pit Locations





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 o 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.

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:

<u>Aerial Photographs</u>

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.

#### ■ <u>NWI</u>

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

■ <u>Field Visit</u>

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.

■ <u>IDNR EcoCAT</u>

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.

#### ■ <u>NWI</u>

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

#### <u>Field Visit</u>

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 APL in areas where construction could result in the need to

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







CDM Smith Applicant: 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

#### Disclaimer

The Illinois Natural Heritage Database cannot provide a conclusive statement on the presence, absence, or condition of natural resources in Illinois. This review reflects the information existing in the Database at the time of this inquiry, and should not be regarded as a final statement on the site being considered, nor should it be a substitute for detailed site surveys or field surveys required for environmental assessments. If additional protected resources are encountered during the project's implementation, compliance with applicable statutes and regulations is required.

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CDM Smith Applicant: 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



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

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Applicant: CDM Smith Contact: Claudia Lea 125 S Wacker Drive Address: 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	

#### IL Department of Natural Resources Contact

Impact Assessment Section 217-785-5500 **Division of Ecosystems & Environment** 



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CDM Smith Applicant: 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, 22 37N, 14E, 15 37N, 14E, 26 37N, 14E, 27 37N, 14E, 28 37N, 14E, 33 37N, 14E, 34 37N, 14E, 35



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

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CDM Smith Applicant: Contact: Claudia Lea 125 S Wacker Drive Address: 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, 29 37N. 14E. 28 37N, 14E, 32 37N, 14E, 33

#### IL Department of Natural Resources Contact

Impact Assessment Section 217-785-5500 **Division of Ecosystems & Environment** 

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#### Privacy

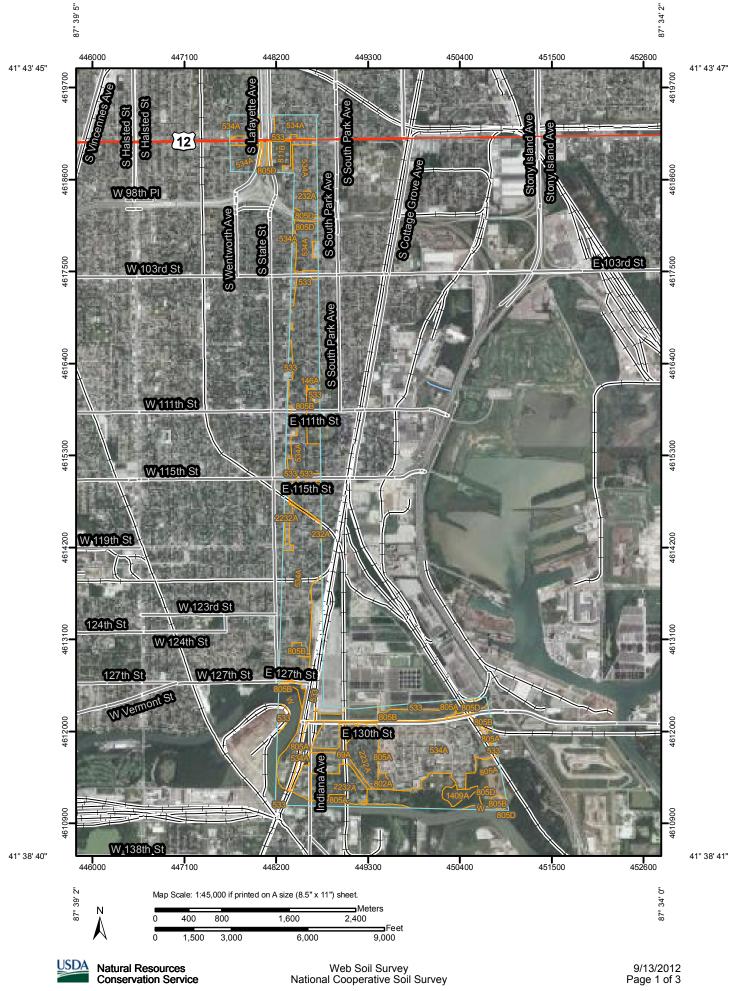
EcoCAT generates a public record subject to disclosure under the Freedom of Information Act. Otherwise, IDNR uses the information submitted to EcoCAT solely for internal tracking purposes.



## Appendix B Natural Resources Conservation Service Web Soil Survey Summary



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



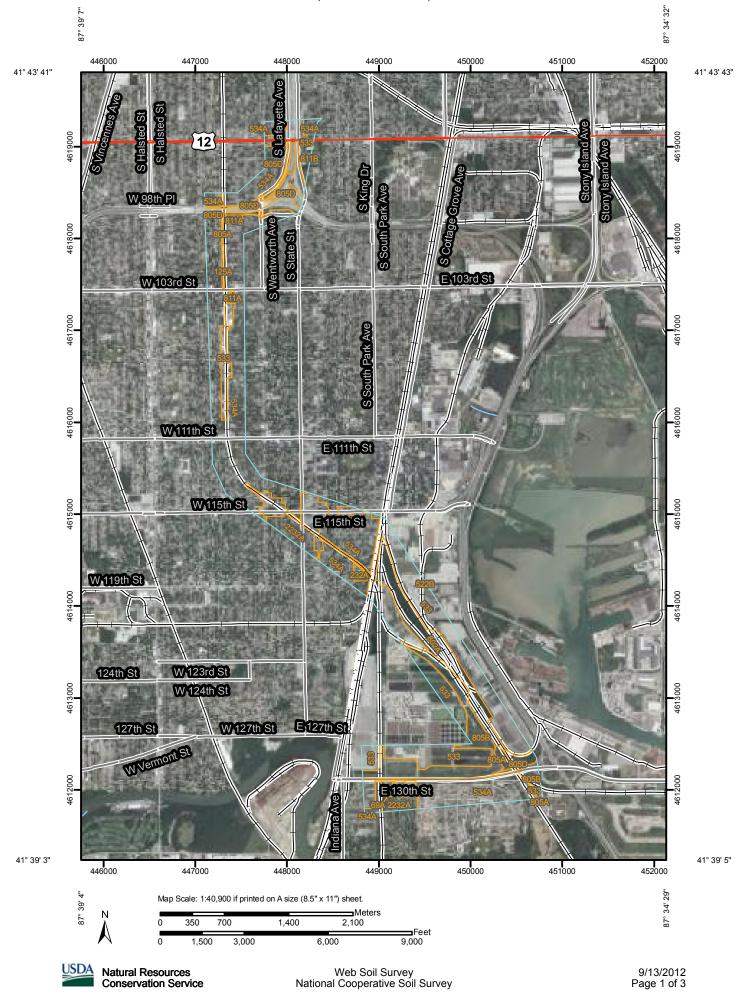
9/13/2012 Page 1 of 3

MAP LEGEND				MAP INFORMATION Map Scale: 1:45,000 if printed on A size (8.5" × 11") sheet.	
Area of Interest (AOI) Area of Interest (AOI)		Very Stony Spot			
		¥	Wet Spot	The soil surveys that comprise your AOI were mapped at 1:12,000	
Soils	Soil Map Units	•	Other	Please rely on the bar scale on each map sheet for accurate r	
Createl	Point Features		Line Features	measurements.	
Special (•)	Blowout	$\sim$	Gully	Source of Map: Natural Resources Conservation Service Web Soil Survey URL: http://websoilsurvey.nrcs.usda.gov	
×	Borrow Pit	12.0	Short Steep Slope	Coordinate System: UTM Zone 16N NAD83	
	Clay Spot	11	Other	This product is generated from the USDA-NRCS certified data as	
*		Political F	eatures	the version date(s) listed below.	
•	Closed Depression	•	Cities	Soil Survey Area: Cook County, Illinois	
$\times$	Gravel Pit	Water Fea	itures	Survey Area Data: Version 6, Nov 2, 2011	
~	Gravelly Spot	$\sim$	Streams and Canals	Date(s) aerial images were photographed: 7/30/2007; 8/3/200	
Ø	Landfill	Transport		The orthophoto or other base map on which the soil lines were	
۸.	Lava Flow	+++	Rails	compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shift	
علد	Marsh or swamp	~	Interstate Highways	of map unit boundaries may be evident.	
*	Mine or Quarry	$\sim$	US Routes		
0	Miscellaneous Water	~~	Major Roads		
۲	Perennial Water				
~	Rock Outcrop				
+	Saline Spot				
:::	Sandy Spot				
=	Severely Eroded Spot				
\$	Sinkhole				
3	Slide or Slip				
ø	Sodic Spot				
3	Spoil Area				

## 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 Inter	rest	1,629.8	100.0%			

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



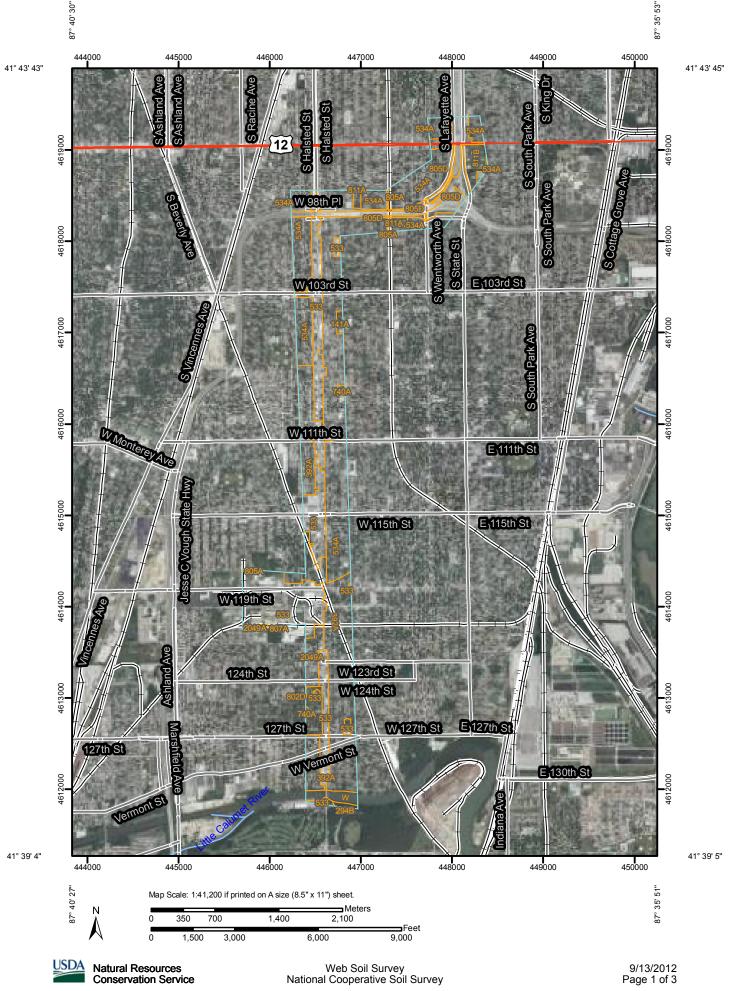
MAP LEGEND			MAP INFORMATION	
Area of Interest (AOI)		æ	Very Stony Spot	Map Scale: 1:40,900 if printed on A size (8.5" × 11") sheet.
	Area of Interest (AOI)	¥	Wet Spot	The soil surveys that comprise your AOI were mapped at 1:12,
Soils	Soil Map Units	•	Other	Please rely on the bar scale on each map sheet for accurate n measurements.
Special	Point Features	-	Line Features	Source of Map: Natural Resources Conservation Service
•	Blowout	$\sim$	Gully	Web Soil Survey URL: http://websoilsurvey.nrcs.usda.gov
$\boxtimes$	Borrow Pit	100	Short Steep Slope	Coordinate System: UTM Zone 16N NAD83
*	Clay Spot	11	Other	This product is generated from the USDA-NRCS certified data
•	Closed Depression	Political F		the version date(s) listed below.
×	Gravel Pit	0	Cities	Soil Survey Area: Cook County, Illinois Survey Area Data: Version 6, Nov 2, 2011
	Gravelly Spot	Water Fea	Streams and Canals	Date(s) aerial images were photographed: 7/30/2007; 8/3/2
۵	Landfill	Transport	ation	The orthophoto or other base map on which the soil lines were
Ā	Lava Flow	+++	Rails	compiled and digitized probably differs from the background
علد	Marsh or swamp	~	Interstate Highways	imagery displayed on these maps. As a result, some minor sh of map unit boundaries may be evident.
~	Mine or Quarry	$\sim$	US Routes	of map unit boundaries may be evident.
õ	Miscellaneous Water	$\sim$	Major Roads	
õ	Perennial Water			
v	Rock Outcrop			
+	Saline Spot			
	Sandy Spot			
=	Severely Eroded Spot			
\$	Sinkhole			
ò	Slide or Slip			
ø	Sodic Spot			
	Spoil Area			
٥	Stony Spot			
~	7 - 1			



## 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 Inte	rest	1,374.3	100.0%	

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



9/13/2012 Page 1 of 3

MAP LEGEND				MAP INFORMATION	
Area of Interest (AOI)		۵	Very Stony Spot	Map Scale: 1:41,200 if printed on A size (8.5" × 11") sheet.	
	Area of Interest (AOI)	¥	Wet Spot	The soil surveys that comprise your AOI were mapped at 1:12,00	
Soils			Other	Please rely on the bar scale on each map sheet for accurate map	
	Soil Map Units	Special Line Features		measurements.	
Special (•)	Point Features Blowout	$\sim$	Gully	Source of Map: Natural Resources Conservation Service Web Soil Survey URL: http://websoilsurvey.nrcs.usda.gov	
×	Borrow Pit	1.1.1	Short Steep Slope	Coordinate System: UTM Zone 16N NAD83	
×	Clay Spot	~-	Other	This product is generated from the USDA-NRCS certified data as	
*	Closed Depression	Political F	eatures	the version date(s) listed below.	
•		•	Cities	Soil Survey Area: Cook County, Illinois	
×	Gravel Pit	Water Fea		Survey Area Data: Version 6, Nov 2, 2011	
~	Gravelly Spot	~	Streams and Canals	Date(s) aerial images were photographed: 7/30/2007; 8/3/200	
۵	Landfill	Transport	Rails	The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background	
۸.	Lava Flow	~	Interstate Highways	imagery displayed on these maps. As a result, some minor shift	
علد	Marsh or swamp		US Routes	of map unit boundaries may be evident.	
*	Mine or Quarry	~			
0	Miscellaneous Water	~~	Major Roads		
۲	Perennial Water				
~	Rock Outcrop				
+	Saline Spot				
	Sandy Spot				
=	Severely Eroded Spot				
\$	Sinkhole				
3	Slide or Slip				
ø	Sodic Spot				
3	Spoil Area				
	Stony Spot				



## Map Unit Legend

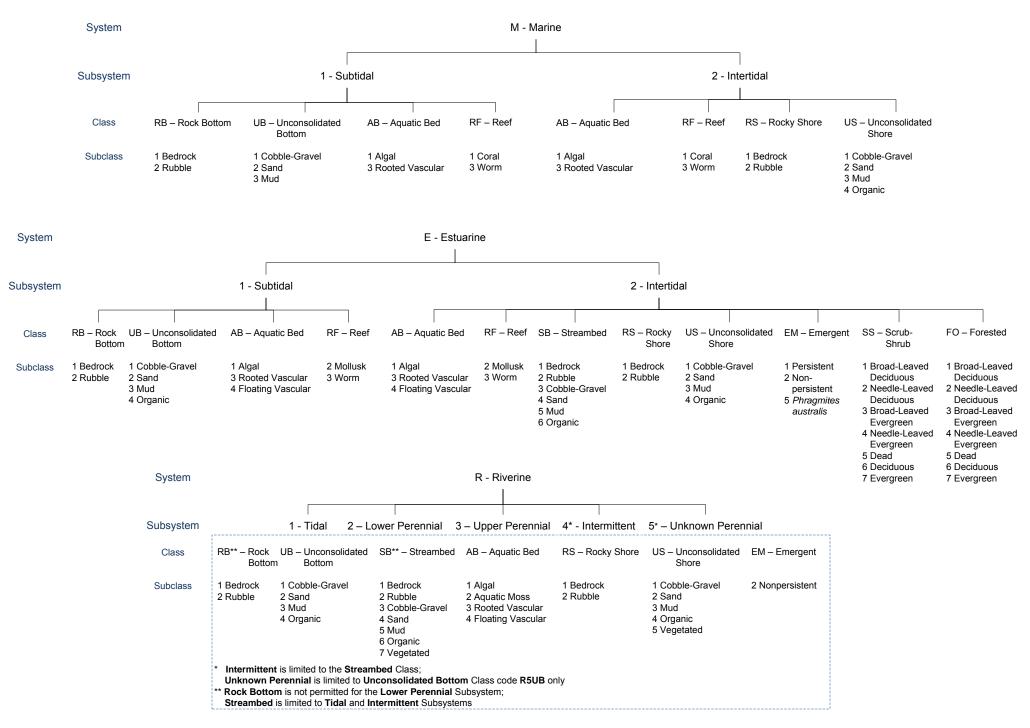
Cook County, Illinois (IL031)				
Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI	
141A	Wesley fine sandy loam, 0 to 2 percent slopes	4.2	0.3%	
293A	Andres silt loam, 0 to 2 percent slopes	0.6	0.0%	
294B	Symerton silt loam, 2 to 5 percent slopes	2.9	0.2%	
392A	Urban land-Orthents, loamy, complex, 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 Inter	est	1,251.9	100.0%	



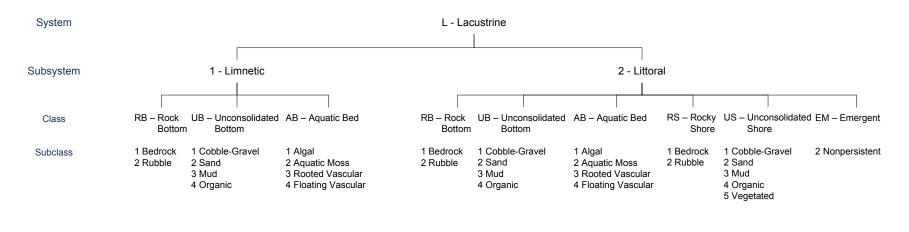
# Appendix C Wetlands and Deepwater Habitats Classification



### WETLANDS AND DEEPWATER HABITATS CLASSIFICATION

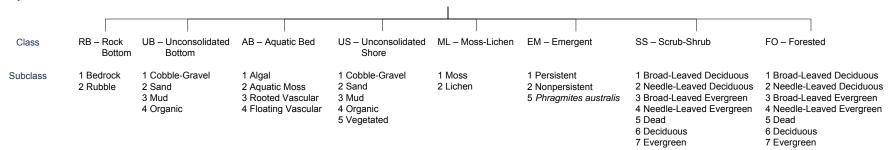


### WETLANDS AND DEEPWATER HABITATS CLASSIFICATION



System

P - Palustrine



	In order to more adeo	N quately describe the wetland and deep	IODIFIERS water habitats, one or more o	of the water regime, water o	chemistry, soil,or		
S	pecial modifiers may be a Water Regime	applied at the class or lower level in the Ə	hierarchy. The farmed mod Special Modifiers		the ecological system ater Chemistr		Soil
Nontidal	Saltwater Tidal	Freshwater Tidal		Coastal Halinity	Inland Salinity	pH M odifiers 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 M ineral
C Seasonally Flooded	N Regularly Flooded	T Semipermanently Flooded-Tidal	f Farmed	3 Mixohaline (Brackish)	9 M ixo saline	i Alkaline	
E Seasonally Flooded/	P Irregularly Flooded	V Permanently Flooded-Tidal	h Diked/Impounded	4 Polyhaline	0 Fresh		
Saturated			r Artificial	5 M eso haline			
F Semipermanently Flooded			s Spoil	6 Oligo haline			
G Intermittently Exposed			x Excavated	0 Fresh			
H Permanently Flooded							
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



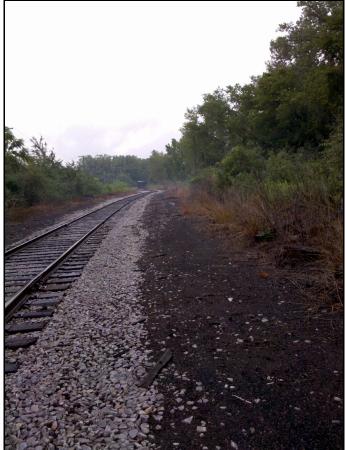
Along existing train tracks near test pit TP-2, facing northwest



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



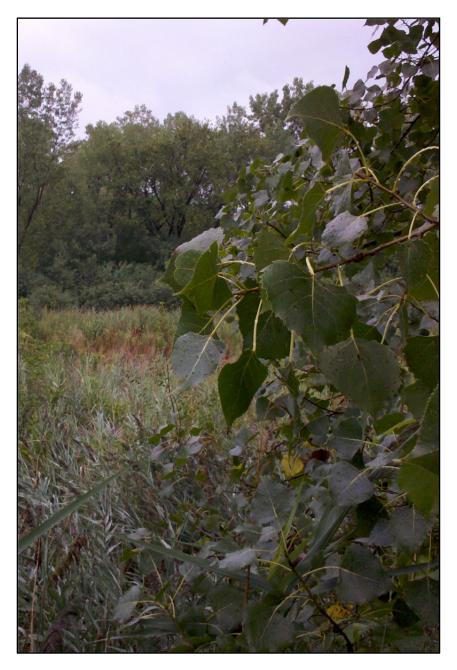
Scientific name: *Daucus carota* Common name: Queen Anne's lace



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









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	
Туре	Indicator Status
Populous deltoids (eastern cottonwood)	FAC+

FACW+

--

FAC-

Phragmites australis (phragmites) Daucus carota (Queen Anne's Lace) Prunus virginiana (Chokecherry)

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

<u>Legend</u>: 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	
<u>Type</u>	Indicator Status
Populous deltoids (eastern cottonwood)	FAC+

\_\_\_

Populous deltoids (eastern cottonwood) Daucus carota (Queen Anne's Lace) Rhus typhina (Staghorn sumac)

<u>Legend</u>: 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	
<u>Type</u>	Indicator Status

Туре	Indicator Status
Populous deltoids (eastern cottonwood)	FAC+
Daucus carota (Queen Anne's Lace)	
Rhus typhina (Staghorn sumac)	
nnus typninu (Stagnorn sunnac)	

<u>Legend</u>: 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







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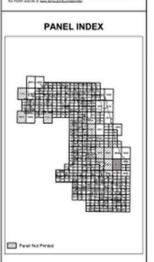
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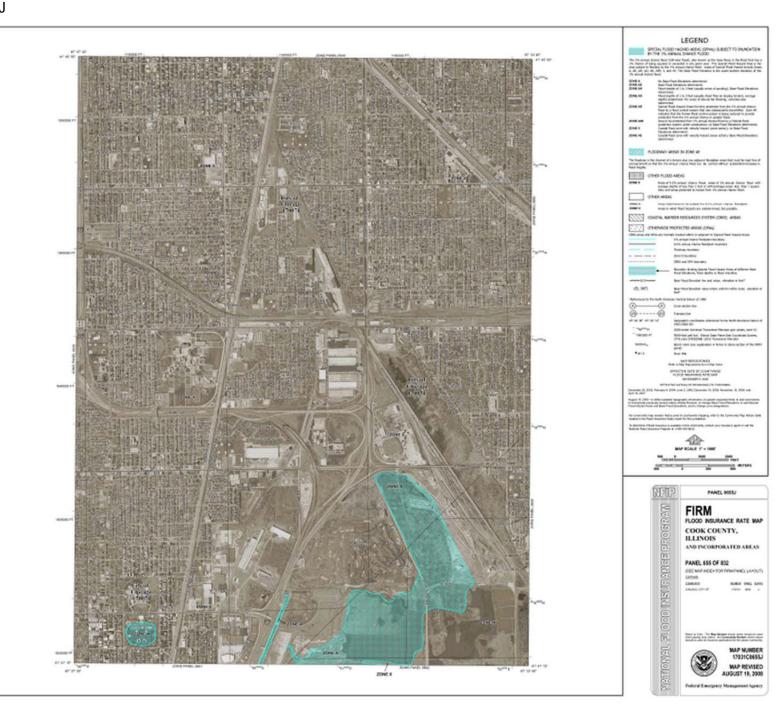
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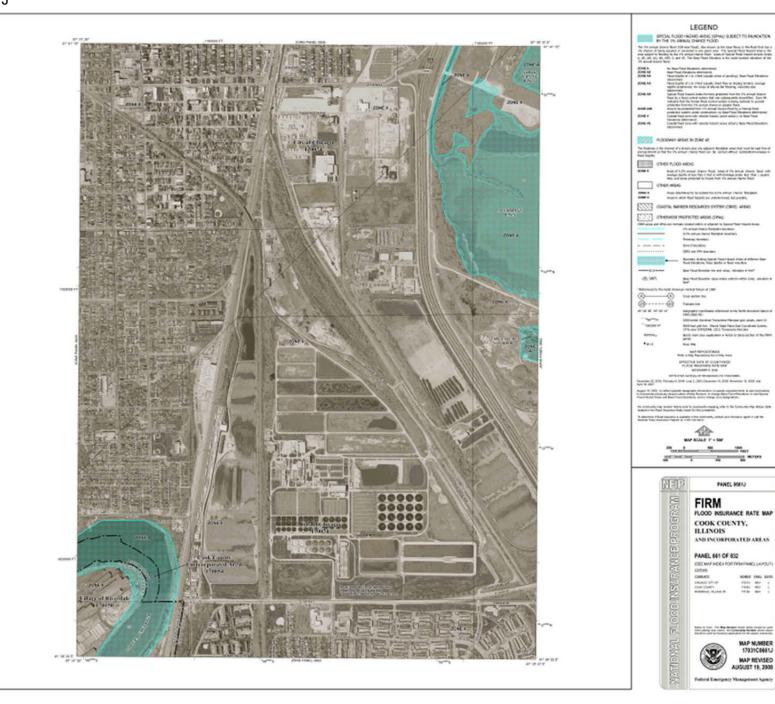
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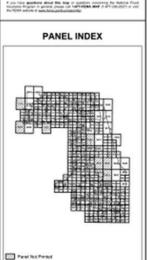
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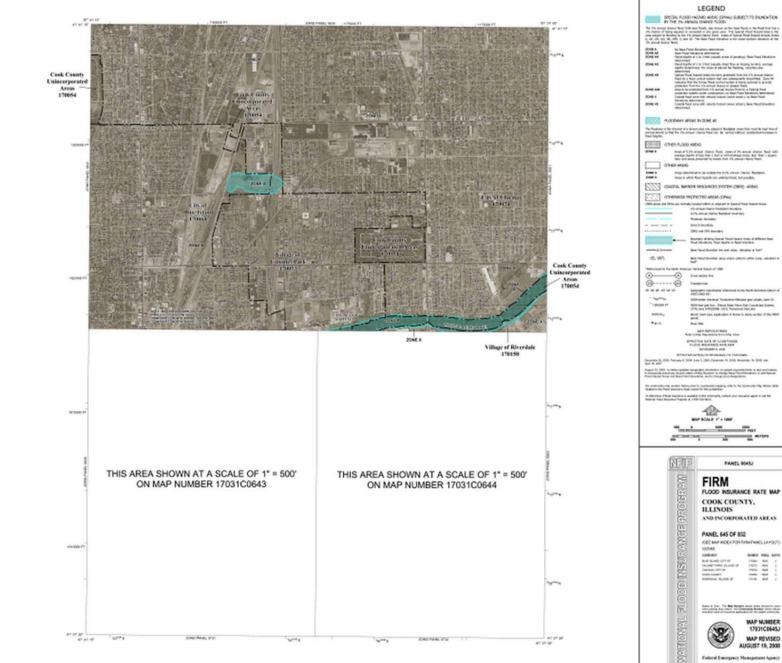
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# Appendix G 2014-2015 Red Line Extension Project Update





#### 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 130<sup>th</sup> 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

### Hey and Associates, Inc.

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).

Wetland	Area within Project Limits (acres)	Total Wetland Area (acres)	FQI <sup>1</sup>	Native Mean C <sup>2</sup>	HQAR <sup>3</sup>	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 <sup>4</sup>	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 ( <i>Phragmites australis</i> )
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					
x 2 3 6 4	egetative quality a The Native Mear The Chicago Dis lesignation is base While this area	nd above 35 ind a C is an indicat strict U.S. Arm and on the defin has a Native M	dicates "Nat ion of nativ ny Corps of itions found Mean C of g	tural Area" qual e vegetative qua Engineers has l within the Re greater than 3.	lity. ality for an are designated va gional Permit 5, it was base	a. Areas with value of 3.5 or greater arious Waters of the United States t Program that became effective Apr	o be high-quality aquatic resources (HQARs). This

Table 1. Summary of Wetlands within Project Limits.

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 135<sup>th</sup> Street. It is dominated by common reed and defined on the south by the 135<sup>th</sup> Street embankment, on the north and west by the Cottage Grove Avenue entrance off 135<sup>th</sup> 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 135<sup>th</sup> 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 135<sup>th</sup> 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 135<sup>th</sup> 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 135<sup>th</sup> 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.

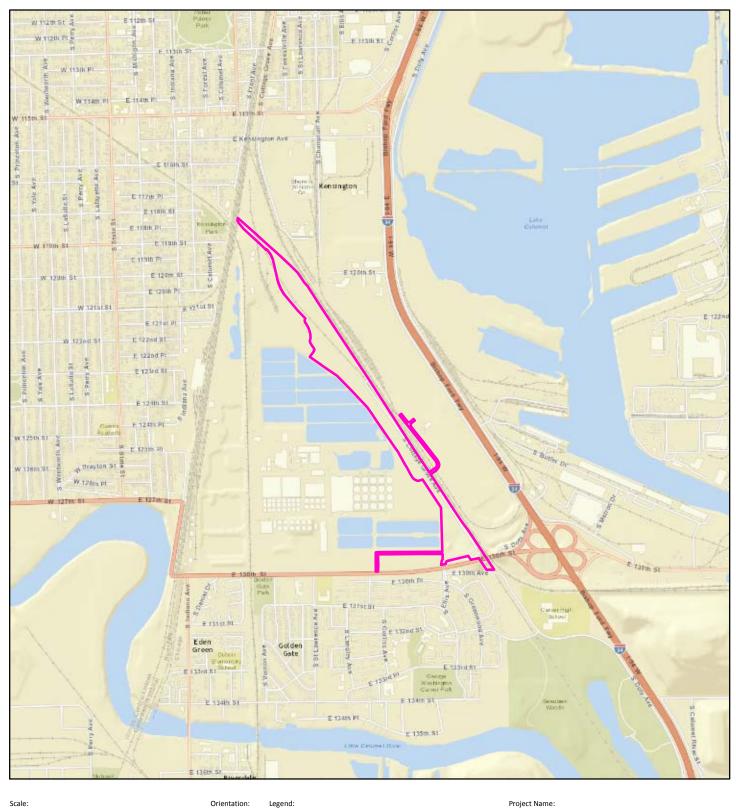
Wetland 14 is a swale located on the east side of the Indiana Harbor Belt Railroad/Metra South Shore line, but west of the MWRD fence around some sludge drying beds and other facilities. It is partially wooded by box elder and cottonwood but in open areas remains dominated by common reed.

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.



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Prepared by:

Feet





Project Permanent Envelope

**CTA Red Line Extension** 

Prepared for: **CDM Smith** 

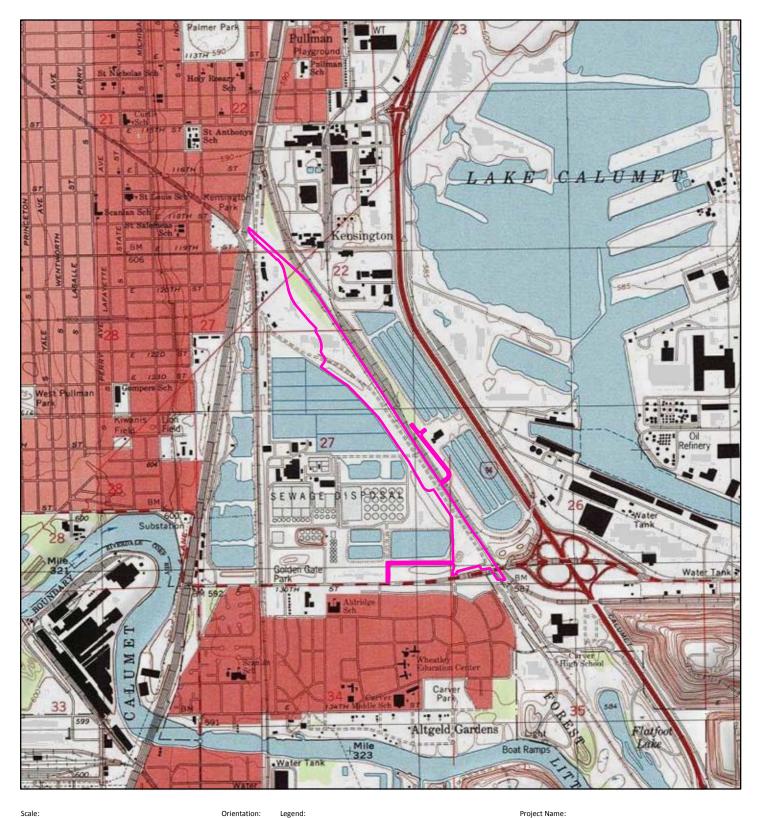
Location Information: T.37N.-R.14E., Sections 22, 26 & 27

Hey and Associates, Inc.

Engineering, Ecology and Landscape Architecture

2,000

Exhibit Title: **Project Location** 



0





Project Number: 15-0218

Latest Revision: 10/1/2015





Project Permanent Envelope

Project Name: CTA Red Line Extension

Prepared for: **CDM Smith** 

Location Information: Lake Calumet Quadrangle

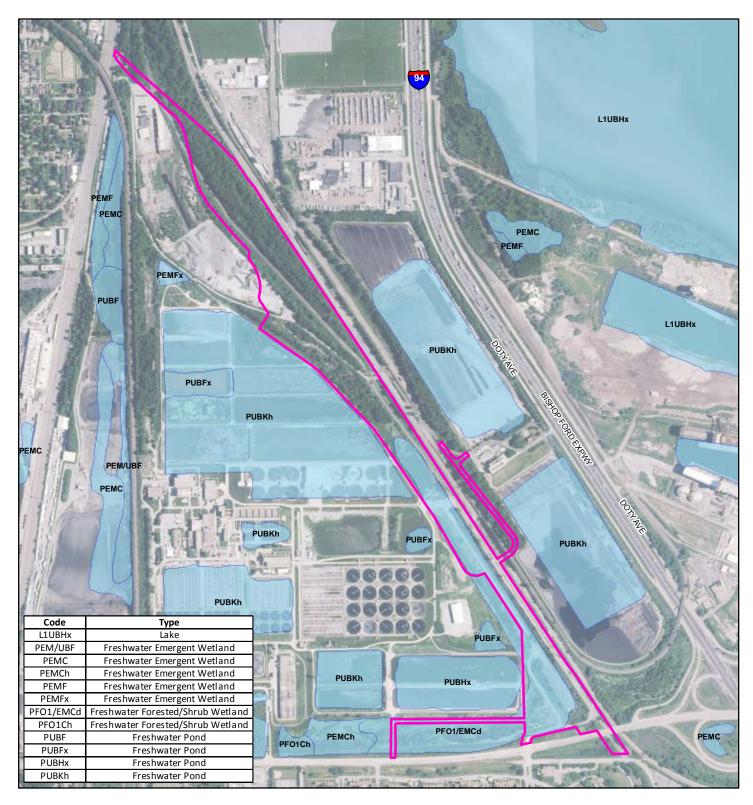
Prepared by:



2,000

Feet

Exhibit Title: U.S.G.S. Topographic Map



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Prepared by:

Project Number: 15-0218





Latest Revision: 10/1/2015

# Legend:

National Wetland Inventory Project Permanent Envelope Project Name: **CTA Red Line Extension** 

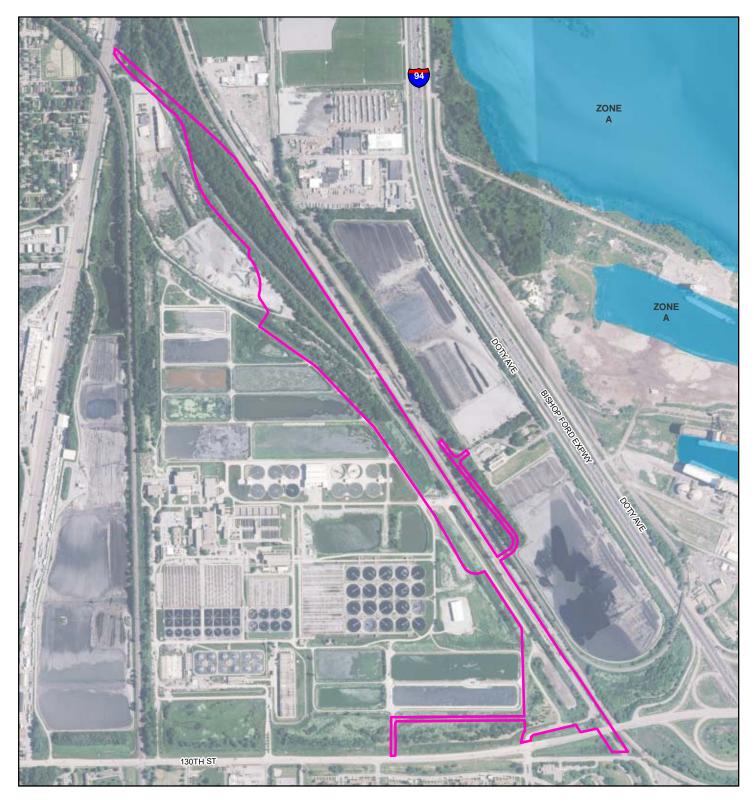
Prepared for: **CDM Smith** 

NWI Date: 1981

Hey and Associates, Inc.

Feet

Engineering, Ecology and Landscape Architecture









# Legend:

Project Number: 15-0218



100 Year Flood Zone Project Permanent Envelope Project Name: CTA Red Line Extension

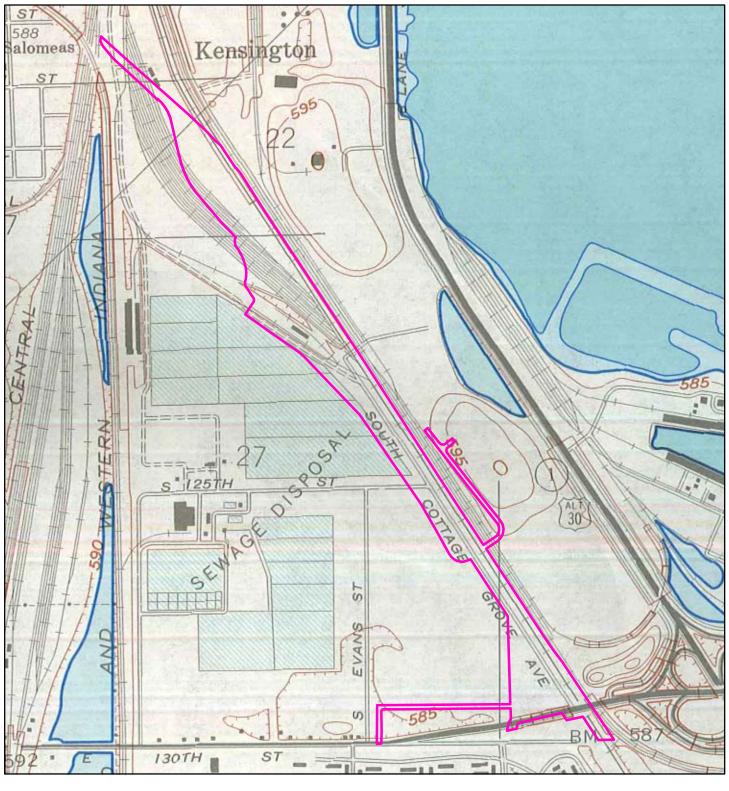
Prepared for: **CDM Smith** 

Panel #: 17031C0661J

Prepared by:



Exhibit Title: **Flood Insurance Rate Map** 



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Legend:

Orientation:

Latest Revision: 10/1/2015

Project Permanent Envelope

Project Name: CTA Red Line Extension

Prepared for: CDM Smith

Hydro Atlas Date: 1966

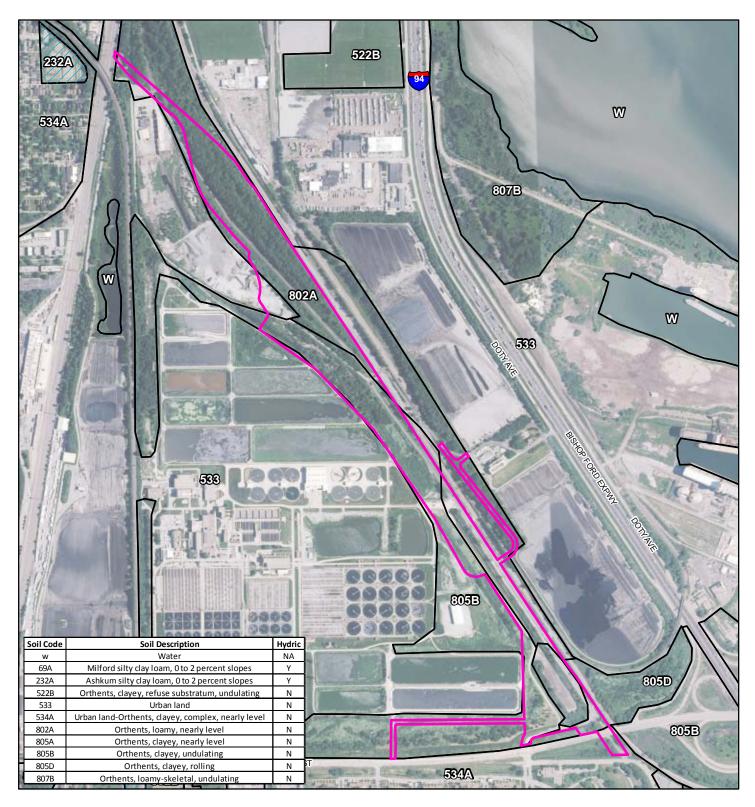
Prepared by:

Project Number: 15-0218



1,000 Feet

> Exhibit Title: U.S.G.S Hydrologic Atlas



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Project Number: 15-0218



1,000 Fe





Hydric Soils Soil Units

Legend:

Project Permanent Envelope

Project Name: CTA Red Line Extension

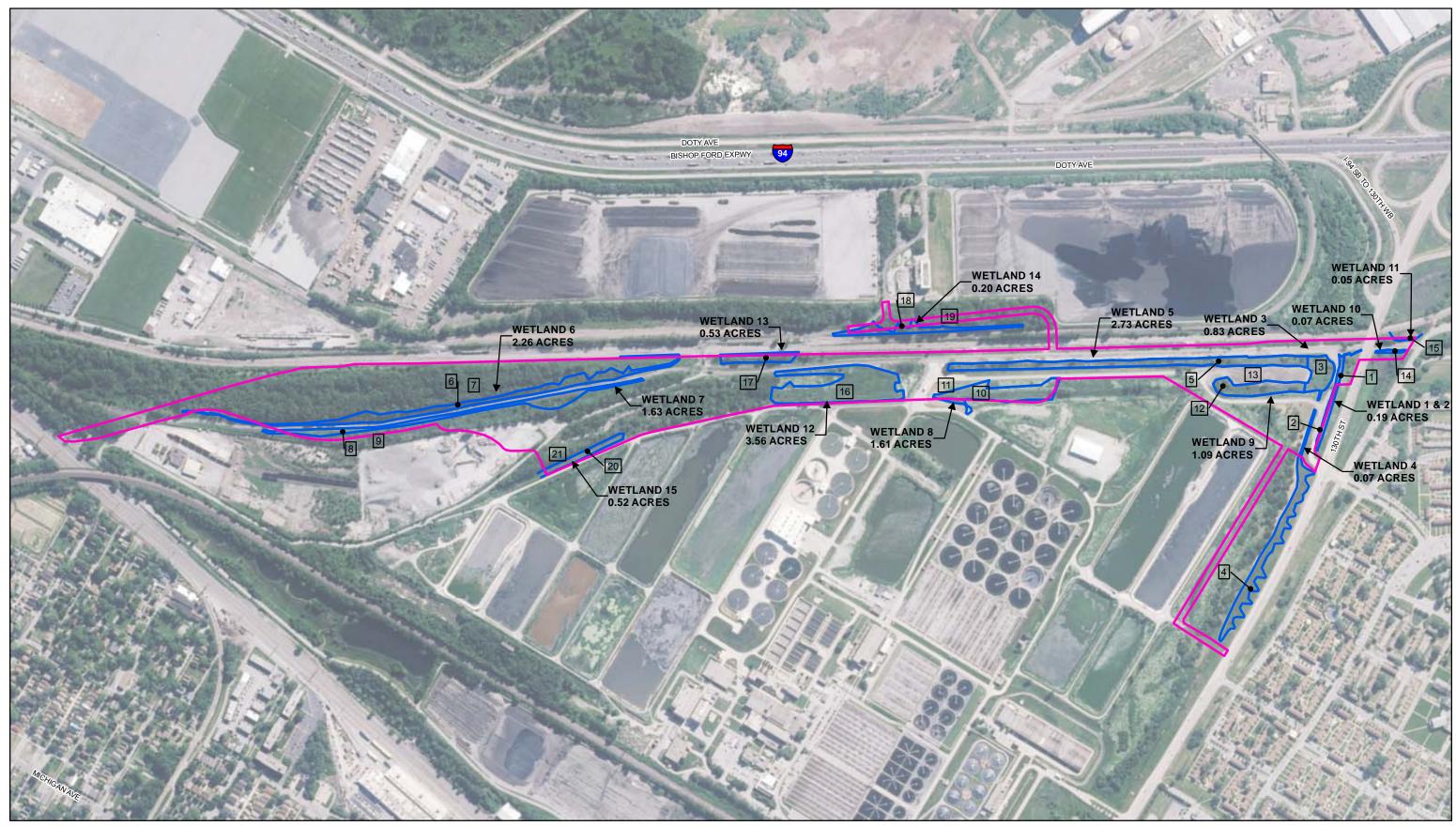
Prepared for: CDM Smith

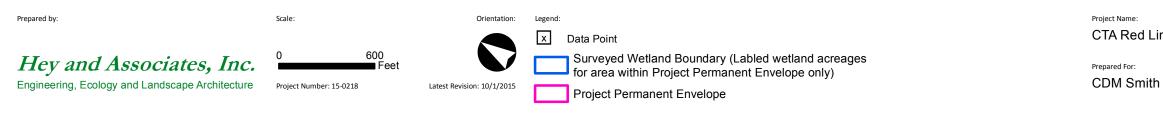
Soil Survey Date: 2012

Prepared by:

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

Exhibit Title: NRCS Soil Survey





Project Name: CTA Red Line Extension

Aerial Date: 2014

Exhibit Title: Wetland Boundary Exhibit:

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

Project Number: 15-0218

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

Project Name: CTA Red Line Extension

Exhibit Title: Exhibit: **Observed Wetland Species** 

#### CONSERVATISM-BASED METRICS

#### MEAN C 1.38 (NATIVE SPECIES) 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

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 NAME							
SPECIES	(NWPL/	SPECIES	COMMON		MIDWEST WET			
ACRONYM	MOHLENBROCK)	(SYNONYM)	NAME	C VALUE	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
			Hedge False					
consep	Calystegia sepium	Convolvulus sepium	Bindweed	1	FAC	Forb	Perennial	Native
diplac	Dipsacus laciniatus	DIPSACUS LACINIATUS	Cut-Leaf Teasel	0	UPL	Forb	Biennial	Adventive
		Fraxinus pennsylvanica						
frapen	Fraxinus pennsylvanica	subintegerrima	Green Ash	1	FACW	Tree	Perennial	Native
lytsal	Lythrum salicaria	LYTHRUM SALICARIA	Purple Loosestrife	0	OBL	Forb	Perennial	Adventive
	Phragmites australis ssp.							
phrausu	australis	Phragmites australis	Common Reed	0	FACW	Grass	Perennial	Adventive
popdel	Populus deltoides	Populus deltoides	Eastern Cottonwood	2	FAC	Tree	Perennial	Native
P - P								
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

## 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

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 % ANNUAL	0.00
% PERENNIAL	0.83

	SPECIES NAME				MIDWEST			
SPECIES	(NWPL/	SPECIES	COMMON		WET			
ACRONYM	MOHLENBROCK)	(SYNONYM)	NAME	C VALUE	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

BASED

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 % ANNUAL	0.00
% PERENNIAL	0.82

	SPECIES NAME				MIDWEST			
SPECIES	(NWPL/	SPECIES	COMMON		WET			
ACRONYM	MOHLENBROCK)	(SYNONYM)	NAME	C VALUE	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

# 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

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 NAME				MIDWEST			
SPECIES	(NWPL/	SPECIES	COMMON		WET			
ACRONYM	MOHLENBROCK)	(SYNONYM)	NAME	C VALUE	INDICATOR	HABIT	DURATION	NATIVITY
		Ambrosia artemisiifolia						
ambart	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
	Parthenocissus	Parthenocissus						
parqui	quinquefolia	quinquefolia	Virginia-Creeper	2	FACU	Vine	Perennial	Native
	Phragmites australis							
phrausu	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

BASED	
METRICS	
MEAN C	
(NATIVE SPECIES)	2.43
MEAN C	
-	1.50
(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

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 % ANNUAL	0.06
% PERENNIAL	0.78

	SPECIES NAME				MIDWEST			
SPECIES	(NWPL/	SPECIES	COMMON		WET			
ACRONYM	MOHLENBROCK)	(SYNONYM)	NAME	C VALUE	INDICATOR	HABIT	DURATION	NATIVITY
		Acer negundo var.						
aceneg	Acer negundo	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 Spotted St. John's-	2	FACW	Forb	Perennial	Native
hyppun	Hypericum punctatum	Hypericum punctatum	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
	Phragmites australis ssp.							
phrausu	australis	Phragmites australis	Common Reed	0	FACW	Grass	Perennial	Adventive
			Smooth Ground					
physub	Physalis subglabrata	Physalis subglabrata	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

0050150	SPECIES NAME				MIDWEST			
SPECIES	(NWPL/	SPECIES	COMMON	C VALUE	WET INDICATOR	HABIT	DUDATION	NATIVITY
ACRONYM	MOHLENBROCK)	(SYNONYM)	NAME	C VALUE	INDICATOR	HABII	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) ADJUSTED FQAI % C VALUE 0 % C VALUE 1-3 11.66 23.81 0.45 0.18 % C VALUE 4-6 % C VALUE 7-10 0.33 0.03

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

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

14
7
0.50
-0.21
-0.57
0.79
0.36
0.14
0.14
0.79

	SPECIES NAME				MIDWEST			
SPECIES	(NWPL/	SPECIES	COMMON		WET			
ACRONYM	MOHLENBROCK)	(SYNONYM)	NAME	C VALUE	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
			Climbing Black-					
polsca	Fallopia scandens	Polygonum scandens	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
	Phragmites australis ssp.							
phrausu	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

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

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 NAME				MIDWEST			
SPECIES	(NWPL/	SPECIES	COMMON		WET			
ACRONYM	MOHLENBROCK)	(SYNONYM)	NAME	C VALUE	INDICATOR	HABIT	DURATION	NATIVITY
		Acer negundo var.						
aceneg	Acer negundo	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
	Phragmites australis ssp.							
phrausu	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

#### 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) ADJUSTED FQAI & C VALUE 0 2.12 10.61 0.50 % C VALUE 1-3 % C VALUE 4-6 0.50 0.00 % C VALUE 7-10 0.00

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 NAME				MIDWEST			
SPECIES	(NWPL/	SPECIES	COMMON		WET			
ACRONYM	MOHLENBROCK)	(SYNONYM)	NAME	C VALUE	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
		Fraxinus pennsylvanica						
frapen	Fraxinus pennsylvanica	subintegerrima	Green Ash	1	FACW	Tree	Perennial	Native
lytsal	Lythrum salicaria	LYTHRUM SALICARIA	Purple Loosestrife	0	OBL	Forb	Perennial	Adventive
	Phragmites australis ssp.							
phrausu	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

## 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

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 % ANNUAL	0.00
% PERENNIAL	1.00

SPECIES	SPECIES NAME	SPECIES	COMMON		MIDWEST WET			
ACRONYM	(NWPL/	(SYNONYM)	NAME	C VALUE	INDICATOR	HABIT	DURATION	NATIVITY
lytsal	Lythrum salicaria	LYTHRUM SALICARIA	Purple Loosestrife	0	OBL	Forb	Perennial	Adventive
	Phragmites australis ssp.							
phrausu	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

### 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

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 NAME							
SPECIES	(NWPL/	SPECIES	COMMON		MIDWEST WET			
ACRONYM	MOHLENBROCK)	(SYNONYM)	NAME	C VALUE	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

#### 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 % C VALUE 7-10 0.00 0.00

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 % PERENNIAL	0.00

	SPECIES NAME							
SPECIES	(NWPL/	SPECIES	COMMON		MIDWEST WET			
ACRONYM	MOHLENBROCK)	(SYNONYM)	NAME	C VALUE	INDICATOR	HABIT	DURATION	NATIVITY
		Acer negundo var.						
aceneg	Acer negundo	violaceum	Box Elder	0	FAC	Tree	Perennial	Native
			Hedge False					
consep	Calystegia sepium	Convolvulus sepium	Bindweed	1	FAC	Forb	Perennial	Native
lytsal	Lythrum salicaria	LYTHRUM SALICARIA	Purple Loosestrife	0	OBL	Forb	Perennial	Adventive
	Phragmites australis ssp.							
phrausu	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

## 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

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 % 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
aceneg	Acer negunuo	violaceum	DOX LIGEI	0	TAC	nee	Ferennia	INALIVE
ambtri	Ambrosia trifida	Ambrosia trifida	Great Ragweed	0	FAC	Forb	Annual	Native
arcmin	Arctium minus	ARCTIUM MINUS	Lesser Burrdock	0	FACU	Forb	Biennial	Adventive
			Hedge False					
consep	Calystegia sepium	Convolvulus sepium	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

## 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	2.00
(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

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	0.50
PERENNIAL % NATIVE ANNUAL	0.50
% ANNUAL	0.00
% PERENNIAL	1.00

SPECIES ACRONYM	SPECIES NAME (NWPL/ MOHLENBROCK)	SPECIES (SYNONYM)	COMMON NAME	C VALUE	MIDWEST WET	HABIT	DURATION	NATIVITY
		Acer negundo var.						
aceneg	Acer negundo	violaceum	Box Elder	0	FAC	Tree	Perennial	Native
			Hedge False					
consep	Calystegia sepium	Convolvulus sepium	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

Project Number: 15-0218



Project Name: CTA Red Line Extension

Exhibit Title: Exhibit: Urisdictional Data Forms #9

# 15-0218 CDM-Smith -- CTA Red Line Extension

Project/Site Lake Calumet CTA Red Line Extension	City/	County:	Cook	Sampling	Date: 8/13/2	015
Applicant/Owner: CTA/MWRD		State:	Illin	ois Sampling	Point: 1	
Investigator(s): J Mengler, V Mosca		Se	ection, Towns	ship, Range:	T34N R14E S26	
Landform (hillslope, terrace, etc.): dite	ch	Lo	cal relief (cor	ncave, convex, none):	ditch	
Slope (%): Lat: 41.660019	9	Long:	-87.5954	29 Datum:		
Soil Map Unit Name: urban land-orthents clayey comp	lex, nearly			/I Classification:	none	
Are climatic/hydrologic conditions of the site typical fo	-		Y (	If no, explain in remarks	;)	
Are vegetation , soil Y , or hydrol	loav	significantly		Y Are "normal circum		
Are vegetation , soil , or hydrol				N present?	istances	Y
SUMMARY OF FINDINGS		natarany pro		·	any answers in rem	
Hydrophytic vegetation present? Y				(		
Hydric soil present?		is the sa	ampled area	within a wetland?	Y	
Wetland hydrology present? Y			•	—	etland 1	
		-	optional wet			
Remarks: (Explain alternative procedures here or in a	i separate r	eport.)				
Relied primarily upon vegetation and landsca	pe positio	n due to dry	y time of se	ason, and mostly ur	banland/fill for su	ubstrate.
		-		•		
VEGETATION Use scientific names of plan	its.					
	Absolute	Dominant	Indicator	Dominance Test	Norksheet	
<u>Tree Stratum</u> (Plot size: 9 m )	% Cover	Species	Status	Number of Dominant Sp		( )
1 Populus deltoides 2 Acer saccharinum	20	Y Y	FAC FACW	are OBL, FACW, or		(A)
3 Ulmus americana	5	N	FACW	Total Number of Do Species Across all S		(B)
4			1700	-		_(D)
5				Percent of Dominant Sp are OBL, FACW, or		% (A/B)
°	45	= Total Cover			100.00	,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,
Sapling/Shrub stratum (Plot size: 4.6 m	)			Prevalence Index	Worksheet	
1 Salix interior	, 15	Y	FACW	Total % Cover of:		
2 Populus deltoides	10	Y	FAC	OBL species	0 x 1 = 0	
3 Fraxinus pennsylvanica	5	Ν	FACW	FACW species	140 x 2 = 280	0
4				FAC species	30 x 3 = 90	)
5				FACU species	0 x 4 = 0	
	30	= Total Cover		UPL species	0 x 5 = 0	
Herb stratum (Plot size: 1 m sq	)			Column totals		0 (B)
1 Phragmites australis	95	Y	FACW	Prevalence Index =	= B/A = 2.18	_
2						
3					etation Indicators:	
4				·	hydrophytic vegetati	on
5 6				X Dominance tes X Prevalence inc		
7					lex 15 =5.0	
8					adaptations* (provid	
9				supporting dat separate shee	a in Remarks or on t)	a
10					/drophytic vegetation	n*
· · · · · · · · · · · · · · · · · · ·	95	= Total Cover		(explain)		
Woody vine stratum (Plot size: 1 m sq	)				oil and wotland budgets	av must be
1 <u> </u>					soil and wetland hydrolog ss disturbed or problema	
2				Hydrophytic		
	0	= Total Cover		vegetation	N/	
				present?	<u>Y</u>	
Remarks: (Include photo numbers here or on a separ	ate sheet)					

SOIL	
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		ibe to th				ne indica	tor or confirm th	e absence o	f indicators.)
Depth (Inches)	<u>Matrix</u> Color (moist)	%	Red Color (moist)	dox Feat %		Loc**	Texture		Remarks
(110105)		/0		70	Type*		rexture	<u> </u>	nemarks
			<b></b>						
*Type: C = (	Concentration, D	= Denlei	tion RM = Redu	L red Matr	iv MS =	Masked	Sand Grains	**Location: F	PL = Pore Lining, M = Matrix
	bil Indicators:	- Depie			IX, INO –	Maskeu			tic Hydric Soils:
-	tisol (A1)		Sai	ndv Glev	ed Matrix	x (S4)			A16) ( <b>LRR K, L, R</b> )
	tic Epipedon (A2)	1		ndy Red		x (04)		rface (S7) (LF	, , , , ,
	ck Histic (A3)			-	atrix (S6)				Peat (S3) ( <b>LRR K, L, R</b> )
	drogen Sulfide (A	4)		•••	ky Miner			•	ses (F12) ( <b>LRR K, L, R</b> )
´	atified Layers (A5	,		•	/ed Matri	• •		allow Dark Su	( )( ), ( ), ( ), ( ), ( ), ( ), ( ), (
	m Muck (A10)	)							
	pleted Below Darl	<pre>c Surfaa</pre>	`		atrix (F3)			xplain in rema	arks)
	ck Dark Surface (				< Surface ark Surfa	. ,			
	ndy Mucky Minera				ressions				ic vegetation and wetland
	m Mucky Peat or			иох рер	165510115	(10)	hydrology		sent, unless disturbed or lematic
	-	•	3)					piobi	
	Layer (if observ ravel, ballast, fill	ea):					Hydric soil	nrocont?	
Depth (inch		nined			-		Tryunc son		
Remarks: Area ma	pped as urban	land, a	and located ald	ong roa	d at bas	se of an	other road emb	oankment.	Probe refusal within 2-
	due to gravel	and fill.							
HYDROL									
	drology Indicato		a raquiradi abaal	all that	onnhu)		Coord		
	cators (minimum	of one is	<u>s required, crieck</u>						s (minimum of two required)
X Surface					Fauna (B	,		Surface Soil C	
·	ater Table (A2)			-	Juatic Plai			Drainage Patte	
Saturatio				Hydroge	en Sulfide	Odor (C			/ater Table (C2)
	larks (B1)				d Rhizosp	heres on		Crayfish Burro	
	nt Deposits (B2)			(C3)					ible on Aerial Imagery (C9)
	posits (B3)			Presenc	ce of Red	uced Iron	· · · —		essed Plants (D1)
-	at or Crust (B4)				Iron Redu	uction in T		Geomorphic P	
	oosits (B5)			(C6)				FAC-Neutral T	ēst (D5)
	on Visible on Aeria			-	ick Surfac				
X Sparsely	/ Vegetated Conca	ve Surfa	ce (B8)	Gauge	or Well D	ata (D9)			
	tained Leaves (B9	)		Other (E	Explain in	Remarks	)		
Field Obser		Maa	Nia	X	Denth (	·		Wetland	
Surface wat Water table	•	Yes Yes	No No	$\frac{x}{x}$		inches): inches):		hydrolog	1V
Saturation p	•	Yes	X No			inches):	0	present?	
•	pillary fringe)					,			
Describe re	corded data (stre	am gaug	je, monitoring we	ell, aerial	photos,	previous	inspections), if av	/ailable:	
Dementer									
Remarks:									
Saturatio	on within ditch	channe	l lined by hydr	onhvte	\$				
- attaituit									

oject/Site Lake Calumet CTA Red Line Extension City/C		County:	Cook		Sampling Date:	8/13/2015
pplicant/Owner: CTA/MWRD		State	tate: Illinois		Sampling Point:	2
Investigator(s): J Mengler, V Mosca		5	Section, Township, Range: T37N, R14E			14E, S26
Landform (hillslope, terrace, etc.): dit	ch	L	ocal relief (co	ncave, convex	, none):	ditch
Slope (%): Lat: 41.690632	23	Long:	-87.6205	465	Datum:	
Soil Map Unit Name: urban land-orthents clayey com			NV	VI Classificatio	on:	none
Are climatic/hydrologic conditions of the site typical for				If no, explain i	in remarks)	
Are vegetation, soil, or hydro	logy	significant	ly disturbed?	Y Aro "por	mal circumstancos	,
Are vegetation , soil , or hydro				N present?		Y
SUMMARY OF FINDINGS	···			(If neede	d, explain any ans	wers in remarks.)
Hydrophytic vegetation present? Y						
Hydric soil present?		Is the	sampled area	within a wet	land? Y	
Wetland hydrology present? Y			•		Wetland 2	
Remarks: (Explain alternative procedures here or in a	e senarate re		-, -	_		
	a separate re	port.)				
Relied primarily upon vegetation and landsca	ape positior	n due to d	Iry time of se	eason, and r	nostly urbanland	/fill for substrate.
VEGETATION Use scientific names of plar	nts.					
	Absolute	Dominant	Indicator	Domina	nce Test Workshe	et
Tree Stratum (Plot size: 9 m )	% Cover	Species	Status	Number of D	ominant Species tha	t
1					FACW, or FAC:	1 (A)
2				Total Nur	nber of Dominant	
3				Species	Across all Strata:	1 (B)
4					ominant Species tha	
5				are OBL,	FACW, or FAC:	100.00% (A/B)
Conling/Chrub stratum (Dist size) 4.6 m	=	Total Cove	er	Dreveley		t
Sapling/Shrub stratum (Plot size: 4.6 m	)				<b>1ce Index Worksh</b> Cover of:	eet
2				OBL spe		1 = 0
3				-	pecies 95 x	
4				FAC spe		3 = 0
5				FACU sp		4 = 0
	0 =	Total Cove	er	UPL spe	cies 0 x	5 = 0
Herb stratum (Plot size: 1 m sq	)			Column	totals 95 (A	A) 190 (B)
1 Phragmites australis	95	Y	FACW	Prevaler	ice Index = B/A =	2.00
2						
3					nytic Vegetation Ir	
4					d test for hydrophy	-
5 6					inance test is >50% alence index is ≤3.	
7						
8					phological adaptation orting data in Rem	
9					irate sheet)	
10					lematic hydrophytic	c vegetation*
	95 =	Total Cove	er	(exp		<b>U</b>
Woody vine stratum (Plot size: 1 m sq	)				rs of hydric soil and we resent, unless disturbe	tland hydrology must be
2					rophytic	
	0 =	Total Cove	er	vege	etation	
	-			pres	ent? Y	
Remarks: (Include photo numbers here or on a separ	ate sheet)					

SOIL
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Profile Des	cription: (Descr	ibe to th	he depth neede	d to docu	ument th	e indica	tor or confirm tl	he absence of ind	icators.)
Depth	<u>Matrix</u>		Re	dox Feat					
(Inches)	Color (moist)	%	Color (moist)	%	Type*	Loc**	Texture		Remarks
*Type: C = C	Concentration, D	= Deplet	tion, RM = Redu	ced Matri	ix, MS =	Masked	Sand Grains.	**Location: PL = F	Pore Lining, M = Matrix
Hydric So	il Indicators:						Indicators f	or Problematic Hy	dric Soils:
Hist	tisol (A1)			ndy Gley		(S4)	Coast P	Prairie Redox (A16)	(LRR K, L, R)
Hist	tic Epipedon (A2)			ndy Redo				urface (S7) (LRR K	•
	ck Histic (A3)		Str	ipped Ma	atrix (S6)			ucky Peat or Peat (	
	Irogen Sulfide (A			amy Muc	•	. ,			F12) ( <b>LRR K, L, R</b> )
	atified Layers (A5)	)		amy Gley		. ,		allow Dark Surface	e (TF12)
	m Muck (A10)			pleted Ma			Other (e	explain in remarks)	
	pleted Below Dark			dox Dark					
	ck Dark Surface (			pleted Da			*Indicator	s of hydrophytic ve	getation and wetland
	ndy Mucky Minera			dox Depr	ressions	(F8)	hydrology must be present, unless disturbed or		
	n Mucky Peat or		3)					problemat	IC
	Layer (if observe	ed):							
Type: gr Depth (inche	ravel, ballast, fill es): not determ	inod			-		Hydric so	il present?	
		inteu			-				
Remarks:									
	• •			ong road	d at bas	e of an	other road em	bankment. Pro	be refusal within 2-
4 inches	due to gravel a	and fill.							
HYDROLO									
-	drology Indicato								
Primary Indi	cators (minimum	of one is	s required; check	call that a	apply)		<u>Secon</u>	dary Indicators (mi	nimum of two required)
X Surface	Water (A1)				Fauna (B	-		Surface Soil Cracks	
High Wa	iter Table (A2)			True Aq	uatic Plar	nts (B14)	X	Drainage Patterns (	B10)
Saturatio	on (A3)			Hydroge	en Sulfide	Odor (C1	1)	Dry-Season Water	Table (C2)
	larks (B1)				d Rhizosp	heres on	Living Roots	Crayfish Burrows (C	
X Sedimer	nt Deposits (B2)			(C3)				•	n Aerial Imagery (C9)
Drift Dep	oosits (B3)			Presenc	e of Redu	uced Iron	(C4)	Stunted or Stressed	( )
Algal Ma	t or Crust (B4)				ron Redu	ction in T	illed Soils	Geomorphic Positio	n (D2)
	osits (B5)			(C6)				FAC-Neutral Test (I	05)
	on Visible on Aeria			Thin Mu	ck Surfac	e (C7)			
X Sparsely	Vegetated Conca	ve Surfa	ce (B8)	Gauge c	or Well Da	ata (D9)			
	tained Leaves (B9	)		Other (E	xplain in	Remarks	)		
Field Obser		Vee	No	×	Donth (i		0 lan	Wetland	
Surface wate Water table		Yes Yes	No No	$\frac{X}{X}$	Depth (i Depth (i	,	0-Jan	hydrology	
Saturation p	•	Yes	X No		Depth (i	,	0	present?	Y
(includes ca	pillary fringe)				-				
Describe rec	corded data (strea	am gaug	ge, monitoring we	ell, aerial	photos,	previous	inspections), if a	vailable:	
Remarks:									
Saturatio	on within ditch	channe	el lined by hydr	ophytes	6.				

Project/Site Lake Calumet CTA Red Line Extension	City/0	County:	Cook		Sampling Date:	8/13/2015	
Applicant/Owner: CTA/MWRD	Stat	te: Illir	nois	Sampling Point:	Impling Point: 3		
Investigator(s): J Mengler, V Mosca			Section, Township, Range: T37N, R14E, S2				
Landform (hillslope, terrace, etc.): dit	ch		Local relief (co	ncave, conve	(, none):	ditch	
Slope (%): Lat: 41.660463	3	Long:	-87.595	76	Datum:		
Soil Map Unit Name: urban land-orthents clayey com	olex, nearly			VI Classificatio	on:	none	
Are climatic/hydrologic conditions of the site typical for				lf no, explain	in remarks)		
Are vegetation, soilY, or hydro	logy	significar	ntly disturbed?	Y Aro "por	mal circumstancos		
Are vegetation , soil , or hydro						Y	
SUMMARY OF FINDINGS	<u> </u>				ed, explain any ans	wers in remarks.)	
Hydrophytic vegetation present? Y					· ·	·	
Hydric soil present?		Is the	e sampled area	within a wet	land? Y		
Wetland hydrology present? Y			-		Wetland 3		
Remarks: (Explain alternative procedures here or in a	e senarate r						
Remarks. (Explain alternative procedures here of in a	a separate n	epon.)					
Relied primarily upon vegetation and landsca	ape positio	n due to	dry time of se	eason, and r	mostly urbanland	l/fill for substrate.	
L VEGETATION Use scientific names of plar	nts						
	Absolute	Domina	nt Indicator	Domina	nce Test Workshe	et	
<u>Tree Stratum</u> (Plot size: 9 m )	% Cover	Species		Number of D	ominant Species tha	t	
1					, FACW, or FAC:	1 (A)	
2				Total Nur	mber of Dominant		
3				Species	Across all Strata:	<u>1</u> (B)	
4					ominant Species tha		
5				are OBL	, FACW, or FAC:	100.00% (A/B)	
	<u> </u>	= Total Co	ver	<u> </u>			
Sapling/Shrub stratum (Plot size: 4.6 m	)				n <b>ce Index Worksh</b> Cover of:	eet	
2				OBL spe		1 = 10	
3					pecies 95 x		
4				FAC spe	·	3 = 0	
5				FACU sp		4 = 0	
	0	= Total Co	ver	UPL spe	cies 0 x	5 = 0	
Herb stratum (Plot size: 1 m sq	)			Column	totals 105 (A	.) <u>200</u> (B)	
1 Phragmites australis	95	Y	FACW	Prevaler	nce Index = $B/A =$	1.90	
2 Lythrum salicaria	10	N	OBL				
3					nytic Vegetation In		
4					id test for hydrophy	-	
5					iinance test is >50% alence index is ≤3.		
6 7							
8					phological adaptation		
9					arate sheet)		
10					elematic hydrophytio	c vegetation*	
	105	= Total Co	ver	(exp		J	
<u>Woody vine stratum</u> (Plot size: 1 m sq 1	)				rs of hydric soil and we present, unless disturbe	tland hydrology must be d or problematic	
2				Hyd	rophytic		
	0	= Total Co	ver	-	etation ent? Y	_	
Remarks: (Include photo numbers here or on a separ	rate sheet)						

SOIL	
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Profile Des	cription: (Descr	ibe to th	ne depth needed	to docu	ument th	e indica	tor or confirm the abse	nce of indicators.)		
Depth	Matrix		Rec	lox Feat	ures					
(Inches)	Color (moist)	%	Color (moist)	%	Type*	Loc**	Texture	Remarks		
*Tvpe: C = 0	Concentration, D	= Deplet	tion, RM = Reduc	ed Matri	x. MS =	Masked	Sand Grains. **Locat	tion: PL = Pore Lining, M = Matrix		
	il Indicators:	1			.,			lematic Hydric Soils:		
-	isol (A1)		Sar	dy Gleye	ed Matrix	(S4)		edox (A16) ( <b>LRR K, L, R</b> )		
	ic Epipedon (A2)			idy Redo		((01)	Dark Surface (S			
	ck Histic (A3)			pped Ma				it or Peat (S3) ( <b>LRR K, L, R</b> )		
	. ,	4)		my Mucł	. ,			Masses (F12) (LRR K, L, R)		
	rogen Sulfide (A			•	•	• •				
	tified Layers (A5	)		my Gley				ark Surface (TF12)		
	n Muck (A10)		·	leted Ma	. ,		Other (explain ir	remarks)		
	leted Below Darl		• • —	lox Dark						
	ck Dark Surface (			pleted Da			*Indicators of hydr	ophytic vegetation and wetland		
	idy Mucky Minera			lox Depr	essions	(F8)	hydrology must b	hydrology must be present, unless disturbed or		
5 cr	n Mucky Peat or	Peat (S3	3)					problematic		
	Layer (if observ	ed):								
	avel, ballast, fill						Hydric soil preser	nt?		
Depth (inche	es): not detern	nined								
Remarks:										
Aroo mo	nnod og urbon	land a	and located he	woon	urovol n	orking l	ot and gravel read	Proba refusal within 2.4		
	ue to gravel ar			weeng	ji avei p	arking i	ol and graver load. I	Probe refusal within 2-4		
inches u	ue to graver ar	iu iii.								
HYDROLO	DGY									
Wetland Hy	drology Indicate	ors:								
Primary Indi	<u>cators (minimum</u>	of one is	s required; check	all that a	apply)		Secondary Ind	icators (minimum of two required)		
Surface	Water (A1)			Aquatic I	Fauna (B	13)	Surface	Soil Cracks (B6)		
High Wa	ter Table (A2)			True Aqu	uatic Plar	nts (B14)	X Drainage	e Patterns (B10)		
Saturatio	on (A3)			Hydroge	n Sulfide	Odor (C1	l) Dry-Sea	son Water Table (C2)		
Water M	arks (B1)			Ovidized	l Rhizosn	heres on	Living Roots Crayfish	Burrows (C8)		
X Sedimer	t Deposits (B2)			(C3)	1112000		•	on Visible on Aerial Imagery (C9)		
	oosits (B3)				e of Redi	uced Iron		or Stressed Plants (D1)		
	t or Crust (B4)						Coomer	phic Position (D2)		
·	osits (B5)			(C6)	ron Reau	Iction in 1		utral Test (D5)		
	on Visible on Aeria	Imager	(B7)	•	ck Surfac					
	Vegetated Conca			•						
<u> </u>	-				r Well Da					
	tained Leaves (B9	)		Other (E	xpiain in	Remarks	)			
Field Obser Surface wat		Yes	No	Х	Depth (i	inchoc).	We	tland		
Water table	•	Yes	No	X	Depth (i			Irology		
Saturation p	•	Yes	X No		Depth (i			sent? Y		
(includes ca	pillary fringe)				• • •					
Describe rec	corded data (stre	am gaug	ge, monitoring we	ll, aerial	photos,	previous	inspections), if available:			
Remarks:										
noniaitts.										
Saturation	within ditat /	owala	honnol of low	ot noi-	t in loc		0000			
Saturatio	m within allch/	swale (	channel at lowe	ser hoiu	L II I I I I I I I I I I I I I I I I I	andrius	cape.			

Project/Site Lake Calumet CTA Red Line Extension	on City/	County:	Cook	(	Sampling Date:	8/13/2015
Applicant/Owner: CTA/MWRD		State	te: Illinois		Sampling Point: 4	
Investigator(s): J Mengler, V Mosca			Section, Township, Range: T37N, R14E,			14E, S27
Landform (hillslope, terrace, etc.): swale	at toe of slope		Local relief (co	ncave, convex	, none):	swale
Slope (%): Lat: 41.65	9641	Long:	-87.599	965	Datum:	
Soil Map Unit Name: orthents, clayey undulating				VI Classificatio	n: PF0	1/EMCd
Are climatic/hydrologic conditions of the site typic	al for this time o	of the year?		(If no, explain i		
Are vegetation , soil Y , or hy	/drology	significan	tly disturbed?	Y Are "norr	nal circumstances"	
Are vegetation , soil , or hy				N present?		Y
SUMMARY OF FINDINGS				(If neede	d, explain any ansv	vers in remarks.)
Hydrophytic vegetation present? Y						
Hydric soil present?		Is the	sampled area	a within a wetl	and? Y	
Wetland hydrology present? Y			•		Wetland 4	
Remarks: (Explain alternative procedures here or	in a senarate r					
Remarks. (Explain alternative procedures here of	in a separate i	epon.)				
Relied primarily upon vegetation and land	scape positio	on due to	dry time of se	eason, and n	nostly urbanland	/fill for substrate.
L VEGETATION Use scientific names of p	olants					
	Absolute	Dominar	nt Indicator	Dominar	nce Test Workshee	et
<u>Tree Stratum</u> (Plot size: 9 m	) % Cover	Species		Number of Dr	ominant Species that	
1					FACW, or FAC:	1 (A)
2				Total Num	nber of Dominant	
3				Species A	Across all Strata:	<u>1</u> (B)
4				Percent of Do	ominant Species that	
5				are OBL,	FACW, or FAC:	100.00% (A/B)
	0	= Total Cov	/er			
Sapling/Shrub stratum (Plot size: 4.6 m	)				ice Index Workshe	et
1		·		Total % (		- 20
3				OBL spectrum FACW sp		
4		·		FAC spe		
5				FACU sp		
	0	= Total Cov	/er	UPL spe		5 = 0
Herb stratum (Plot size: 1 m sq	)			Column t	otals 120 (A	) 220 (B)
1 Phragmites australis	100	Y	FACW	Prevalen	ce Index = B/A =	1.83
2 Lythrum salicaria	20	N	OBL			
3				Hydroph	ytic Vegetation In	dicators:
4					d test for hydrophyt	•
5					inance test is >50%	
6				X Preva	alence index is ≤3.0	ر. ۳
7 8		·			hological adaptatio	
9					orting data in Rema rate sheet)	arks of on a
10		·			lematic hydrophytic	vegetation*
	120	= Total Cov	/er	(expl		
Woody vine stratum (Plot size: 1 m sq	)	•		*Indicator	s of hydric soil and wet	land hydrology must be
1					resent, unless disturbed	
2				-	ophytic	
	0	= Total Cov	/er	vege	tation ent? Y	
Remarks: (Include photo numbers here or on a se	anarata ahaati			pies	<u> </u>	
	אמומוב אוופנו)					

SOIL	
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Profile Des	cription: (Descr	ide to tr	he depth needec	l to doci	ument th	e indica	tor or confir	rm the abser	nce of indicators.)
Depth	Matrix		Red	dox Feat	ures				-
(Inches)	Color (moist)	%	Color (moist)	%	Type*	Loc**	Tex	ture	Remarks
*Tvne: C = (	Concentration, D	= Deplet	tion RM = Reduc	ed Matri	x MS =	Masked	Sand Grains	**Locat	ion: PL = Pore Lining, M = Matrix
	bil Indicators:	Dopiot			х, шо	maonoa			ematic Hydric Soils:
-	tisol (A1)		Sar	ndy Gleve	ed Matrix	(\$4)			dox (A16) ( <b>LRR K, L, R</b> )
	tic Epipedon (A2)			ndy Redo		(04)			7) ( <b>LRR K, L)</b>
				-					t or Peat (S3) ( <b>LRR K, L, R</b> )
	ck Histic (A3)	4)		pped Ma				-	
	Irogen Sulfide (A			-	ky Minera			-	Masses (F12) (LRR K, L, R)
	atified Layers (A5	)			ed Matrix			-	rk Surface (TF12)
	m Muck (A10)				atrix (F3)		Oth	er (explain in	remarks)
	pleted Below Darl				Surface				
	ck Dark Surface (				ark Surfa		*Indic	ators of hydro	ophytic vegetation and wetland
	ndy Mucky Minera			dox Depr	ressions	(F8)	hydr	•••	e present, unless disturbed or
5 cr	m Mucky Peat or	Peat (S3	3)						problematic
	Layer (if observ	ed):							
	ravel, ballast, fill				-		Hydric	c soil presen	t?
Depth (inche	es): not determ	nined			-				
Remarks: Area mapped as urban land, and located road and berm around sewage lagoons.									
	pped as urban	land, a	and located roa	ad and I	berm ar	ound se	ewage lago	oons.	
		land, a	and located roa	ad and I	berm ar	ound se	ewage lago	oons.	
Area ma			and located roa	ad and I	perm ar	ound se	ewage lago	oons.	
Area ma HYDROLO Wetland Hy	OGY	ors:				ound so			cators (minimum of two required)
Area ma HYDROL( Wetland Hy Primary Indi	DGY drology Indicato	ors:		all that a				econdary Indi	cators (minimum of two required) Soil Cracks (B6)
Area ma HYDROLO Wetland Hy Primary Indi Surface	DGY drology Indicato cators (minimum	ors:		all that a	apply)	13)		econdary Indi	
Area ma HYDROLO Wetland Hy Primary Indi Surface	DGY rdrology Indicato cators (minimum Water (A1) ater Table (A2)	ors:		all that a Aquatic True Aqu	<u>apply)</u> Fauna (B	13) nts (B14)	<u>Se</u>	econdary Indi Surface S X Drainage	Soil Cracks (B6)
Area ma HYDROLO Wetland Hy Primary Indi Surface High Wa Saturatio	DGY rdrology Indicato cators (minimum Water (A1) ater Table (A2) on (A3)	ors:		all that a Aquatic True Aqu Hydroge	<u>apply)</u> Fauna (B uatic Plar n Sulfide	13) nts (B14) Odor (C <sup>2</sup>	)	econdary Indi Surface : X Drainage Dry-Seas	Soil Cracks (B6) Patterns (B10)
Area ma HYDROLO Wetland Hy Primary Indi Surface High Wa Saturatio Water M	DGY rdrology Indicato cators (minimum Water (A1) ater Table (A2) on (A3) larks (B1)	ors:		all that a Aquatic True Aqu Hydroge Oxidized	<u>apply)</u> Fauna (B uatic Plar n Sulfide	13) nts (B14) Odor (C <sup>2</sup>	<u>Se</u>	econdary Indi Surface s X Drainage Dry-Seas Crayfish	Soil Cracks (B6) Patterns (B10) son Water Table (C2) Burrows (C8)
Area ma HYDROLO Wetland Hy Primary Indi Surface High Wa Saturatio Water M X Sedimer	DGY drology Indicato cators (minimum Water (A1) ater Table (A2) on (A3) larks (B1) nt Deposits (B2)	ors:		all that a Aquatic True Aqu Hydroge Oxidized (C3)	apply) Fauna (B uatic Plar n Sulfide I Rhizosp	13) hts (B14) Odor (C <sup>2</sup> heres on	) Living Roots	econdary Indi Surface s X Drainage Dry-Seas Crayfish Saturatio	Soil Cracks (B6) e Patterns (B10) son Water Table (C2) Burrows (C8) in Visible on Aerial Imagery (C9)
Area ma HYDROLO Wetland Hy Primary Indi Surface High Wa Saturatio Water M X Sedimer Drift Dep	DGY drology Indicato cators (minimum Water (A1) ater Table (A2) on (A3) larks (B1) ht Deposits (B2) posits (B3)	ors:		all that a Aquatic I True Aqu Hydroge Oxidizec (C3) Presenc	apply) Fauna (B uatic Plar In Sulfide I Rhizosp e of Redu	13) hts (B14) Odor (C <sup>2</sup> heres on uced Iron	) Living Roots (C4)	econdary Indi Surface S X Drainage Dry-Seas Crayfish Saturatic Stunted o	Soil Cracks (B6) Patterns (B10) son Water Table (C2) Burrows (C8) In Visible on Aerial Imagery (C9) or Stressed Plants (D1)
Area ma HYDROLO Wetland Hy Primary Indi Surface High Wa Saturatio Water M X Sedimer Drift Dep Algal Ma	DGY drology Indicato cators (minimum Water (A1) ater Table (A2) on (A3) larks (B1) nt Deposits (B2) posits (B3) at or Crust (B4)	ors:		all that a Aquatic True Aqu Hydroge Oxidizec (C3) Presenc Recent I	apply) Fauna (B uatic Plar In Sulfide I Rhizosp e of Redu	13) hts (B14) Odor (C <sup>2</sup> heres on uced Iron	) Living Roots	econdary Indi Surface S Z Drainage Dry-Seas Crayfish Saturatio Stunted o Geomore	Soil Cracks (B6) e Patterns (B10) son Water Table (C2) Burrows (C8) on Visible on Aerial Imagery (C9) or Stressed Plants (D1) ohic Position (D2)
Area ma HYDROLO Wetland Hy Primary Indi Surface High Wa Saturatio Water M X Sedimer Drift Dep Algal Ma Iron Dep	DGY drology Indicato <u>cators (minimum</u> Water (A1) ater Table (A2) on (A3) larks (B1) nt Deposits (B2) posits (B3) at or Crust (B4) posits (B5)	ors: of one is	s required; check	all that a Aquatic I True Aqu Hydroge Oxidizec (C3) Presenc Recent I (C6)	apply) Fauna (B uatic Plar In Sulfide I Rhizosp I Rhizosp e of Redu ron Redu	13) Odor (C <sup>7</sup> heres on uced Iron iction in T	) Living Roots (C4)	econdary Indi Surface S Z Drainage Dry-Seas Crayfish Saturatio Stunted o Geomore	Soil Cracks (B6) Patterns (B10) son Water Table (C2) Burrows (C8) In Visible on Aerial Imagery (C9) or Stressed Plants (D1)
Area ma HYDROLO Wetland Hy Primary Indi Surface High Wa Saturatio Water M X Sedimer Drift Dep Algal Ma Iron Dep Inundatio	DGY drology Indicato <u>cators (minimum</u> Water (A1) ater Table (A2) on (A3) larks (B1) nt Deposits (B2) posits (B3) at or Crust (B4) posits (B5) on Visible on Aeria	ors: of one is	s required; check	all that a Aquatic I True Aqu Hydroge Oxidizec (C3) Presenc Recent I (C6) Thin Mu	apply) Fauna (B uatic Plar In Sulfide I Rhizosp e of Redu ron Redu ck Surfac	13) Odor (C <sup>7</sup> heres on uced Iron iction in T	) Living Roots (C4)	econdary Indi Surface S Z Drainage Dry-Seas Crayfish Saturatio Stunted o Geomore	Soil Cracks (B6) e Patterns (B10) son Water Table (C2) Burrows (C8) on Visible on Aerial Imagery (C9) or Stressed Plants (D1) ohic Position (D2)
Area ma HYDROLO Wetland Hy Primary Indi Surface High Wa Saturatio Water M X Sedimer Drift Dep Algal Ma Iron Dep Inundatio Sparsely	DGY drology Indicato cators (minimum Water (A1) ater Table (A2) on (A3) larks (B1) at Deposits (B2) posits (B3) at or Crust (B4) posits (B5) on Visible on Aeria v Vegetated Conca	ors: of one is I Imagery ve Surfa	s required; check	all that a Aquatic True Aqu Hydroge Oxidizec (C3) Presenc Recent I (C6) Thin Mu Gauge c	apply) Fauna (B uatic Plar in Sulfide I Rhizosp e of Redu ron Redu ck Surfac or Well Da	13) Odor (C <sup>2</sup> heres on uced Iron uction in T ae (C7) ata (D9)	) Living Roots (C4) illed Soils	econdary Indi Surface S Z Drainage Dry-Seas Crayfish Saturatio Stunted o Geomore	Soil Cracks (B6) e Patterns (B10) son Water Table (C2) Burrows (C8) on Visible on Aerial Imagery (C9) or Stressed Plants (D1) ohic Position (D2)
Area ma HYDROLO Wetland Hy Primary Indi Surface High Wa Saturatio Water M X Sedimer Drift Dep Algal Ma Iron Dep Inundatio Sparsely X Water-S	DGY drology Indicato cators (minimum Water (A1) ater Table (A2) on (A3) larks (B1) at Deposits (B2) posits (B3) at or Crust (B4) posits (B5) on Visible on Aeria v Vegetated Conca tained Leaves (B9	ors: of one is I Imagery ve Surfa	s required; check	all that a Aquatic True Aqu Hydroge Oxidizec (C3) Presenc Recent I (C6) Thin Mu Gauge c	apply) Fauna (B uatic Plar In Sulfide I Rhizosp e of Redu ron Redu ck Surfac	13) Odor (C <sup>2</sup> heres on uced Iron uction in T ae (C7) ata (D9)	) Living Roots (C4) illed Soils	econdary Indi Surface S Z Drainage Dry-Seas Crayfish Saturatio Stunted o Geomore	Soil Cracks (B6) e Patterns (B10) son Water Table (C2) Burrows (C8) on Visible on Aerial Imagery (C9) or Stressed Plants (D1) ohic Position (D2)
Area ma HYDROLO Wetland Hy Primary Indi Surface High Wa Saturatio Water M X Sedimer Drift Dep Algal Ma Iron Dep Inundatio Sparsely X Water-S Field Obser	DGY rdrology Indicato cators (minimum Water (A1) ater Table (A2) on (A3) larks (B1) at Deposits (B2) posits (B3) at or Crust (B4) posits (B5) on Visible on Aeria v Vegetated Conca tained Leaves (B9 rvations:	of one is of one is I Imagery ve Surfac	s required; check	all that a Aquatic True Aqu Hydroge Oxidizec (C3) Presenc Recent I (C6) Thin Mu Gauge c Other (E	apply) Fauna (B uatic Plar In Sulfide I Rhizosp e of Redu ron Redu ron Redu ck Surfac or Well Da ixplain in	13) Odor (C <sup>2</sup> heres on uced Iron uction in T re (C7) ata (D9) Remarks	) Living Roots (C4) illed Soils	econdary Indi Surface S Dry-Seas Crayfish Saturatio Stunted o Geomorp FAC-Neu	Soil Cracks (B6) e Patterns (B10) son Water Table (C2) Burrows (C8) on Visible on Aerial Imagery (C9) or Stressed Plants (D1) ohic Position (D2)
Area ma HYDROLO Wetland Hy Primary Indi Surface High Wa Saturatio Water M X Sedimer Drift Dep Algal Ma Iron Dep Inundatio Sparsely X Water-S	DGY drology Indicato cators (minimum Water (A1) ater Table (A2) on (A3) larks (B1) nt Deposits (B2) posits (B3) at or Crust (B4) posits (B5) on Visible on Aeria v Vegetated Conca tained Leaves (B9 rvations: er present?	ors: of one is I Imagery ve Surfa	s required; check	all that a Aquatic True Aqu Hydroge Oxidizec (C3) Presenc Recent I (C6) Thin Mu Gauge c	apply) Fauna (B uatic Plar in Sulfide I Rhizosp e of Redu ron Redu ck Surfac or Well Da	13) odor (C <sup>2</sup> heres on uced Iron uction in T ee (C7) ata (D9) Remarks nches):	) Living Roots (C4) illed Soils	econdary Indi Surface S Dry-Seas Crayfish Saturatio Stunted o FAC-Net	Soil Cracks (B6) e Patterns (B10) son Water Table (C2) Burrows (C8) in Visible on Aerial Imagery (C9) or Stressed Plants (D1) ohic Position (D2) utral Test (D5)
Area ma HYDROLO Wetland Hy Primary Indi Surface High Wa Saturatio Water M X Sedimer Drift Dep Algal Ma Iron Dep Inundatio Sparsely X Water-S Field Obser Surface wat Water table Saturation p	DGY drology Indicato cators (minimum Water (A1) ater Table (A2) on (A3) larks (B1) at Deposits (B2) posits (B3) at or Crust (B4) posits (B5) on Visible on Aeria v Vegetated Conca tained Leaves (B9 rvations: er present? present? present?	of one is of one is I Imagery ve Surfac ) Yes	s required; check	all that a Aquatic I True Aqu Hydroge Oxidizec (C3) Presenc Recent I (C6) Thin Mu Gauge c Other (E	apply) Fauna (B uatic Plar in Sulfide I Rhizosp e of Redu ron Redu ron Redu ck Surfac or Well Da ixplain in	13) Odor (C <sup>2</sup> heres on aced Iron action in T ata (D9) Remarks nches): nches):	) Living Roots (C4) illed Soils	econdary Indi Surface S Dry-Seas Crayfish Saturatio Stunted o Geomorp FAC-Neu	Soil Cracks (B6) Patterns (B10) son Water Table (C2) Burrows (C8) In Visible on Aerial Imagery (C9) or Stressed Plants (D1) ohic Position (D2) utral Test (D5)
Area ma HYDROLO Wetland Hy Primary Indi Surface High Wa Saturatio Water M X Sedimer Drift Dep Algal Ma Iron Dep Inundatio Sparsely X Water-S Field Obser Surface wat Water table Saturation p (includes ca	DGY drology Indicato cators (minimum Water (A1) ater Table (A2) on (A3) larks (B1) at Deposits (B2) posits (B3) at or Crust (B4) posits (B5) on Visible on Aeria v Vegetated Conca tained Leaves (B9 rvations: er present? present? present? present? present? pillary fringe)	I Imagery ve Surfac ) Yes Yes Yes	s required; check	all that a Aquatic I True Aqu Hydroge Oxidizec (C3) Presenc Recent I (C6) Thin Mu Gauge c Other (E X X	apply) Fauna (B uatic Plar in Sulfide I Rhizosp e of Redu ron Redu ck Surfac or Well Da cxplain in Depth (i Depth (i	13) Odor (C' heres on aced Iron action in T ata (D9) Remarks nches): nches): nches):	) Living Roots (C4) illed Soils	econdary Indi Surface S Dry-Seas Crayfish Saturatio Stunted o Geomorp FAC-Neu	Soil Cracks (B6) e Patterns (B10) son Water Table (C2) Burrows (C8) in Visible on Aerial Imagery (C9) or Stressed Plants (D1) ohic Position (D2) utral Test (D5)
Area ma HYDROLO Wetland Hy Primary Indi Surface High Wa Saturatio Water M X Sedimer Drift Dep Algal Ma Iron Dep Inundatio Sparsely X Water-S Field Obser Surface wat Water table Saturation p (includes ca	DGY drology Indicato cators (minimum Water (A1) ater Table (A2) on (A3) larks (B1) at Deposits (B2) posits (B3) at or Crust (B4) posits (B5) on Visible on Aeria v Vegetated Conca tained Leaves (B9 rvations: er present? present? present?	I Imagery ve Surfac ) Yes Yes Yes	s required; check	all that a Aquatic I True Aqu Hydroge Oxidizec (C3) Presenc Recent I (C6) Thin Mu Gauge c Other (E X X	apply) Fauna (B uatic Plar in Sulfide I Rhizosp e of Redu ron Redu ck Surfac or Well Da cxplain in Depth (i Depth (i	13) Odor (C' heres on aced Iron action in T ata (D9) Remarks nches): nches): nches):	) Living Roots (C4) illed Soils	econdary Indi Surface S Dry-Seas Crayfish Saturatio Stunted o Geomorp FAC-Neu	Soil Cracks (B6) e Patterns (B10) son Water Table (C2) Burrows (C8) in Visible on Aerial Imagery (C9) or Stressed Plants (D1) ohic Position (D2) utral Test (D5)
Area ma HYDROLO Wetland Hy Primary Indi Surface High Wa Saturatio Water M X Sedimer Drift Dep Algal Ma Iron Dep Inundatio Sparsely X Water-S Field Obser Surface wat Water table Saturation p (includes ca	DGY drology Indicato cators (minimum Water (A1) ater Table (A2) on (A3) larks (B1) at Deposits (B2) posits (B3) at or Crust (B4) posits (B5) on Visible on Aeria v Vegetated Conca tained Leaves (B9 rvations: er present? present? present? present? present? pillary fringe)	I Imagery ve Surfac ) Yes Yes Yes	s required; check	all that a Aquatic I True Aqu Hydroge Oxidizec (C3) Presenc Recent I (C6) Thin Mu Gauge c Other (E X X	apply) Fauna (B uatic Plar in Sulfide I Rhizosp e of Redu ron Redu ck Surfac or Well Da cxplain in Depth (i Depth (i	13) Odor (C' heres on aced Iron action in T ata (D9) Remarks nches): nches): nches):	) Living Roots (C4) illed Soils	econdary Indi Surface S Dry-Seas Crayfish Saturatio Stunted o Geomorp FAC-Neu	Soil Cracks (B6) e Patterns (B10) son Water Table (C2) Burrows (C8) in Visible on Aerial Imagery (C9) or Stressed Plants (D1) ohic Position (D2) utral Test (D5)
Area ma HYDROLO Wetland Hy Primary Indi Surface High Wa Saturatio Water M X Sedimer Drift Dep Algal Ma Iron Dep Inundatic Sparsely X Water-S Field Obser Surface wat Water table Saturation p (includes ca Describe red	DGY drology Indicato cators (minimum Water (A1) ater Table (A2) on (A3) larks (B1) at Deposits (B2) posits (B3) at or Crust (B4) posits (B5) on Visible on Aeria v Vegetated Conca tained Leaves (B9 rvations: er present? present? present? present? present? pillary fringe)	I Imagery ve Surfac ) Yes Yes Yes	s required; check	all that a Aquatic I True Aqu Hydroge Oxidizec (C3) Presenc Recent I (C6) Thin Mu Gauge c Other (E X X	apply) Fauna (B uatic Plar in Sulfide I Rhizosp e of Redu ron Redu ck Surfac or Well Da cxplain in Depth (i Depth (i	13) Odor (C' heres on aced Iron action in T ata (D9) Remarks nches): nches): nches):	) Living Roots (C4) illed Soils	econdary Indi Surface S Dry-Seas Crayfish Saturatio Stunted o Geomorp FAC-Neu	Soil Cracks (B6) e Patterns (B10) son Water Table (C2) Burrows (C8) in Visible on Aerial Imagery (C9) or Stressed Plants (D1) ohic Position (D2) utral Test (D5)
Area ma HYDROLO Wetland Hy Primary Indi Surface High Wa Saturatio Water M X Sedimer Drift Dep Algal Ma Iron Dep Inundatio Sparsely X Water-S Field Obser Surface wat Water table Saturation p (includes ca	DGY drology Indicato cators (minimum Water (A1) ater Table (A2) on (A3) larks (B1) at Deposits (B2) posits (B3) at or Crust (B4) posits (B5) on Visible on Aeria v Vegetated Conca tained Leaves (B9 rvations: er present? present? present? present? present? pillary fringe)	I Imagery ve Surfac ) Yes Yes Yes	s required; check	all that a Aquatic I True Aqu Hydroge Oxidizec (C3) Presenc Recent I (C6) Thin Mu Gauge c Other (E X X	apply) Fauna (B uatic Plar in Sulfide I Rhizosp e of Redu ron Redu ck Surfac or Well Da cxplain in Depth (i Depth (i	13) Odor (C' heres on aced Iron action in T ata (D9) Remarks nches): nches): nches):	) Living Roots (C4) illed Soils	econdary Indi Surface S Dry-Seas Crayfish Saturatio Stunted o Geomorp FAC-Neu	Soil Cracks (B6) e Patterns (B10) son Water Table (C2) Burrows (C8) in Visible on Aerial Imagery (C9) or Stressed Plants (D1) ohic Position (D2) utral Test (D5)

Project/Site Lake Calumet CTA Red Line Extension	City/C	ounty:	Cook		Sampling Date:	8/13/2015
Applicant/Owner: CTA/MWRD	State:	Illin	ois	Sampling Point:	5	
Investigator(s): J Mengler, V Mosca		s	ection, Towns	ship, Range:	T37N, R14	E, S26 & 27
Landform (hillslope, terrace, etc.): swa	ale	Lo	ocal relief (cor	ncave, convex	, none):	swale
Slope (%): Lat: 41.663596	6	Long:	-87.5980	043	Datum:	
Soil Map Unit Name: orthents, loamy, nearly level			NM	/I Classificatio	on:	none
Are climatic/hydrologic conditions of the site typical fo	r this time of	the year?	Y (	lf no, explain i	in remarks)	
Are vegetation , soil Y , or hydrol	ogy	significantly	y disturbed?	Y Are "per	mal circumstances"	
Are vegetation , soil , or hydrol				N present?		Y
SUMMARY OF FINDINGS				(If neede	d, explain any ans	wers in remarks.)
Hydrophytic vegetation present? Y						
Hydric soil present?		Is the s	ampled area	within a wet	land? Y	
Wetland hydrology present? Y			•		Wetland 5	
Remarks: (Explain alternative procedures here or in a	separate rer		, .p			
Remarks. (Explain alternative procedures here of in a	separate rep	JUIL.)				
Relied primarily upon vegetation and landsca	pe position	due to dr	ry time of se	eason, and r	nostly urbanland	l/fill for substrate.
VEGETATION Use scientific names of plan	ts					
	Absolute	Dominant	Indicator	Domina	nce Test Workshe	et
<u>Tree Stratum</u> (Plot size: 9 m )	% Cover	Species	Status	Number of D	ominant Species tha	ł
1					FACW, or FAC:	1 (A)
2				Total Nun	nber of Dominant	
3			<u> </u>	Species /	Across all Strata:	<u> </u>
4					ominant Species that	
5				are OBL,	FACW, or FAC:	<u>100.00%</u> (A/B)
	=	Total Cove	r			
Sapling/Shrub stratum (Plot size: 4.6 m	)				nce Index Worksh Cover of:	eet
2			. <u> </u>	OBL spe		1 = 0
3			·		pecies 100 x2	
4			·	FAC spe	·	3 = 0
5				FACU sp		4 = 0
	0 =	Total Cove	r	UPL spe		5 = 0
Herb stratum (Plot size: 1 m sq	)			Column	totals 100 (A	) <u>200</u> (B)
1 Phragmites australis	100	Y	FACW	Prevalen	ice Index = B/A =	2.00
2						
3					nytic Vegetation In	
4			·	· ·	d test for hydrophy	•
5 6			·		inance test is >50% alence index is ≤3.	
7						
8					phological adaptation porting data in Rem	
9			·		irate sheet)	
10					lematic hydrophytic	vegetation*
	100 =	Total Cove	r	(expl		0
Woody vine stratum (Plot size: 1 m sq	)			*Indicator	rs of hydric soil and we	land hydrology must be
1				р	resent, unless disturbed	
2		_		-	rophytic	
	0 =	Total Cove	r	-	etation ent? Y	
Remarks: (Include photo numbers here or on a separa	ate sheet)					

SOIL	
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Profile Des	cription: (Descr	ibe to th	ne depth needed	to docu	ument th	e indica	tor or confirm the a	osence of indicators.)		
Depth	Matrix		Rec	lox Feat	ures					
(Inches)	Color (moist)	%	Color (moist)	%	Type*	Loc**	Texture	Remarks		
*Type: C = 0	Concentration, D	= Deplet	tion, RM = Reduc	ed Matri	x, MS =	Masked	Sand Grains. **L	ocation: PL = Pore Lining, M = Matrix		
Hydric So	il Indicators:						Indicators for P	roblematic Hydric Soils:		
Hist	tisol (A1)		Sar	dy Gleye	ed Matrix	(S4)	Coast Prairie	e Redox (A16) ( <b>LRR K, L, R</b> )		
Hist	tic Epipedon (A2)		Sar	dy Redo	ox (S5)		Dark Surfac	e (S7) ( <b>LRR K, L)</b>		
	ck Histic (A3)			-	ıtrix (S6)			Peat or Peat (S3) (LRR K, L, R)		
	Irogen Sulfide (A	4)		•	ky Minera			nese Masses (F12) (LRR K, L, R)		
	-					. ,	×	v Dark Surface (TF12)		
	atified Layers (A5	)			ed Matri	. ,		. ,		
	m Muck (A10)				atrix (F3)		Other (expla	in in remarks)		
	pleted Below Dark				Surface					
Thio	ck Dark Surface (	A12)	Dep	leted Da	ark Surfa	ce (F7)	*Indicators of	nydrophytic vegetation and wetland		
Sar	ndy Mucky Minera	ıl (S1)	Rec	lox Depr	ressions	(F8)		hydrology must be present, unless disturbed or		
5 cr	m Mucky Peat or	Peat (S3	3)					problematic		
Restrictive	Layer (if observ	ed):								
	avel, ballast, fill	,					Hydric soil pre	esent?		
Depth (inche		nined			•					
Remarks:	-				•					
Remarks.										
Aroo mo	nnad ag urban	land a	ad located hat	woonr	aada					
Area ma	pped as urban	ianu, a		ween	oaus					
HYDROLO										
-	drology Indicato						<b>.</b> .			
Primary Indi	cators (minimum	of one is	s required; check	all that a	apply)		Secondary	Indicators (minimum of two required)		
Surface	Water (A1)			Aquatic I	Fauna (B	13)		ace Soil Cracks (B6)		
High Wa	ter Table (A2)			True Aqu	uatic Plar	nts (B14)	X Drai	nage Patterns (B10)		
Saturatio	on (A3)			Hydroge	n Sulfide	Odor (C	I) Dry-	Season Water Table (C2)		
Water M	larks (B1)			Oxidized Rhizospheres on Living Roots Crayfish Burrows (C8)						
X Sedimer	nt Deposits (B2)			(C3)	11112000			ration Visible on Aerial Imagery (C9)		
	posits (B3)				e of Redi	uced Iron		ited or Stressed Plants (D1)		
·								morphic Position (D2)		
	it or Crust (B4)				ron Redu	iction in T				
	osits (B5)		(D=)	(C6)			FAC	-Neutral Test (D5)		
	on Visible on Aeria				ck Surfac					
Sparsely	Vegetated Conca	ve Surfa	ce (B8)	Gauge o	or Well Da	ata (D9)				
X Water-S	tained Leaves (B9	)		Other (E	xplain in	Remarks	)			
Field Obser	vations:									
Surface wat	•	Yes	No	Х	Depth (i	,		Wetland		
Water table	•	Yes	No	Х	Depth (i	,		hydrology		
Saturation p		Yes	X No		Depth (i	ncnes):	0	present? Y		
	pillary fringe)			U. artist	uluat		inconcetion - ) if !!	ble.		
Describe red	corded data (strea	am gaug	je, monitoring we	ii, aerial	pnotos,	previous	inspections), if availa	DIE:		
Remarks:										
Saturatio	on within draina		ale along road							
Jacurall		-90 SW	alo along ibau.							

Project/Site Lake Calumet CTA Red Line Extension	City/0	County:	Cook	(	Sampling Date:	8/13/2015
Applicant/Owner: CTA/MWRD		State	e: Illir	nois	Sampling Point:	6
Investigator(s): J Mengler, V Mosca			Section, Towns	ship, Range:	T37N, F	R14E, S27
Landform (hillslope, terrace, etc.): sw	ale	I	_ocal relief (co	ncave, convex	, none):	swale
Slope (%): Lat: 41.66907	7	Long:	-87.601	542	Datum:	
Soil Map Unit Name: orthents, loamy, nearly level				VI Classificatio	n:	none
Are climatic/hydrologic conditions of the site typical for	or this time o	of the year?	Y (	If no, explain i	n remarks)	
Are vegetation , soil Y , or hydro	logy	significan	tly disturbed?	Y Are "porr	nal circumstances	u .
Are vegetation , soil , or hydro				N present?		Y
SUMMARY OF FINDINGS				(If neede	d, explain any ans	wers in remarks.)
Hydrophytic vegetation present? Y						
Hydric soil present?		Is the	sampled area	within a wetl	and? Y	
Wetland hydrology present? Y					Wetland 6	
Remarks: (Explain alternative procedures here or in a	separate r		.,			
Remarks. (Explain alternative procedures here of in a	i separate n	epon.)				
Relied primarily upon vegetation and landsca	pe positio	n due to c	dry time of se	eason, and n	nostly urbanland	d/fill for substrate.
VEGETATION Use scientific names of plar	nts					
	Absolute	Dominan	t Indicator	Dominar	nce Test Workshe	et
<u>Tree Stratum</u> (Plot size: 9 m )	% Cover	Species		Number of Dr	ominant Species that	it .
1					FACW, or FAC:	1 (A)
2				Total Num	nber of Dominant	
3				Species A	Across all Strata:	<u> </u>
4					ominant Species that	
5				are OBL,	FACW, or FAC:	100.00% (A/B)
	0	= Total Cov	er	<u> </u>		
Sapling/Shrub stratum (Plot size: 4.6 m	)			Total % (	ice Index Worksh	eet
2				OBL spe		1 = 20
3				FACW spec		
4				FAC spe		3 = 0
5				FACU sp		4 = 0
	0	= Total Cov	er	UPL spe		5 = 0
Herb stratum (Plot size: 1 m sq	)			Column t	otals 104 (A	A) 188 (B)
1 Phragmites australis	80	Y	FACW	Prevalen	ce Index = B/A =	1.81
2 Lythrum salicaria	10	Ν	OBL			
3 Typha angustifolia	10	N	OBL		ytic Vegetation Ir	
4 Helianthus grosseserratus	2	<u>N</u>	FACW		d test for hydrophy	•
5 Verbena hastata	2	N	FACW		inance test is >50%	
6 7				Preva	alence index is ≤3.	U
8					hological adaptatio	
9					orting data in Rem rate sheet)	airs ui uil a
10					lematic hydrophyti	c vegetation*
	104	= Total Cov	er	(expl		
<u>Woody vine stratum</u> (Plot size: 1 m sq 1	)				s of hydric soil and we resent, unless disturbe	tland hydrology must be d or problematic
2					ophytic	P
	0	= Total Cov	er	-	tation	
Remarks: (Include photo numbers here or on a separ	ate sheet)			1		

SOIL
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Profile Des	cription: (Descr	ibe to th	e depth needed	to docu	ument th	e indica	tor or confi	rm the abser	nce of indicators.)	
Depth	Matrix		Rec	lox Feat	ures					
(Inches)	Color (moist)	%	Color (moist)	%	Type*	Loc**	Тех	kture	Remarks	
*Turno: C = (	Concentration D	- Doplot	ion DM - Doduc	od Motri	× MS -	Maakad	Sand Crains	**!	ion: DL - Doro Lining M - Matrix	
	Concentration, D	- Depier			x, 1vi3 –	waskeu			ion: PL = Pore Lining, M = Matrix	
•	bil Indicators:		0		a al Mastria	(04)			ematic Hydric Soils:	
	tisol (A1)				ed Matrix	(54)			dox (A16) ( <b>LRR K, L, R</b> )	
	tic Epipedon (A2)			idy Redo					7) ( <b>LRR K, L)</b>	
	ck Histic (A3)				ıtrix (S6)			-	t or Peat (S3) ( <b>LRR K, L, R</b> )	
	Irogen Sulfide (A	,		-	ky Miner			-	Masses (F12) ( <b>LRR K, L, R</b> )	
	atified Layers (A5	)			ed Matri			-	rk Surface (TF12)	
2 cr	m Muck (A10)				atrix (F3)		Oth	ier (explain in	remarks)	
Dep	pleted Below Dark	< Surface	e (A11) Rec	lox Dark	Surface	(F6)				
Thio	ck Dark Surface (	A12)	Dep	pleted Da	ark Surfa	ce (F7)	*India	cators of hvdr	ophytic vegetation and wetland	
Sar	ndy Mucky Minera	al (S1)	Rec	lox Depr	ressions	(F8)			e present, unless disturbed or	
5 cr	m Mucky Peat or	Peat (S3	5)						problematic	
Restrictive	Layer (if observ	ed):								
Туре: gi	ravel, ballast, fill						Hydri	c soil presen	t?	
Depth (inche	es): not determ	nined								
Remarks:										
Area mapped as urban land, and located between road and railroad.										
Area mapped as druan land, and located between road and rainoad.										
HYDROLOGY										
Wetland Hy	drology Indicato	ors:								
Primary Indi	cators (minimum	of one is	s required; check	all that a	apply)		S	econdary Indi	cators (minimum of two required)	
Surface	Water (A1)			Aquatic	Fauna (B	13)		Surface	Soil Cracks (B6)	
High Wa	ater Table (A2)				uatic Plar	,			e Patterns (B10)	
Saturatio						Odor (C	)		son Water Table (C2)	
X Water M								·	Burrows (C8)	
	nt Deposits (B2)			(C3)	i Rnizosp	neres on	Living Roots		on Visible on Aerial Imagery (C9)	
	posits (B3)			• •	o of Podu	uced Iron	(C4)		or Stressed Plants (D1)	
				Fiesenc	e or iteut		(04)			
	at or Crust (B4)				ron Redu	iction in T	illed Soils		ohic Position (D2)	
·	oosits (B5)		(D.7.)	(C6)		(0-)		FAC-Ne	utral Test (D5)	
	on Visible on Aeria			•	ck Surfac	. ,				
	Vegetated Conca		ce (B8)		or Well Da	. ,				
	tained Leaves (B9	)		Other (E	xplain in	Remarks	)			
Field Obser		V	N1 -	v	Denth "	nok = : \;		10/	land	
Surface wat Water table	•	Yes Yes	No No	X X	Depth (i Depth (i				rology	
Saturation p	•	Yes	X No	~	Depth (i	,	0		sent? Y	
	pillary fringe)	-				- /		-		
	corded data (strea	am gaug	e, monitoring we	ll, aerial	photos,	previous	inspections)	), if available:		
			-							
Domoris										
Remarks:										
1										
0-1	on within draina			<b>.</b>						

Project/Site Lake Calumet CTA Red Line Extension	City/	County:	Cook		Sampling Date:	8/13/2015	
Applicant/Owner: CTA/MWRD		State	e: Illir	iois	Sampling Point:	7	
Investigator(s): J Mengler, V Mosca			Section, Towns	ship, Range:	T37N, R	14E, S27	
Landform (hillslope, terrace, etc.): sw	ale		Local relief (co	ncave, convex	, none):	swale	
Slope (%): Lat: 41.66907	7	Long:	-87.601	542	Datum:		
Soil Map Unit Name: orthents, loamy, nearly level				VI Classificatio	n:	none	
Are climatic/hydrologic conditions of the site typical for	or this time o	of the year?	Y (	If no, explain i	n remarks)		
Are vegetation , soil Y , or hydro	ology	significan	tly disturbed?	Y Aro "por	nal circumstances"		
	ology		problematic?	N present?		Y	
SUMMARY OF FINDINGS		-		(If neede	d, explain any ansv	wers in remarks.)	
Hydrophytic vegetation present? Y					· · ·	·	
Hydric soil present?		Is the sampled area within a wetland? N					
Wetland hydrology present? N			es, optional we				
Remarks: (Explain alternative procedures here or in	a sonarato r		.,				
	a separate n	eport.)					
Relied primarily upon vegetation and landsca	ape positio	n due to o	dry time of se	eason, and n	nostly urbanland	/fill for substrate.	
L VEGETATION Use scientific names of play	nts						
	Absolute	Dominar	t Indicator	Dominar	nce Test Workshe	et	
<u>Tree Stratum</u> (Plot size: 9 m )	% Cover	Species		Number of Do	ominant Species that	•	
1					FACW, or FAC:	1 (A)	
2				Total Num	ber of Dominant		
3				Species A	Across all Strata:	<u>2</u> (B)	
4					minant Species that		
5				are OBL,	FACW, or FAC:	50.00% (A/B)	
	0	= Total Cov	ver				
Sapling/Shrub stratum (Plot size: 4.6 m	)	Ň	540		ice Index Worksho	eet	
1 Rhamnus cathartica	100	Y	FAC	Total % C		1 - 0	
2				OBL spec FACW sp			
4				FAC spec			
5				FACU sp		4 = 0	
	100	= Total Cov	ver	UPL spec		5 = 0	
Herb stratum (Plot size: 1 m sq	)			Column t	otals 100 (A	) <u>300</u> (B)	
1	80	Y		Prevalen	ce Index = B/A =	3.00	
2	10	Ν					
3	10	N		Hydroph	ytic Vegetation In	dicators:	
4	2	N			d test for hydrophyt	-	
5	2	N			inance test is >50%		
6	·			X Preva	alence index is ≤3.0	J	
8					hological adaptatio		
°9					orting data in Rema rate sheet)	arks of on a	
10					lematic hydrophytic	vegetation*	
	104	= Total Cov	ver	(expl			
Woody vine stratum (Plot size: 1 m sq	)			` ·	,	land hydrology must be	
1	·				esent, unless disturbed		
2			_	-	ophytic		
	0	= Total Cov	ver	vege	tation ent? Y		
Pomorko: (Includo aboto aumboro baro a se s	roto obcati			pies	<u> </u>	_	
Remarks: (Include photo numbers here or on a sepa	iale Sileel)						

SOIL	
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Profile Des	cription: (Descr	ibe to th	ne depth neede	d to docı	ument th	e indica	tor or confirm	the abser	nce of indicators.)		
Depth	Matrix			dox Feat					-		
(Inches)	Color (moist)	%	Color (moist)	%	Type*	Loc**	Textu	re	Remarks		
*Type: C = C	Concentration, D	= Deplet	tion, RM = Redu	ced Matr	ix, MS =	Masked	Sand Grains.	**Locat	ion: PL = Pore Lining, M = Matrix		
Hydric So	il Indicators:						Indicators	s for Probl	ematic Hydric Soils:		
Hist	isol (A1)		Sa	ndy Gley	ed Matrix	(S4)	Coast	Prairie Re	dox (A16) ( <b>LRR K, L, R</b> )		
Hist	ic Epipedon (A2)		Sa	ndy Redo	ox (S5)		Dark	Surface (S	7) ( <b>LRR K, L)</b>		
Blac	ck Histic (A3)		St	ripped Ma	atrix (S6)		5 cm	Mucky Pea	t or Peat (S3) ( <b>LRR K, L, R</b> )		
	rogen Sulfide (A	4)		amy Muc		al (F1)		•	Masses (F12) (LRR K, L, R)		
	atified Layers (A5			amy Gley	•			-	rk Surface (TF12)		
	n Muck (A10)	,		pleted M				(explain in			
		Curfoo							Terrarks)		
	bleted Below Darl			dox Dark							
	ck Dark Surface (	,		pleted Da			*Indicat	ors of hydr	ophytic vegetation and wetland		
	idy Mucky Minera			dox Depr	ressions	ons (F8) hydrology must be present, unless disturbed					
5 cr	n Mucky Peat or	Peat (S3	3)						problematic		
Restrictive	Layer (if observ	ed):									
	avel, ballast, fill						Hydric s	oil presen			
Depth (inche	es): not determ	nined			-						
Remarks:											
Area mapped as urban land, and 2-3 feet higher in elevation than adjacent wetland swales.											
HYDROLO	DGY										
Wetland Hy	drology Indicate	ors:									
Primary Indi	cators (minimum	of one is	s required; chec	k all that a	apply)		Seco	ondary Indi	cators (minimum of two required)		
Surface	Water (A1)			Aquatic	Fauna (B	13)		Surface	Soil Cracks (B6)		
High Wa	iter Table (A2)				uatic Plar	-	—	Drainage Patterns (B10)			
Saturatio				_	n Sulfide		I) —	Dry-Season Water Table (C2)			
	arks (B1)						· _	Crayfish Burrows (C8)			
	. ,			Oxidized (C3)	d Rhizosp	heres on	Living Roots		on Visible on Aerial Imagery (C9)		
	t Deposits (B2)						<u> </u>		0,00		
	oosits (B3)			Presenc	e of Redu	icea iron	(C4)		or Stressed Plants (D1)		
	t or Crust (B4)				ron Redu	ction in T	illed Soils	Geomor	phic Position (D2)		
Iron Dep	osits (B5)			(C6)			_	FAC-Nei	utral Test (D5)		
Inundatio	on Visible on Aeria	I Imager	y (B7)	Thin Mu	ck Surfac	e (C7)					
Sparsely	Vegetated Conca	ve Surfa	ce (B8)	Gauge o	or Well Da	ata (D9)					
Water-S	tained Leaves (B9	)		Other (E	xplain in	Remarks	)				
Field Obser	vations:										
Surface wat	•	Yes	No	Х	Depth (i	· · ·			land		
Water table	•	Yes	No	X	Depth (i			-	rology		
Saturation p		Yes	No	X	Depth (i	ncnes):	0	pre	sent? <u>N</u>		
	pillary fringe) corded data (strea	am aous	e monitoring		nhotoo	arovious	inepections) #	available:			
Describe rec	Jordeu data (strea	anı yaug	e, monitoring w	en, aenal	priotos,	JIEVIOUS	inspections), li	avaiiabie:			
Remarks:											
2-3 feet	higher in eleva	tion tha	an adjacent w	etland s	wales w	ith no e	evidence of h	ydrology			

Project/Site Lake Calumet CTA Red Line Extension	City/C	County:	Cook		Sampling Date:	8/13/2015	
Applicant/Owner: CTA/MWRD		State	e: Illin	iois	Sampling Point:	8	
Investigator(s): J Mengler, V Mosca			Section, Towns	ship, Range:	T37N, R14	E, S22 & 27	
Landform (hillslope, terrace, etc.): swa	ale	L	ocal relief (cor	ncave, convex	, none):	swale	
Slope (%): Lat: 41.672876	6	Long:	-87.6070	)44	Datum:		
Soil Map Unit Name: orthents, loamy, nearly level			N۷	VI Classificatio	n:	none	
Are climatic/hydrologic conditions of the site typical fo	r this time of	f the year?	Y (	If no, explain i	n remarks)		
Are vegetation , soil Y , or hydro	logy	significant	ly disturbed?	Y Aro "porr	nal circumstances'	,	
Are vegetation , soil , or hydro				N present?		Y	
SUMMARY OF FINDINGS	··			(If neede	d, explain any ans	wers in remarks.)	
Hydrophytic vegetation present? Y				•			
Hydric soil present?		Is the sampled area within a wetland?					
Wetland hydrology present? Y			-		Wetland 7		
Remarks: (Explain alternative procedures here or in a	separate re		-, -	_			
	i separate re	;pon.)					
Relied primarily upon vegetation and landsca	pe positior	n due to d	Iry time of se	eason, and n	nostly urbanland	/fill for substrate.	
VEGETATION Use scientific names of plan	its.						
	Absolute	Dominant	t Indicator	Dominar	nce Test Workshe	et	
Tree Stratum (Plot size: 9 m )	% Cover	Species	Status	Number of Do	ominant Species tha	t	
1					FACW, or FAC:	1 (A)	
2				Total Num	nber of Dominant		
3				Species A	Across all Strata:	1 (B)	
4					ominant Species tha		
5				are OBL,	FACW, or FAC:	100.00% (A/B)	
Conling/Chrub stratum (Dist size) 4.6 m	=	= Total Cove	er	Drevelor	aa Inday Markab	<b>t</b>	
Sapling/Shrub stratum (Plot size: 4.6 m	)			Total % (	ce Index Worksh	eet	
2				OBL spe		1 = 10	
3					pecies 94 x		
4				FAC spe		3 = 0	
5				FACU sp		4 = 0	
	0 =	Total Cove	er	UPL spec	cies 0 x	5 = 0	
Herb stratum (Plot size: 1 m sq	)			Column t	otals 104 (A	.) 198 (B)	
1 Phragmites australis	80	Y	FACW	Prevalen	ce Index = B/A =	1.90	
2 Lythrum salicaria	10	N	OBL				
3 Solidago graminifolia	10	N	FACW		ytic Vegetation In		
4 Helianthus grosseserratus	2	<u>N</u>	FACW	· - ·	d test for hydrophy	Ũ	
5 Verbena hastata 6	2	N	FACW		inance test is >50% alence index is ≤3.		
7		-				0	
8					hological adaptation orting data in Rem		
9					rate sheet)		
10					lematic hydrophytic	c vegetation*	
	104 =	Total Cove	er	(expl		<b>U</b>	
<u>Woody vine stratum</u> (Plot size: 1 m sq 1	)				rs of hydric soil and we resent, unless disturbe	tland hydrology must be d or problematic	
2				Hydr	ophytic		
	0 =	Total Cove	er	vege pres	tation ent? Y	_	
Remarks: (Include photo numbers here or on a separ	ate sheet)						

SOIL
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Profile Des	cription: (Descr	ibe to th	ne depth needed	to docu	ument th	e indica	tor or confirm	the abser	ce of indicators.)	
Depth	Matrix		Rec	lox Feat	ures					
(Inches)	Color (moist)	%	Color (moist)	%	Type*	Loc**	Textu	re	Remarks	
*Type: C = 0	Concentration, D	= Deplet	ion, RM = Reduc	ed Matri	ix, MS =	Masked	Sand Grains.	**Locati	ion: PL = Pore Lining, M = Matrix	
Hydric So	il Indicators:						Indicator	s for Probl	ematic Hydric Soils:	
Hist	tisol (A1)		Sar	dy Gleye	ed Matrix	(S4)	Coas	t Prairie Re	dox (A16) ( <b>LRR K, L, R</b> )	
Hist	tic Epipedon (A2)		Sar	dy Redo	ox (S5)				7) (LRR K, L)	
	ck Histic (A3)			-	atrix (S6)				t or Peat (S3) ( <b>LRR K, L, R</b> )	
	Irogen Sulfide (A	4)			ky Minera			-	Masses (F12) (LRR K, L, R)	
	atified Layers (A5			-	ed Matrix			-	rk Surface (TF12)	
	n Muck (A10)	/			atrix (F3)			(explain in		
	pleted Below Darl	Surface			Surface			(		
	ck Dark Surface (					` '				
Sandy Mucky Mineral (S1) Redox Depressions (F8) hydrology must be present, unless of hydrology must be present, unless of hydrology must be present, unless of hydrology must be present.						cators of hydrophytic vegetation and wetland				
					problematic					
	-		,,						problemate	
	Layer (if observer avel, ballast, fill	ea):					Hydric 6	soil presen	+2	
Depth (inche		nined			-		Tryunes	son presen		
Remarks:	,				-					
Remarks.										
Area manned as urban land, and located between railroad and gravel contractor word										
Area mapped as urban land, and located between railroad and gravel contractor yard.										
HYDROLO										
	drology Indicato	irs:								
-	cators (minimum		s required: check	all that a	apply)		Sec	ondary Indi	cators (minimum of two required)	
-	Water (A1)	0. 0.10			Fauna (B	13)	<u></u>		Soil Cracks (B6)	
	iter Table (A2)				uatic Plar	,	<u> </u>		Patterns (B10)	
Saturatio					en Sulfide				son Water Table (C2)	
							· –	-	Burrows (C8)	
X Water M	. ,				l Rhizosp	heres on	Living Roots		( )	
	nt Deposits (B2)			(C3)	a of Dodu	ممط البعيم	<u> </u>		n Visible on Aerial Imagery (C9)	
· ·	posits (B3)			Presenc	e of Redu	icea iron	(C4)	_	or Stressed Plants (D1)	
	it or Crust (B4)				ron Redu	iction in T	illed Soils		ohic Position (D2)	
· · ·	osits (B5)		(D.7.)	(C6)		(0-)	_	FAC-Neu	ıtral Test (D5)	
	on Visible on Aeria				ck Surfac					
Sparsely	Vegetated Conca	ve Surfa	ce (B8)		or Well Da					
	tained Leaves (B9	)		Other (E	xplain in	Remarks	)			
Field Obser		Vee	NI	v	Dorth (	nohce):		\M/o+	land	
Surface wat Water table	•	Yes Yes	No No	X X	Depth (i Depth (i	,			rology	
Saturation p	•	Yes	X No	~	Depth (i	,	0	-	sent? Y	
	pillary fringe)									
Describe red	corded data (strea	am gaug	e, monitoring we	ll, aerial	photos, j	previous	inspections), i	f available:		
Domorkov										
Remarks:										
Coturet				od						
Saturatio	on within draina	age swa	ale along railro	au.						

Project/Site Lake Calumet CTA Red Line Extension	City/0	County:	Cook		Sampling Date:	8/13/2015	
Applicant/Owner: CTA/MWRD		State	e: Illin	ois	Sampling Point:	9	
Investigator(s): J Mengler, V Mosca			Section, Towns	ship, Range:	T37N, R	14E, S27	
Landform (hillslope, terrace, etc.): sw	ale	I	_ocal relief (co	ncave, convex	x, none):	swale	
Slope (%): Lat: 41.66907	7	Long:	-87.601	542	Datum:		
Soil Map Unit Name: orthents, loamy, nearly level			NV	VI Classificatio	on:	none	
Are climatic/hydrologic conditions of the site typical for	or this time o	of the year?	Y (	lf no, explain i	in remarks)		
Are vegetation , soil Y , or hydro	logy	significan	tly disturbed?	Y Are "norr	mal circumstances"		
	logy		problematic?	N present?		Y	
SUMMARY OF FINDINGS				(If neede	d, explain any ans	wers in remarks.)	
Hydrophytic vegetation present? Y							
Hydric soil present?		Is the sampled area within a wetland? N					
Wetland hydrology present? N			s, optional we				
Remarks: (Explain alternative procedures here or in a	separate r		.,	_			
	a separate re	epon.)					
Relied primarily upon vegetation and landsca	ipe positio	n due to c	dry time of se	eason, and r	nostly urbanland	I/fill for substrate.	
VEGETATION Use scientific names of plar	nts						
	Absolute	Dominan	t Indicator	Domina	nce Test Workshe	et	
<u>Tree Stratum</u> (Plot size: 9 m )	% Cover	Species		Number of Do	ominant Species tha	t	
1					FACW, or FAC:	1 (A)	
2				Total Nun	nber of Dominant		
3				Species /	Across all Strata:	<u>2</u> (B)	
4					ominant Species that		
5				are OBL,	FACW, or FAC:	50.00% (A/B)	
	<u> </u>	= Total Cov	er	<u> </u>			
Sapling/Shrub stratum (Plot size: 4.6 m 1 Rhamnus cathartica	)	Y	FAC	Total % (	nce Index Worksh	eet	
2	100	I	FAC	OBL spe		1 = 0	
3				FACW s		2 = 0	
4				FAC spe	·		
5				FACU sp		4 = 0	
	100	= Total Cov	er	UPL spe		5 = 0	
Herb stratum (Plot size: 1 m sq	)			Column f	totals 100 (A	.) <u>300</u> (B)	
1	80	Y		Prevalen	ice Index = B/A =	3.00	
2	10	N					
3	10	N			nytic Vegetation In		
4	2	<u> </u>			d test for hydrophy	•	
5	2	N			inance test is >50%	-	
6 7					alence index is ≤3.	U	
8					phological adaptation		
9					oorting data in Rem irate sheet)		
10					lematic hydrophytic	vegetation*	
	104	= Total Cov	er	(expl		- egotatori	
<u>Woody vine stratum</u> (Plot size: 1 m sq 1	)				rs of hydric soil and we resent, unless disturbe	tland hydrology must be d or problematic	
2				· · · · ·	rophytic		
	0	= Total Cov	er	vege pres	ent? Y	_	
Remarks: (Include photo numbers here or on a separ	rate sheet)						

SOIL
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Profile Des	cription: (Descr	ibe to th	ne depth neede	d to doci	ument th	ne indica	tor or confirm	the absen	ce of indicators.)
Depth	Matrix			edox Feat			_		
(Inches)	Color (moist)	%	Color (moist)	%	Type*	Loc**	Textur	е	Remarks
*Type: C = C	Concentration, D	= Deplet	ion, RM = Redu	iced Matr	ix, MS =	Masked	Sand Grains.	**Locati	ion: PL = Pore Lining, M = Matrix
Hydric So	il Indicators:						Indicators	for Proble	ematic Hydric Soils:
Hist	isol (A1)		Sa	andy Gley	ed Matrix	(S4)	Coast	Prairie Re	dox (A16) ( <b>LRR K, L, R</b> )
Hist	ic Epipedon (A2)		Sa	andy Redo	ox (S5)		Dark S	Surface (S7	7) ( <b>LRR K, L)</b>
Blac	ck Histic (A3)		St	ripped Ma	atrix (S6)		5 cm N	/lucky Peat	t or Peat (S3) ( <b>LRR K, L, R</b> )
	rogen Sulfide (A	4)		amy Muc			Iron-M	anganese	Masses (F12) (LRR K, L, R)
	atified Layers (A5		Lc	amy Gley	ed Matri	x (F2)		-	rk Surface (TF12)
	n Muck (A10)	,		epleted M		. ,		(explain in	
	leted Below Darl	k Surface		edox Dark	. ,			(- I <sup>-</sup> -	,
	ck Dark Surface (		· · · · · · · · · · · · · · · · · · ·	epleted Da		• •			
	dy Mucky Minera			edox Depi					ophytic vegetation and wetland e present, unless disturbed or
	n Mucky Peat or					( - )	Tiyarolo		problematic
	Layer (if observ		,						•
	avel, ballast, fill	eu).					Hvdric s	oil presen	t?
Depth (inche		nined			-		,		
Remarks:									
Area ma	pped as urban	land, a	and 2-3 feet h	igher in	elevatic	on than	adjacent wetl	and swal	es.
				-			-		
HYDROLO									
-	drology Indicato								
Primary Indi	cators (minimum	of one is	s required; chec	k all that	<u>apply)</u>		<u>Seco</u>	ndary Indi	cators (minimum of two required)
Surface	Water (A1)			Aquatic	Fauna (B	13)		Surface S	Soil Cracks (B6)
High Wa	ter Table (A2)			True Aq	uatic Plar	nts (B14)		Drainage	Patterns (B10)
Saturatio	on (A3)			Hydroge	en Sulfide	Odor (C	1)	Dry-Seas	son Water Table (C2)
Water M	arks (B1)			Oxidized	d Rhizosp	heres on	Living Roots	Crayfish	Burrows (C8)
Sedimer	t Deposits (B2)			(C3)			_	Saturatio	n Visible on Aerial Imagery (C9)
Drift Dep	oosits (B3)			Presenc	e of Redu	uced Iron	(C4)	Stunted of	or Stressed Plants (D1)
Algal Ma	t or Crust (B4)			Recent	Iron Redu	ction in T	illed Soils	Geomorp	phic Position (D2)
Iron Dep	osits (B5)			(C6)				FAC-Neu	ıtral Test (D5)
Inundatio	on Visible on Aeria	I Imagery	/ (B7)	Thin Mu	ck Surfac	ce (C7)		_	
Sparsely	Vegetated Conca	ve Surfa	ce (B8)	Gauge o	or Well Da	ata (D9)			
Water-S	tained Leaves (B9	)		Other (E	Explain in	Remarks	)		
Field Obser	vations:			_					
Surface wat	er present?	Yes	No	Х	Depth (i	inches):			land
Water table	•	Yes	No	X	Depth (i	,		-	rology
Saturation p	resent? pillary fringe)	Yes	No	X	Depth (i	inches):	0	pres	sent? N
	corded data (stre	am dauo	e monitoring w	ell aerial	photos	previous	inspections) if	available:	
2000100100		an guuy	,e, mennoning w	en, aonar	p.1000,	p. 011000			
Remarks:									
2-3 feet	higher in eleva	tion tha	in adjacent w	etland s	wales w	vith no e	evidence of h	ydrology	

Project/Site Lake Calumet CTA Red Line Extension	City/0	County:	Cook		Sampling Date:	8/19/2015
Applicant/Owner: CTA/MWRD		State:	Illir	ois	Sampling Point:	10
Investigator(s): J Mengler, V Mosca		Se	ction, Towns	ship, Range:	T37N, R	14E, S27
Landform (hillslope, terrace, etc.): swa	ale	Loc	al relief (co	ncave, conve	(, none):	swale
Slope (%): Lat: 41.65712		Long:	-87.600	738	Datum:	
Soil Map Unit Name: orthents, loamy, nearly level				VI Classificatio	on:	none
Are climatic/hydrologic conditions of the site typical fo	r this time c	of the year?	Y (	lf no, explain	in remarks)	
Are vegetation, soil Y, or hydrol	ogy	significantly	disturbed?	Y Are "nor	mal circumstances"	
Are vegetation, soil, or hydrol				N present?		Y
SUMMARY OF FINDINGS				(If neede	ed, explain any ans	wers in remarks.)
Hydrophytic vegetation present? Y						
Hydric soil present?		Is the sa	mpled area	within a wet	land? Y	
Wetland hydrology present? Y			-		Wetland 8	
Remarks: (Explain alternative procedures here or in a	separate r		•	-		
	i separate n	epon.)				
Relied primarily upon vegetation and landsca	pe positio	n due to dry	time of se	eason, and r	nostly urbanland	l/fill for substrate.
VEGETATION Use scientific names of plan	its					
	Absolute	Dominant	Indicator	Domina	nce Test Workshe	et
<u>Tree Stratum</u> (Plot size: 9 m )	% Cover	Species	Status	Number of D	ominant Species tha	t
1					, FACW, or FAC:	1 (A)
2				Total Nur	nber of Dominant	
3				Species	Across all Strata:	<u> </u>
4					ominant Species tha	
5				are OBL	, FACW, or FAC:	100.00% (A/B)
Openities (Ohmethis teachangel (Distributes 1.0 mm		= Total Cover				4
Sapling/Shrub stratum (Plot size: 4.6 m	)				n <b>ce Index Worksh</b> e Cover of:	eet
2				OBL spe		1 = 0
3					pecies 100 x 2	
4				FAC spe	·	3 = 0
5				FACU sp		4 = 0
	0	= Total Cover		UPL spe	cies 0 x	5 = 0
Herb stratum (Plot size: 1 m sq	)			Column	totals 100 (A	.) <u>200</u> (B)
1 Phragmites australis	100	Y	FACW	Prevaler	nce Index = B/A =	2.00
2						
3					nytic Vegetation In	
4					d test for hydrophy	Ũ
5 6					iinance test is >50% alence index is ≤3.	
6 7						0
8					phological adaptation	
9					arate sheet)	
10					lematic hydrophytic	c vegetation*
	100	= Total Cover		(exp		J
Woody vine stratum (Plot size: 1 m sq	)			*Indicato	rs of hydric soil and we	tland hydrology must be
1				p	resent, unless disturbed	
2				-	rophytic	
	0	= Total Cover		-	etation ent? Y	
Remarks: (Include photo numbers here or on a separ	ate sheet)				<u> </u>	_

SOIL	
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Profile Des	cription: (Descr	ibe to th	ne depth needed	l to docu	ument th	e indica	tor or confirm the	absence of indicators.)
Depth	Matrix		Re	dox Feat	ures			
(Inches)	Color (moist)	%	Color (moist)	%	Type*	Loc**	Texture	Remarks
*Tvpe: C = 0	Concentration, D	= Deplet	tion. RM = Redu	ced Matri	x. MS =	Masked	Sand Grains. **	Location: PL = Pore Lining, M = Matrix
	oil Indicators:		,		, -			Problematic Hydric Soils:
•	tisol (A1)		Sa	ndy Gleye	ed Matrix	(S4)		rie Redox (A16) ( <b>LRR K, L, R</b> )
	tic Epipedon (A2)			ndy Redo		(0.)		ce (S7) ( <b>LRR K, L)</b>
	ck Histic (A3)			pped Ma				y Peat or Peat (S3) ( <b>LRR K, L, R</b> )
	Irogen Sulfide (A	1)		amy Mucl	. ,			anese Masses (F12) (LRR K, L, R)
	atified Layers (A5			amy Gley		. ,		ow Dark Surface (TF12)
	m Muck (A10)	)						
	( )	Curfoo		oleted Ma	. ,			lain in remarks)
	oleted Below Dark		· · · ·	dox Dark				
	ck Dark Surface (			oleted Da				f hydrophytic vegetation and wetland
	ndy Mucky Minera	. ,		dox Depr	essions	(F8)	hydrology n	nust be present, unless disturbed or
	m Mucky Peat or		3)					problematic
	Layer (if observ	ed):						
	ravel, ballast, fill	ined					Hydric soil p	resent?
Depth (inche	es): not determ	linea						
Area ma	pped as urban	land, a	and located be	tween g	gravel ro	oads.		
HYDROLO	OGY							
Wetland Hy	drology Indicato	ors:						
Primary Indi	cators (minimum	of one is	s required; check	all that a	apply)		Seconda	ry Indicators (minimum of two required)
Surface	Water (A1)			Aquatic	Fauna (B	13)	Su	Irface Soil Cracks (B6)
	ater Table (A2)			•	uatic Plar	-		ainage Patterns (B10)
Saturatio				-		Odor (C1		y-Season Water Table (C2)
	larks (B1)			-				avfish Burrows (C8)
	nt Deposits (B2)			(C3)	i Rnizosp	neres on		turation Visible on Aerial Imagery (C9)
	posits (B3)			-	e of Redi	uced Iron		unted or Stressed Plants (D1)
	at or Crust (B4)			-			· ·	eomorphic Position (D2)
·	oosits (B5)			Recent I (C6)	ron Redu	iction in T		C-Neutral Test (D5)
		Imagon		-	ok Surfac	(C7)	FP	(C-Neutral Test (D5)
	on Visible on Aeria			-	ck Surfac			
	Vegetated Conca		се (ва)	- °	or Well Da	• •	,	
	tained Leaves (B9	)		Other (E	xplain in	Remarks	)	
Field Obser		Vee	Na	V	Denth (			Wetland
Surface wat Water table		Yes Yes	No No	$\frac{x}{x}$	Depth (i Depth (i	,		hydrology
Saturation p	•	Yes	X No		Depth (i	,	0	present? Y
	pillary fringe)				<u> </u>	,		•
		am gaug	ge, monitoring we	ell, aerial	photos,	previous	inspections), if avai	lable:
		-						
Domortica								
Remarks:								
Saturatia	n within drains		ale along rood					
Saturallo	on within draina	iye swa	ale alony road	э.				

Project/Site Lake Calumet CTA Red Line Extension	City/	County:	Cook		Sampling Date:	8/19/2015
Applicant/Owner: CTA/MWRD		State:	Illin	iois S	Sampling Point:	11
Investigator(s): J Mengler, V Mosca		Se	ction, Towns	ship, Range:	T37N, R <sup>-</sup>	14E, S27
Landform (hillslope, terrace, etc.): sw	ale	Lo	cal relief (co	ncave, convex,	, none):	swale
Slope (%): Lat: 41.665712	2	Long:	-87.6007	738	Datum:	
Soil Map Unit Name: orthents, loamy, nearly level			NV	VI Classificatio	n: r	none
Are climatic/hydrologic conditions of the site typical for	or this time o	of the year?	Y (	If no, explain ir	n remarks)	
Are vegetation , soil Y , or hydro	logy	significantly	disturbed?	Y Are "norm	nal circumstances"	
	logy			N present?		Y
SUMMARY OF FINDINGS				(If needed	d, explain any answ	vers in remarks.)
Hydrophytic vegetation present? Y						
Hydric soil present?		Is the sa	mpled area	within a wetla	and? N	
Wetland hydrology present? N			•	tland site ID:		
Remarks: (Explain alternative procedures here or in a	senarate r		•			
	a separate r	epon.)				
Relied primarily upon vegetation and landsca	ipe positio	n due to dry	/ time of se	eason, and m	nostly urbanland	/fill for substrate.
VEGETATION Use scientific names of plar	nts.					
	Absolute	Dominant	Indicator	Dominan	ice Test Workshee	ət
Tree Stratum (Plot size: 9 m )	% Cover	Species	Status	Number of Do	ominant Species that	
1					FACW, or FAC:	0 (A)
2				Total Num	ber of Dominant	
3				Species A	Across all Strata:	0 (B)
4					minant Species that	
5				are OBL,	FACW, or FAC:	0.00% (A/B)
Conling/Chrub stratum (Dist size) 4.6 m	<u> </u>	= Total Cover		Drevelan	oo Indox Morkoba	
Sapling/Shrub stratum (Plot size: 4.6 m	)			Total % C	ce Index Workshe	et
2				OBL spec		= 0
3				FACW sp		
4				FAC spec		
5				FACU sp		= 0
	0	= Total Cover		UPL spec	cies 0 x 5	i = 0
Herb stratum (Plot size: 1 m sq	)			Column te	`	) <u> </u>
1 Ambrosia trifida			FAC	Prevalence	ce Index = B/A =	
2 Artemisia vulgaris			UPL			
3 Melilotus albus			FACU		ytic Vegetation Ind	
4 Arctium minus			FACU		d test for hydrophyti	-
5 <u>Lotus corniculata</u> 6			FACU		nance test is >50% alence index is ≤3.0	
7						
8					hological adaptatio orting data in Rema	
9					rate sheet)	
10				Probl	ematic hydrophytic	vegetation*
	0	= Total Cover		(expla		č
Woody vine stratum (Plot size: 1 m sq 1	)				s of hydric soil and wetl esent, unless disturbed	and hydrology must be or problematic
2				Hydr	ophytic	
	0	= Total Cover		vege prese	tation ent? <u>N</u>	_
Remarks: (Include photo numbers here or on a separ	rate sheet)					

SOIL	
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Profile Des	cription: (Descr	ibe to tł	ne depth needed	to docu	ument th	e indica	tor or confirm the abse	nce of indicators.)
Depth (Inches)	Matrix Color (moist)	%	Red Color (moist)	lox Feati %	ures Type*	Loc**	Texture	Remarks
(		,,,		,,,	. )po	200	i o kai o	
*Tvpe: C = (	Concentration, D	= Deplet	tion, RM = Reduc	ed Matri	x. MS =	Masked	Sand Grains. **Loca	tion: PL = Pore Lining, M = Matrix
	il Indicators:		,		.,			lematic Hydric Soils:
•	isol (A1)		Sar	dy Gleye	ed Matrix	(S4)		edox (A16) ( <b>LRR K, L, R</b> )
	ic Epipedon (A2)			dy Redo		( )	Dark Surface (S	
	ck Histic (A3)			pped Ma	. ,			at or Peat (S3) (LRR K, L, R)
	rogen Sulfide (A	4)		my Mucl	. ,			Masses (F12) (LRR K, L, R)
,	atified Layers (A5	,		my Gley		• •		ark Surface (TF12)
2 cr	n Muck (A10)			pleted Ma		. ,	Other (explain ir	
	leted Below Darl	c Surfac	e (A11) Red	lox Dark	Surface	(F6)	、 .	
	ck Dark Surface (		· · · —	leted Da	ark Surfa	ce (F7)	*Indiantara of budy	conduction and watland
Sar	dy Mucky Minera	l (S1)	Rec	lox Depr	essions	(F8)		ophytic vegetation and wetland be present, unless disturbed or
5 cr	n Mucky Peat or	Peat (S3	3)					problematic
Restrictive	Layer (if observ	ed):						
	avel, ballast, fill	•					Hydric soil preser	nt?
Depth (inche	es): not determ	nined						
		land, a	and 2-4 feet hig	her in e	elevatio	on than	adjacent wetland swa	les.
HYDROLO	drology Indicato							
-			s required; check	all that a			Secondary Ind	icators (minimum of two required)
			s required, check			12)		Soil Cracks (B6)
	Water (A1) iter Table (A2)			•	Fauna (B uatic Plar			e Patterns (B10)
Saturatio						Odor (C1		son Water Table (C2)
	arks (B1)						Crowfield	Burrows (C8)
	it Deposits (B2)			Oxidized (C3)	l Rhizosp	heres on		on Visible on Aerial Imagery (C9)
	oosits (B3)				e of Redi	uced Iron		or Stressed Plants (D1)
	t or Crust (B4)						Coomor	phic Position (D2)
	osits (B5)			(C6)	ron Redu	iction in 1		utral Test (D5)
	on Visible on Aeria	l Imager	(B7)	•	ck Surfac	e (C7)		
	Vegetated Conca				or Well Da			
	tained Leaves (B9					Remarks	)	
Field Obser	•	)				rtemarko	)	
Surface wat		Yes	No	х	Depth (i	nches):	We	tland
Water table	•	Yes	No	Х	Depth (i	nches):		Irology
Saturation p		Yes	No	Х	Depth (i	nches):	0 pre	sent? N
•	pillary fringe)				nhotoo	aroviouo	inspections), if available:	
Describe red	Solueu uala (Sifei	anı yaug	je, monitoring we	n, aerial	μποιοs,	PIEVIOUS	mapecuona), ii avaliable:	
Remarks:								
2-4 feet	higher in eleva	tion the	an adjacent we	tland sv	wales w	ith no e	evidence of hydrology	

Project/Site Lake Calumet CTA Red Line Extension	City/0	County:	Cook		Sampling Date:	8/19/2015
Applicant/Owner: CTA/MWRD		State:	Illir	ois	Sampling Point:	12
Investigator(s): J Mengler, V Mosca		Se	ction, Towns	ship, Range:	T37N, R	14E, S26
Landform (hillslope, terrace, etc.): swa	ale	Loc	al relief (co	ncave, convex	, none):	swale
Slope (%): Lat: 41.661704	1	Long:	-87.5973	341	Datum:	
Soil Map Unit Name: orthents, clayey, undulating				VI Classificatio	on: PFC	)1/EMCd
Are climatic/hydrologic conditions of the site typical fo	r this time c	of the year?	Y (	If no, explain i	in remarks)	
Are vegetation, soil Y, or hydrol	ogy	significantly	disturbed?	Y Are "norr	mal circumstances"	
Are vegetation, soil, or hydrol				N present?		Y
SUMMARY OF FINDINGS					d, explain any ans	wers in remarks.)
Hydrophytic vegetation present? Y						
Hydric soil present?		Is the sa	mpled area	within a wet	land? Y	
Wetland hydrology present? Y			-		Wetland 9	
Remarks: (Explain alternative procedures here or in a	separate r		•	-		
	i separate i	epon.)				
Relied primarily upon vegetation and landsca	pe positio	n due to dry	time of se	eason, and r	nostly urbanland	l/fill for substrate.
VEGETATION Use scientific names of plan	its					
	Absolute	Dominant	Indicator	Domina	nce Test Workshe	et
Tree Stratum (Plot size: 9 m )	% Cover	Species	Status	Number of D	ominant Species tha	ł
1					FACW, or FAC:	1 (A)
2				Total Nur	nber of Dominant	
3				Species /	Across all Strata:	<u> </u>
4					ominant Species that	
5				are OBL,	FACW, or FAC:	100.00% (A/B)
Openities (Ohmethis teachangel (Distributions) 4.0 mm		= Total Cover		Durali	I	4
Sapling/Shrub stratum (Plot size: 4.6 m	)				nce Index Worksho Cover of:	eet
2				OBL spe		1 = 0
3					pecies 100 x 2	
4				FAC spe	·	3 = 0
5				FACU sp		4 = 0
	0	= Total Cover		UPL spe	cies 0 x s	5 = 0
Herb stratum (Plot size: 1 m sq	)			Column	totals 100 (A	.) <u>200</u> (B)
1 Phragmites australis	100	Y	FACW	Prevalen	ice Index = B/A =	2.00
2						
3					nytic Vegetation In	
4					d test for hydrophyl	°,
5 6					inance test is >50% alence index is ≤3.0	
6 7						0
8					phological adaptation	
9					irate sheet)	
10					lematic hydrophytic	vegetation*
	100	= Total Cover		(expl		0
Woody vine stratum (Plot size: 1 m sq	)			*Indicator	rs of hydric soil and wet	land hydrology must be
1				р	resent, unless disturbed	
2				-	rophytic	
	0	= Total Cover		-	etation ent? Y	
Remarks: (Include photo numbers here or on a separ	ate sheet)			1		_

SOIL	
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Profile Des	cription: (Descr	ibe to th	ne depth needed	to docu	ument th	ne indica	tor or confirm th	e absence o	f indicators.)
Depth	Matrix			dox Featu					
(Inches)	Color (moist)	%	Color (moist)	%	Type*	Loc**	Texture		Remarks
			'						
		l	l	اا					
	1								
	+	<u> </u>	<u> </u>		<u> </u>	+ +			
	+	<u> </u>	<b> </b> '		┣───	┼──┦			
		┝───	<b> </b> '	┝───┘	┣───	<b>├───</b> ┦			
	<b> </b>	┝───	<b> </b> '	<b>└───</b> '	┣───				
			<u> </u> '	<u> </u>					
	Concentration, D	= Deplet	tion, RM = Reduc	ed Matri	x, MS =	Masked 9			PL = Pore Lining, M = Matrix
-	oil Indicators:								ic Hydric Soils:
	tisol (A1)			ndy Gleye		x (S4)			A16) ( <b>LRR K, L, R</b> )
	tic Epipedon (A2)			ndy Redo				rface (S7) (LF	
	ick Histic (A3)		`	pped Ma	. ,			-	Peat (S3) (LRR K, L, R)
	drogen Sulfide (A		Loa	amy Mucł	ky Miner	al (F1)		-	ses (F12) ( <b>LRR K, L, R</b> )
Stra	atified Layers (A5	)	Loa	amy Gley	ed Matri	x (F2)	Very Sha	allow Dark Su	rface (TF12)
2 cr	m Muck (A10)		Dep	oleted Ma	atrix (F3)	)	Other (e)	xplain in rema	arks)
Dep	pleted Below Darl	< Surface	e (A11)Rec	dox Dark	Surface	: (F6)			
	ck Dark Surface (		Dep	pleted Da	ark Surfø	ace (F7)	*Indicators	of hydrophyt	ic vegetation and wetland
Sar	ndy Mucky Minera	il (S1)	Rec	dox Depr	essions	(F8)			sent, unless disturbed or
5 cr	m Mucky Peat or	Peat (S3	3)					probl	lematic
Restrictive	Layer (if observ	ed):							
	ravel, ballast, fill				_		Hydric soil	present?	
Depth (inche	es): not determ	nined			-				
Remarks:									
							_		
Area ma	apped as urban	land, a	and located bef	ween g	jravel p	arking r	bad and road.		
HYDROL									
-	vdrology Indicato			all that			Saaaaa		- (
	icators (minimum	OT ONE IS	<u>3 requirea; check</u>						s (minimum of two required)
	Water (A1)			•	Fauna (B			Surface Soil C	
·	ater Table (A2)				uatic Plar	· · ·		Drainage Patte	· · · ·
X Saturatio				Hydroge	n Sulfide	e Odor (C1			/ater Table (C2)
	/larks (B1)				J Rhizosp	heres on		Crayfish Burro	
	nt Deposits (B2)			(C3)					ible on Aerial Imagery (C9)
	posits (B3)			Presence	e of Redu	uced Iron	· /		essed Plants (D1)
Algal Ma	at or Crust (B4)				ron Redu	uction in T		Geomorphic P	
	posits (B5)			(C6)			1	FAC-Neutral T	est (D5)
	ion Visible on Aeria			Thin Mu	ick Surfac	ce (C7)			
Sparsely	y Vegetated Conca	ve Surfa	ce (B8)	Gauge o	or Well Da	ata (D9)			
	Stained Leaves (B9	)		Other (E	xplain in	Remarks	)		
Field Obser						· · · ·			
Surface wat	•	Yes	No No	<u> </u>	_ · ·	(inches):	I	Wetland hydrolog	
Water table Saturation p	•	Yes Yes	X No		Depth (i Depth (i	· · ·	0	present?	
	apillary fringe)							P	<u> </u>
Describe red	corded data (strea	am gauç	je, monitoring we	II, aerial	photos,	previous	inspections), if av	/ailable:	
Demention									
								· · · · · · · · · · · · · · · · · · ·	
Remarks:									
	on within draina	200 500	ale along highs	ur arour	vd				

Project/Site Lake Calumet CTA Red Line Extension	City/0	County:	Cook	<u> </u>	Sampling Date:	8/19/2015
Applicant/Owner: CTA/MWRD		State:	Illir	nois S	Sampling Point:	13
Investigator(s): J Mengler, V Mosca		s	ection, Towns	ship, Range:	T37N, R	14E, S26
Landform (hillslope, terrace, etc.): sw	ale	Lo	ocal relief (co	ncave, convex,	none):	swale
Slope (%): Lat: 41.661704	4	Long:	-87.5973	341 I	Datum:	
Soil Map Unit Name: orthents, loamy, nearly level			NV	VI Classification	n: I	none
Are climatic/hydrologic conditions of the site typical for	or this time o	of the year?	Y (	If no, explain ir	remarks)	
Are vegetation , soil Y , or hydro	logy	significantl	y disturbed?	Y Aro "norm	nal circumstances"	
	logy		roblematic?	N present?	ai circumstances	Y
SUMMARY OF FINDINGS				(If needed	d, explain any ansv	vers in remarks.)
Hydrophytic vegetation present? Y					· · ·	·
Hydric soil present?		Is the s	ampled area	within a wetla	and? N	
Wetland hydrology present? N			-	tland site ID:		
Remarks: (Explain alternative procedures here or in a	a senarate r		.,			
	a separate re	epon.)				
Relied primarily upon vegetation and landsca	ape positio	n due to di	ry time of se	eason, and m	ostly urbanland	/fill for substrate.
L VEGETATION Use scientific names of plar	nts					
	Absolute	Dominant	Indicator	Dominan	ce Test Workshe	et
<u>Tree Stratum</u> (Plot size: 9 m )	% Cover	Species	Status	Number of Do	minant Species that	
1					FACW, or FAC:	2 (A)
2				Total Num	ber of Dominant	
3				Species A	cross all Strata:	<u> </u>
4				Percent of Do	minant Species that	
5				are OBL,	FACW, or FAC:	33.33% (A/B)
	0	= Total Cove	r			
Sapling/Shrub stratum (Plot size: 4.6 m	)				ce Index Workshe	eet
1				Total % C		1- 10
3				OBL spec FACW sp		
4			·	FAC spec		
5				FACU spe		
	0	= Total Cove	r	UPL spec		
Herb stratum (Plot size: 1 m sq	)			Column to	otals 60 (A	) 190 (B)
1 Polygonum lapathifolium	10	Y	FACW	Prevalence	ce Index = B/A =	3.17
2 Carduus nutans	10	Y	FACU			
3 Medicago lupulina	10	Y	FACU	Hydrophy	vtic Vegetation In	dicators:
4 Helianthus annuus	10	Y	FACU		I test for hydrophyt	•
5 Acnida altissima	10	Y	OBL		nance test is >50%	
6 Lotus corniculata	10	Y	FACU	Preva	llence index is ≤3.0	)*
/					nological adaptatio	
8					orting data in Rema ate sheet)	arks or on a
9 10					,	wagatatian*
	60	= Total Cove	er	(expla	ematic hydrophytic ain)	vegetation
Woody vine stratum (Plot size: 1 m sq	)			<u> </u>	,	land hydrology syst h
1					esent, unless disturbed	land hydrology must be I or problematic
2				-	ophytic	
	0	= Total Cove	r	veget		
				prese	ent? N	_
Remarks: (Include photo numbers here or on a separ	rate sneet)					

SOIL
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Depth	Matrix				dox Feat					
(Inches)	Color (moist)	%	Color (n	noist)	%	Type*	Loc**	Text	ure	Remarks
		l								
		l	┨─────							
			<b></b>							
					Γ	Γ				
			<u> </u>		1					
			┨────		+					
		Ĺ		<u> </u>	<u> </u>					
	Concentration, D	= Deplet	tion, RM =	Reduc	ced Matri	ix, MS =	Masked			tion: $PL = Pore Lining, M = N$
Hydric So	oil Indicators:									lematic Hydric Soils:
Hist	tisol (A1)		_	Sar	ndy Gley	ed Matrix	x (S4)	Coas	st Prairie Re	edox (A16) ( <b>LRR K, L, R</b> )
Hist	tic Epipedon (A2)	)		Sar	ndy Redo	ox (S5)		Dark	Surface (S	7) ( <b>LRR K, L)</b>
Bla	ck Histic (A3)		_	Stri	ipped Ma	atrix (S6)		5 cm	Mucky Pea	at or Peat (S3) (LRR K, L, R)
	drogen Sulfide (A	4)			amy Muc	. ,			•	Masses (F12) (LRR K, L, R
	atified Layers (A5		_		amy Gley	-			-	ark Surface (TF12)
	m Muck (A10)	)	-							
	· · · ·	. Cumfa a	- (444) -		pleted Ma	• • •	,		r (explain ir	rienarks)
	pleted Below Darl		e (ATT) _		dox Dark		. ,			
	ck Dark Surface (	. ,	-		pleted Da		. ,	*Indica	tors of hydi	ophytic vegetation and wetla
Sar	ndy Mucky Minera	ıl (S1)	-	Re	dox Depr	ressions	(F8)	hydro	logy must b	e present, unless disturbed
5 cr	m Mucky Peat or	Peat (S3	3)							problematic
							T			
	Layer (if observ	ed):								
estrictive	Layer (if observer ravel, ballast, fill	ed):						Hydric	soil presei	nt?
estrictive /pe: gr epth (inche	ravel, ballast, fill					-		Hydric	soil presei	nt?
estrictive /pe: gi epth (inche emarks:	ravel, ballast, fill	nined	and a gra		arking p		feet hig		-	
estrictive /pe: gi epth (inche emarks: Area ma	ravel, ballast, fill es): <u>not determ</u> pped as urban	nined	and a gra	avel pa	arking p	- bad 2-4	feet hig		-	
estrictive ype: guepth (inche emarks: Area ma	ravel, ballast, fill es): <u>not determ</u> pped as urban	land, a	and a gra	avel pa	arking p		feet hig		-	
estrictive /pe: _gr epth (inche emarks: Area ma YDROL( etland Hy	ravel, ballast, fill es): <u>not determ</u> pped as urban DGY	land, a					feet hig	her than su	rrounding	
estrictive (pe:gi epth (inche emarks: Area ma YDROL( fetland Hy rimary Indi	ravel, ballast, fill es): <u>not determ</u> pped as urban DGY rdrology Indicato	land, a			call that a	apply)		her than su	rrounding	wetland. icators (minimum of two requ
estrictive (pe: gr epth (inche emarks: Area ma YDROL( etland Hy imary Indi Surface	ravel, ballast, fill es): not determ pped as urban OGY rdrology Indicato icators (minimum Water (A1)	land, a			<u>all that a</u> Aquatic	<u>apply)</u> Fauna (B	313)	her than su	condary Ind	wetland. icators (minimum of two requ Soil Cracks (B6)
estrictive ype: gi epth (inche emarks: Area ma YDROLO /etland Hy rimary Indi Surface High Wa	ravel, ballast, fill es): not determ pped as urban OGY rdrology Indicato icators (minimum Water (A1) ater Table (A2)	land, a			<u>all that a</u> Aquatic True Aq	<u>apply)</u> Fauna (B uatic Plar	313) nts (B14)	her than sur Sec	condary Ind Surface	wetland. icators (minimum of two requ Soil Cracks (B6) e Patterns (B10)
estrictive ype: _gi epth (inche emarks: Area ma Area ma (YDROL( /etland Hy rimary Indi Surface High Wa Saturatio	ravel, ballast, fill es): not determ pped as urban DGY rdrology Indicato icators (minimum Water (A1) ater Table (A2) on (A3)	land, a			<u>all that a</u> Aquatic True Aq	<u>apply)</u> Fauna (B uatic Plar	313)	her than sur Sec	condary Ind Surface Drainag Dry-Sea	wetland. icators (minimum of two requ Soil Cracks (B6) e Patterns (B10) son Water Table (C2)
estrictive ype: _gi epth (inche emarks: Area ma YDROL( YDROL( YDROL( YDROL( YDROL( Usurface High Wa Saturatic Water M	ravel, ballast, fill es): not determ pped as urban OGY rdrology Indicato icators (minimum Water (A1) ater Table (A2) on (A3) larks (B1)	land, a			<u>all that a</u> Aquatic True Aq Hydroge	<u>apply)</u> Fauna (B uatic Plar en Sulfide	313) nts (B14) : Odor (C1	her than sur Sec	condary Ind Surface Drainag Dry-Sea Crayfish	wetland. icators (minimum of two requ Soil Cracks (B6) e Patterns (B10) son Water Table (C2) Burrows (C8)
estrictive ype: _gi epth (inche emarks: Area ma YDROL( YDROL( YDROL( YDROL( YDROL( Usurface High Wa Saturatic Water M	ravel, ballast, fill es): not determ pped as urban DGY rdrology Indicato icators (minimum Water (A1) ater Table (A2) on (A3)	land, a			all that a Aquatic True Aq Hydroge	<u>apply)</u> Fauna (B uatic Plar en Sulfide	313) nts (B14) : Odor (C1	her than sur <u>Sec</u> )	condary Ind Surface Drainag Dry-Sea Crayfish	wetland. icators (minimum of two requ Soil Cracks (B6) e Patterns (B10) son Water Table (C2)
estrictive ype: gr epth (inche emarks: Area ma YDROL( Vetland Hy rimary Indi Surface High Wa Saturatio Water M Sedimer	ravel, ballast, fill es): not determ pped as urban OGY rdrology Indicato icators (minimum Water (A1) ater Table (A2) on (A3) larks (B1)	land, a			c all that a Aquatic True Aq Hydroge Oxidizec (C3)	<u>apply)</u> Fauna (B uatic Plar en Sulfide d Rhizosp	313) nts (B14) : Odor (C1	her than sur Sec ) Living Roots _	condary Ind Surface Drainag Dry-Sea Crayfish Saturatio	wetland. icators (minimum of two requ Soil Cracks (B6) e Patterns (B10) son Water Table (C2) Burrows (C8)
estrictive ype: gr epth (inche emarks: Area ma YDROLO Yetland Hy rimary Indi Surface High Wa Saturatio Water M Sedimer Drift Dep	ravel, ballast, fill es): not determ pped as urban OGY rdrology Indicato rdrology In	land, a			<u>a all that a</u> Aquatic True Aq Hydroge Oxidizec (C3) Presenc	apply) Fauna (B uatic Plar en Sulfide d Rhizosp ce of Redu	B13) nts (B14) e Odor (C1 oheres on uced Iron	her than sur Sec ) Living Roots _ (C4) _	condary Ind Surface Drainag Dry-Sea Crayfish Saturatio Stunted	wetland. icators (minimum of two requ Soil Cracks (B6) e Patterns (B10) son Water Table (C2) Burrows (C8) on Visible on Aerial Imagery (C
estrictive ype: gi epth (inche emarks: Area ma YDROL( YDROL( /etland Hy rimary Indi Surface High Wa Saturatio Water M Sedimer Drift Dep Algal Ma	ravel, ballast, fill es): not determ pped as urban OGY drology Indicato icators (minimum Water (A1) ater Table (A2) on (A3) larks (B1) nt Deposits (B2) posits (B3)	land, a			<u>a all that a</u> Aquatic True Aq Hydroge Oxidizec (C3) Presenc	apply) Fauna (B uatic Plar en Sulfide d Rhizosp ce of Redu	313) nts (B14) 9 Odor (C1 9 oheres on	her than sur Sec ) Living Roots _ (C4) _	condary Ind Surface Drainag Dry-Sea Crayfish Saturatio Stunted Geomor	wetland. <u>icators (minimum of two requ</u> Soil Cracks (B6) e Patterns (B10) son Water Table (C2) Burrows (C8) on Visible on Aerial Imagery (C or Stressed Plants (D1)
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estrictive ype: gi epth (inche emarks: Area ma YDROLO /etland Hy rimary Indi Surface High Wa Saturatio Water M Sedimer Drift Dep Algal Ma Iron Dep Inundatio Sparsely Water-S ield Obser urface wat	ravel, ballast, fill es): not determ pped as urban OGY drology Indicato icators (minimum Water (A1) ater Table (A2) on (A3) larks (B1) nt Deposits (B2) posits (B3) at or Crust (B4) posits (B5) on Visible on Aeria / Vegetated Conca itained Leaves (B9 rvations: er present?	al Imager Ne Surfa Yes	s required:	; check	c all that a Aquatic True Aq Hydroge Oxidizec (C3) Presenc Recent I (C6) Thin Mu Gauge c Other (E	apply) Fauna (B uatic Plar en Sulfide d Rhizosp d Rhizosp e of Redu iron Redu ick Surfac or Well Da Explain in	a13) ints (B14) odor (C1 oheres on uced Iron uction in T ce (C7) ata (D9) Remarks inches):	her than sur Sec ) Living Roots _ (C4) _ illed Soils _	condary Ind Surface Drainag Dry-Sea Crayfish Saturatie Stunted Geomor FAC-Ne	wetland. icators (minimum of two requ Soil Cracks (B6) e Patterns (B10) son Water Table (C2) Burrows (C8) on Visible on Aerial Imagery (C or Stressed Plants (D1) phic Position (D2) utral Test (D5) tland
estrictive ype: gi epth (inche emarks: Area ma YDROLO /etland Hy rimary Indi Surface High Wa Saturatio Water M Sedimer Drift Dep Inundatio Sparsely Water-S ield Obser urface wat /ater table	ravel, ballast, fill es): not determ pped as urban OGY rdrology Indicato (cators (minimum Water (A1) ater Table (A2) on (A3) larks (B1) nt Deposits (B2) posits (B3) at or Crust (B4) posits (B5) on Visible on Aeria v Vegetated Conca tained Leaves (B9 rvations: er present? present?	al Imager Ne Surfar Yes Yes	s required:	<u>; check</u>	c all that a Aquatic True Aq Hydroge Oxidizec (C3) Presenc Recent I (C6) Thin Mu Gauge c Other (E X X	apply) Fauna (B uatic Plar en Sulfide d Rhizosp d Rhizosp e of Redu lron Redu ck Surfac or Well Da Explain in  Depth ( 	a13) nts (B14) Odor (C1 oheres on uced Iron uction in T ce (C7) ata (D9) Remarks inches): inches):	her than sur Sec ) Living Roots _ (C4) _ illed Soils _	condary Ind Surface Drainag Dry-Sea Crayfish Saturatio Stunted Geomor FAC-Ne	wetland. icators (minimum of two requ Soil Cracks (B6) e Patterns (B10) son Water Table (C2) Burrows (C8) on Visible on Aerial Imagery (C or Stressed Plants (D1) phic Position (D2) utral Test (D5) tland irology
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estrictive ype: gi epth (inche emarks: Area ma YDROLO /etland Hy rimary Indi Surface High Wa Saturatio Water M Sedimer Drift Dep Inundatio Sparsely Water-S Field Obser urface wat /ater table aturation p ncludes ca	ravel, ballast, fill es): not determ pped as urban OGY rdrology Indicato (cators (minimum Water (A1) ater Table (A2) on (A3) larks (B1) nt Deposits (B2) posits (B3) at or Crust (B4) posits (B5) on Visible on Aeria (Vegetated Conca tained Leaves (B9 rvations: present? present?	al Imager of one is of other of one is of other of other of other of other of oth	s required: y (B7) ce (B8)	Check	Aquatic True Aq Hydroge Oxidizec (C3) Presenc (C6) Thin Mu Gauge c Other (E X X X	apply) Fauna (B uatic Plar en Sulfide d Rhizosp d Rhizosp te of Redu lron Redu lron Redu ck Surfac or Well Da Explain in Depth ( Depth (	a13) hts (B14) odor (C1 oheres on uced Iron uced Iron uced Iron ata (D9) Remarks inches): inches): inches):	her than sur Sec ) Living Roots _ (C4) _ iilled Soils _ ) 0	condary Ind Surface Drainag Dry-Sea Crayfish Saturatio Sturated Geomor FAC-Ne	wetland. icators (minimum of two requ Soil Cracks (B6) e Patterns (B10) son Water Table (C2) Burrows (C8) on Visible on Aerial Imagery (C or Stressed Plants (D1) phic Position (D2) utral Test (D5) tland irology sent? N
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Project/Site Lake Calumet CTA Red Line Extension	City/C	County:	Cook	Sampling	Date:	8/13/2015
Applicant/Owner: CTA/MWRD		State	: Illir	ois Sampling	Point:	14
Investigator(s): J Mengler, V Mosca			Section, Towns	ship, Range:	T37N, R14E	E, S26
Landform (hillslope, terrace, etc.): swa	le	L	ocal relief (co	ncave, convex, none):	s	wale
Slope (%): Lat: 41.659598		Long:				
Soil Map Unit Name: urban land- orthents, clayey, com	plex, nearly			VI Classification:	nor	e
Are climatic/hydrologic conditions of the site typical for			Y (	If no, explain in remarks	;)	
Are vegetation , soil Y , or hydrole		-		Y Are "normal circum		
Are vegetation , soil , or hydrolo			problematic?	N present?	ISIGNCES	Y
SUMMARY OF FINDINGS	<u> </u>	,,		(If needed, explain	any answer	s in remarks.)
Hydrophytic vegetation present? Y						,
Hydric soil present?		Is the	sampled area	within a wetland?	Y	
Wetland hydrology present? Y			-		land 10	_
	concrete re	-	-,			_
Remarks: (Explain alternative procedures here or in a	separate re	eport.)				
Relied primarily upon vegetation and landscap	pe positior	n due to d	Iry time of se	eason, and mostly ur	banland/fil	for substrate.
VEGETATION Use scientific names of plan	te					
	Absolute	Dominant	Indicator	Dominance Test	Norksheet	
Tree Stratum (Plot size: 9 m )	% Cover	Species	Indicator Status	Number of Dominant Sp		
1		·		are OBL, FACW, or		1 (A)
2				Total Number of Do	minant —	
3				Species Across all S		1 (B)
4				Percent of Dominant Sp	becies that	
5				are OBL, FACW, or	FAC:	100.00% (A/B)
	0 =	Total Cove	er			
Sapling/Shrub stratum (Plot size: 4.6 m )				Prevalence Index	Worksheet	
1				Total % Cover of:	0	0
2				OBL species FACW species	0 x 1 = 100 x 2 =	0 200
<u> </u>				FAC v species	$\frac{100}{0}$ x 2 =	0
5				FACU species	$\frac{0}{0} \times 4 =$	0
	0 =	Total Cove	er	UPL species	0 x 5 =	0
Herb stratum (Plot size: 1 m sq )				Column totals	100 (A)	200 (B)
1 Phragmites australis	100	Y	FACW	Prevalence Index =	= B/A =	2.00
2						
3				Hydrophytic Vege	tation Indic	ators:
4				Rapid test for h		egetation
5				X Dominance tes		
6				X Prevalence ind	iex is ≤3.0*	
/				Morphological		
8				supporting data separate sheet		s or on a
10						actation*
	100 =	Total Cove	er	Problematic hy (explain)	urophytic ve	yelalion
Woody vine stratum (Plot size: 1 m sq )				*Indicators of hydric s	oil and wotloss	hydrology must be
1				-	soil and wetland	
2				Hydrophytic		
	0 =	Total Cove	er	vegetation present?	V	
Demonster (Include of the second second	4a al 0			present?	<u>Y</u>	
Remarks: (Include photo numbers here or on a separa	ate sneet)					

SOIL	
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Depth	scription: (Descr Matrix			edox Feat			·		
(Inches)	Color (moist)	%	Color (moist)	%	Type*	Loc**	Textu	re	Remarks
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	<u> </u>	<u> </u>							
*Type: C = (	Concentration, D	= Deple	tion, RM = Redu	ced Matr	ix, MS =	Masked \$	Sand Grains.	**Locatio	on: PL = Pore Lining, M = Matri
-	oil Indicators:							s for Proble	ematic Hydric Soils:
•	stisol (A1)		Sr	andy Gleye	ved Matri	x (S4)			lox (A16) ( <b>LRR K, L, R</b> )
	stic Epipedon (A2)	۱		andy Redo		( <b>C</b> )			) (LRR K, L)
				-		<b>`</b>			or Peat (S3) ( <b>LRR K, L, R</b> )
	ack Histic (A3)	• .		ripped Ma	. ,	·		•	
	drogen Sulfide (A4	,		amy Mucl	-			-	Masses (F12) ( <b>LRR K, L, R</b> )
	atified Layers (A5)	)		amy Gley		. ,			k Surface (TF12)
2 cr	m Muck (A10)		De	epleted Ma	atrix (F3)	)	Other	(explain in i	remarks)
Der	pleted Below Dark	к Surfac	e (A11)Re	edox Dark	< Surface	∍ (F6)			
Thi	ick Dark Surface (	(A12)	De	epleted Da	ark Surfa	ace (F7)	*Indicat	tore of hydro	phytic vegetation and wetland
Sar	ndy Mucky Minera	al (S1)	Re	edox Depr	ressions	(F8)			present, unless disturbed or
	m Mucky Peat or I					•	•• ,		problematic
	Layer (if observe	•				<del></del>			
	ravel, ballast, fill	auj.					Hydric s	soil present	n
Depth (inch		nined			-		Tiyuno -	1011 present	.f
Remarks:									
	apped as urban	land, a	and located at	base of	f roadw:	ay emba	ankment and	I along rail	road
HYDROL									
Wetland Hy	ydrology Indicato	ors:	_	_	_	_	_	_	
Primary Indi	licators (minimum	of one i	s required; chec	<u>k all that</u>	apply)		Sec	ondary Indic	ators (minimum of two required
Surface	Water (A1)			Aquatic	Fauna (B	313)		Surface S	oil Cracks (B6)
	ater Table (A2)				quatic Plar	,			Patterns (B10)
X Saturatio						e Odor (C1			on Water Table (C2)
	Marks (B1)		—	_					Burrows (C8)
	. ,				J Rhizosp	heres on i	Living Roots		n Visible on Aerial Imagery (C9)
	nt Deposits (B2)		—	_(C3) 	-f Dod	- Iron			••••
	posits (B3)		_	Presenc	e of Reu	luced Iron (	(C4)		r Stressed Plants (D1)
Ŭ	at or Crust (B4)				Iron Redu	uction in Ti	illed Soils		hic Position (D2)
	posits (B5)		_	(C6)			_	FAC-Neut	tral Test (D5)
Inundati	ion Visible on Aeria	ıl Imager	y (B7)	Thin Mu	uck Surfac	ce (C7)			
Sparsely	y Vegetated Conca	ave Surfa	ace (B8)	Gauge	or Well Da	ata (D9)			
X Water-S	Stained Leaves (B9)	4)		Other (F	Explain in	Remarks)	)		
Field Obser		<u>,</u>						<u> </u>	
	ter present?	Yes	No	х	Depth (	(inches):		Wetl	and
Water table	•	Yes	No	X		(inches):		hydr	ology
Saturation p	present?	Yes	X No			(inches):	0	pres	
(includes ca	apillary fringe)								
(11010000000				ell, aerial	photos,	previous	inspections), if	f available:	
	corded data (strea	am gauເ	qc, morntoning w			•			
	corded data (stre	am gauį	ge, mormoring w			•			
Describe ree	corded data (stre	am gau			-				
•	corded data (stre	am gau							
Describe ree	corded data (strea								

Project/Site Lake Calumet CTA Red Line Extension	City/C	County:	Cook	(	Sampling Date:	8/19/2015
Applicant/Owner: CTA/MWRD		Sta	ite: Illir	nois	Sampling Point:	15
Investigator(s): J Mengler, V Mosca			Section, Towns	ship, Range:	T37N F	R14E S26
Landform (hillslope, terrace, etc.): dit	ch		Local relief (co	ncave, conve	k, none):	ditch
Slope (%): Lat: 41.660019	9	Long:	-87.5954	429	Datum:	
Soil Map Unit Name: urban land-orthents clayey comp	olex, nearly l			VI Classificatio	on:	none
Are climatic/hydrologic conditions of the site typical for	r this time o	f the year	·? Y (	If no, explain	in remarks)	
Are vegetation, soilY, or hydro	logy	significa	ntly disturbed?	Y Are "nor	mal circumstances	n
Are vegetation , soil , or hydro				N present?		Y
SUMMARY OF FINDINGS	··· <u> </u>	-		(If neede	ed, explain any ans	wers in remarks.)
Hydrophytic vegetation present? Y						
Hydric soil present?		Is th	e sampled area	within a wet	land? Y	
Wetland hydrology present? Y			-		Wetland 11	
Remarks: (Explain alternative procedures here or in a	separate re		,,.			
	i separate re	-pon.)				
Relied primarily upon vegetation and landsca	pe positio	n due to	dry time of se	eason, and r	mostly urbanland	d/fill for substrate.
VEGETATION Use scientific names of plan	its.					
	Absolute	Domina	Indicator	Domina	nce Test Workshe	et
Tree Stratum (Plot size: 9 m )	% Cover	Specie		Number of D	ominant Species that	at
1					, FACW, or FAC:	1 (A)
2				Total Nur	mber of Dominant	
3				Species	Across all Strata:	<u>1</u> (B)
4					ominant Species tha	
5				are OBL	, FACW, or FAC:	100.00% (A/B)
Copling/Chrub stratum (Plat size) 4.6 m	<u> </u>	= Total Co	over	Drevelo	naa Inday Markah	t
Sapling/Shrub stratum (Plot size: 4.6 m 1 Salix interior	)		FACW		<b>nce Index Worksh</b> Cover of:	eet
2			TACI	OBL spe		1 = 0
3					pecies $100 \text{ x}$	
4				FAC spe		3 = 0
5				FACU s		4 = 0
	0 =	Total Co	over	UPL spe	cies 0 x	5 = 0
Herb stratum (Plot size: 1 m sq	)			Column		A) 200 (B)
1 Phragmites australis	100	Y	FACW	Prevaler	nce Index = B/A =	2.00
2						
3					nytic Vegetation Ir	
4					id test for hydrophy	-
5 6					ninance test is >50° valence index is ≤3	
7						
8					phological adaptati porting data in Rem	
9					arate sheet)	
10				Prob	enatic hydrophyti	c vegetation*
	100 :	= Total Co	over	(exp		-
Woody vine stratum (Plot size: 1 m sq	)			*Indicato	rs of hydric soil and we	tland hydrology must be
1					present, unless disturbe	d or problematic
2		<del>.</del>		-	rophytic etation	
	0 :	= Total Co	over	-	sent? Y	
Remarks: (Include photo numbers here or on a separ	ate sheet)			1		
	,					

SOIL	
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Profile Des	cription: (Descr	ibe to th	ne depth needec	l to docı	ument th	e indica	tor or confirm the	e absence of indicators.)	
Depth	Matrix			dox Feat	ures				
(Inches)	Color (moist)	%	Color (moist)	%	Type*	Loc**	Texture	Remarks	
*Type: C = 0	Concentration, D	= Deplet	tion, RM = Reduc	ed Matri	x, MS =	Masked	Sand Grains.	**Location: PL = Pore Lining, M =	Matrix
Hydric Sc	il Indicators:						Indicators for	r Problematic Hydric Soils:	
His	tisol (A1)		Sar	ndy Gleye	ed Matrix	(S4)	Coast Pra	airie Redox (A16) ( <b>LRR K, L, R</b> )	
His	tic Epipedon (A2)		Sar	ndy Redo	ox (S5)		Dark Surf	face (S7) ( <b>LRR K, L)</b>	
	ck Histic (A3)			pped Ma				cky Peat or Peat (S3) (LRR K, L, R	3)
	Irogen Sulfide (A	4)		imy Mucl	. ,			ganese Masses (F12) (LRR K, L, I	
	-			imy Gley	•	• •		llow Dark Surface (TF12)	•)
	atified Layers (A5	)				• •			
	m Muck (A10)			pleted Ma			Other (ex	plain in remarks)	
	pleted Below Darl			dox Dark					
Thio	ck Dark Surface (	A12)	De	pleted Da	ark Surfa	ice (F7)	*Indicators	of hydrophytic vegetation and wetl	and
Sar	ndy Mucky Minera	ıl (S1)	Rec	dox Depr	ressions	(F8)		must be present, unless disturbed	
5 cr	m Mucky Peat or	Peat (S3	3)					problematic	
Restrictive	Layer (if observ	ed):							
	avel, ballast, fill	,					Hydric soil	present?	
Depth (inch	es): not detern	nined						·	
Remarks:									
Remarks.									
Area ma	pped as urban	land, a	and located alc	ng road	d at bas	e of a r	ailroad embank	ment. Probe refusal within 2	2-4
inches d	ue to gravel ar	nd fill.		-					
HYDROL									
-	drology Indicato								
Primary Indi	cators (minimum	of one is	s required; check	all that a	apply)		Seconda	ary Indicators (minimum of two rec	uired)
X Surface	Water (A1)			Aquatic	Fauna (B	13)	s	Surface Soil Cracks (B6)	
High Wa	iter Table (A2)			True Aq	uatic Plar	nts (B14)	XD	Drainage Patterns (B10)	
Saturatio	on (A3)			Hydroge	n Sulfide	Odor (C1	I) D	Dry-Season Water Table (C2)	
Water M	larks (B1)			-				Crayfish Burrows (C8)	
Sedimer	nt Deposits (B2)			(C3)	i Kiizosp		•	Saturation Visible on Aerial Imagery (	C9)
	posits (B3)			•	e of Redi	uced Iron		Stunted or Stressed Plants (D1)	,
└──	. ,			-			·	· · · ·	
- Č	t or Crust (B4)				ron Redu	iction in T		Geomorphic Position (D2)	
· ·	osits (B5)			(C6)			F	AC-Neutral Test (D5)	
	on Visible on Aeria	• •		Thin Mu	ck Surfac	e (C7)			
Sparsely	Vegetated Conca	ve Surfa	ce (B8)	Gauge o	or Well Da	ata (D9)			
Water-S	tained Leaves (B9	)		Other (E	xplain in	Remarks	)		
Field Obser	vations:			_					
Surface wat	•	Yes	No	Х	Depth (i	,		Wetland	
Water table	•	Yes	No	X	Depth (i	,		hydrology	
Saturation p		Yes	X No		Depth (i	inches):	0	present? Y	
	pillary fringe)		., .						
Describe ree	corded data (stre	am gaug	je, monitoring we	ll, aerial	photos,	previous	inspections), if ava	ailable:	
Remarks:									
I .									

Project/Site Lake Calumet CTA Red Line Extension	City/C	County:	Cook	Sampling	Date:	8/19/2015
Applicant/Owner: CTA/MWRD		State	: Illir	ois Sampling	Point:	16
Investigator(s): J Mengler, V Mosca			Section, Towns	ship, Range:	T37N R14	E S27
Landform (hillslope, terrace, etc.): dito	ch	L	ocal relief (co	ncave, convex, none):		ditch
Slope (%): Lat: 41.667542		-	-87.6020			
Soil Map Unit Name: urban land-orthents clayey comp	lex, nearly l			VI Classification:	no	ne
Are climatic/hydrologic conditions of the site typical for	-		Y (	If no, explain in remarks	;)	
Are vegetation, soilY, or hydrol				Y Are "normal circum		
Are vegetation , soil , or hydrol				N present?	ISIGNCES	Y
SUMMARY OF FINDINGS		,,		(If needed, explain	any answei	s in remarks.)
Hydrophytic vegetation present? Y				· · ·		,
Hydric soil present?		Is the	sampled area	within a wetland?	Y	
Wetland hydrology present? Y			-	tland site ID: Wet		
	aoporato re	-	-,			
Remarks: (Explain alternative procedures here or in a	separate re	epon.)				
Relied primarily upon vegetation and landsca	pe positior	n due to d	lry time of se	eason, and mostly ur	banland/fil	I for substrate.
VEGETATION Use scientific names of plan	te					
	Absolute	Dominont	Indicator	Dominance Test V	Norksheet	
Tree Stratum (Plot size: 9 m )	% Cover	Dominant Species	Indicator Status	Number of Dominant Sp		
1				are OBL, FACW, or		1 (A)
2				Total Number of Dor	minant –	
3				Species Across all S		1 (B)
4				Percent of Dominant Sp	ecies that	
5				are OBL, FACW, or	FAC:	100.00% (A/B)
	0 =	Total Cove	er			
Sapling/Shrub stratum (Plot size: 4.6 m )				Prevalence Index	Worksheet	
1				Total % Cover of:	0	0
2				OBL species FACW species	$0 \times 1 =$ 100 x 2 =	
3				FAC v species	$\frac{100}{0}$ x 2 =	
5				FACU species	$\frac{0}{0} x 4 =$	
	0 =	Total Cove	er	UPL species	0 x 5 =	
Herb stratum (Plot size: 1 m sq )				Column totals	100 (A)	200 (B)
1 Phragmites australis	100	Y	FACW	Prevalence Index =	= B/A =	2.00
2						
3				Hydrophytic Vege	etation Indic	ators:
4				Rapid test for h		vegetation
5				X Dominance tes		
6				X Prevalence ind	lex is ≤3.0*	
/				Morphological	•	
8				supporting data separate sheet		s or on a
10				·	,	actation*
	100 =	Total Cove	er	Problematic hy (explain)		gelalion
Woody vine stratum (Plot size: 1 m sq )				*Indicators of hydric s	oil and wotle-	d bydrology must be
1					ss disturbed or	
2				Hydrophytic		
	0 =	Total Cove	er	vegetation present?	V	
Demonstrative de state service a l				present?	<u> </u>	
Remarks: (Include photo numbers here or on a separa	ate sneet)					

SOIL	
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Profile Des	cription: (Descr	ibe to th	ne depth ne	eded	to docu	iment th	ne indica	tor or confi	rm the abser	nce of indicators.)	_
Depth	Matrix			Red	dox Feat	ures					
(Inches)	Color (moist)	%	Color (mo	oist)	%	Type*	Loc**	Tex	ture	Remarks	
											_
*Tvne: C = (	Concentration, D	= Deplet	ion RM = F	Reduc	ed Matri	× MS =	Masked	Sand Grains	**Locat	ion: PL = Pore Lining, M = Matrix	x
	oil Indicators:	Dopio		touut		х, ше	maonou			ematic Hydric Soils:	-
-	tisol (A1)			Sar	ndy Gleye	ad Matrix	(\$4)			dox (A16) ( <b>LRR K, L, R</b> )	
	tic Epipedon (A2)			-	ndy Redo		(04)			7) ( <b>LRR K, L)</b>	
	ck Histic (A3)			-	-						
	( )	4)		-	pped Ma	. ,			-	t or Peat (S3) ( <b>LRR K, L, R</b> )	
	Irogen Sulfide (A			-	my Mucl	•			0	Masses (F12) ( <b>LRR K, L, R</b> )	
	atified Layers (A5	)		-	my Gley		. ,		-	rk Surface (TF12)	
	m Muck (A10)			- '	pleted Ma	• • •		Oth	er (explain in	remarks)	
	pleted Below Dark		e (A11)	-	dox Dark		• •				
	ck Dark Surface (			_	pleted Da			*Indic	ators of hydro	ophytic vegetation and wetland	
Sar	ndy Mucky Minera	l (S1)		Rec	dox Depr	ressions	(F8)	hydr	ology must b	e present, unless disturbed or	
5 cr	m Mucky Peat or	Peat (S3	8)							problematic	
Restrictive	Layer (if observ	ed):									
Туре: ді	avel, ballast, fill							Hydric	c soil presen	t?	
Depth (inche	es): not determ	nined									
Remarks:											
Aroo mo	nnad ag urban	land a	nd loosto			1 of boo		and ombor	akmont D	robo rofuced within 2.4	
	• •		inu iocale	u alu	ng road	a at bas	seorar	oau empai	ikineni. P	robe refusal within 2-4	
inches u	ue to gravel ar	iu iii.									
HYDROLO	DGY										
Wetland Hy	drology Indicato	ors:									
Primary Indi	<u>cators (minimum</u>	of one is	s required;	check	all that a	apply)		<u>Se</u>	econdary Indi	cators (minimum of two required	I)
X Surface	Water (A1)				Aquatic I	Fauna (B	13)		Surface	Soil Cracks (B6)	
High Wa	ter Table (A2)				True Aqu	uatic Plar	nts (B14)		X Drainage	e Patterns (B10)	
Saturatio	on (A3)				Hydroge	n Sulfide	Odor (C1	)	Dry-Seas	son Water Table (C2)	
Water M	larks (B1)				-			Living Roots		Burrows (C8)	
	nt Deposits (B2)				(C3)	i i tinzosp				n Visible on Aerial Imagery (C9)	
	posits (B3)					e of Redu	uced Iron	(C4)		or Stressed Plants (D1)	
	it or Crust (B4)				•			. ,		bhic Position (D2)	
	osits (B5)				(C6)	ron Redu	ICTION IN I	illed Soils		utral Test (D5)	
·	on Visible on Aeria	Imagen	(B7)		•	ck Surfac					
	Vegetated Conca				•		. ,				
	-		се (во)		• •	r Well Da	. ,	<b>`</b>			
	tained Leaves (B9	)			Other (E	xplain in	Remarks	)			
Field Obser		Voo	v	No		Donth (i	inches):	0.2	Wot	land	
Surface wat Water table	•	Yes Yes		No No	Х	Depth (i	,	0-2		rology	
Saturation p	•	Yes		No		Depth (i		0	-	sent? Y	
	pillary fringe)					· · ·	,		•   •		
Describe red	corded data (strea	am gaug	e, monitorii	ng we	ll, aerial	photos,	previous	inspections)	, if available:		-
Deversit											_
Remarks:											

Project/Site Lake Calumet CTA Red Line Extension	City/C	County:	Cook	Sampling	Date:	8/19/2015
Applicant/Owner: CTA/MWRD		State:	Illin	ois Sampling	Point:	17
Investigator(s): J Mengler, V Mosca		s	ection, Town	ship, Range:	T37N R14	E S27
Landform (hillslope, terrace, etc.): dito	ch	Lo	ocal relief (co	ncave, convex, none):		ditch
Slope (%): Lat: 41.669078	3	-	-87.6024			
Soil Map Unit Name: urban land-orthents clayey comp	lex, nearly l			VI Classification:	no	ne
Are climatic/hydrologic conditions of the site typical for	-		Y (	If no, explain in remarks	;)	
Are vegetation, soilY, or hydrol				Y Are "normal circum		
Are vegetation , soil , or hydrol				N present?	ISIGNCES	Y
SUMMARY OF FINDINGS		,,		(If needed, explain	any answei	s in remarks.)
Hydrophytic vegetation present? Y				· · ·		,
Hydric soil present?		Is the s	ampled area	within a wetland?	Y	
Wetland hydrology present? Y			-	tland site ID: Wet		
	accorato ra	-	.,			
Remarks: (Explain alternative procedures here or in a	separate re	eport.)				
Relied primarily upon vegetation and landsca	pe positior	n due to di	ry time of se	eason, and mostly ur	banland/fil	I for substrate.
VEGETATION Use scientific names of plan	te					
	Absolute	Dominont	Indiaator	Dominance Test V	Norksheet	]
Tree Stratum (Plot size: 9 m )	% Cover	Dominant Species	Indicator Status	Number of Dominant Sp		
1		·		are OBL, FACW, or		1 (A)
2				Total Number of Dor	minant –	
3				Species Across all S	Strata:	1 (B)
4				Percent of Dominant Sp	becies that	
5				are OBL, FACW, or	FAC:	100.00% (A/B)
	0 =	Total Cove	er			
Sapling/Shrub stratum (Plot size: 4.6 m )				Prevalence Index	Worksheet	
1				Total % Cover of:	0	0
2				OBL species FACW species	$0 \times 1 =$ 100 x 2 =	
3				FAC v species	$\frac{100}{0}$ x 2 =	
5				FACU species	$\frac{0}{0} x 4 =$	
	0 =	Total Cove	er	UPL species	0 x 5 =	
Herb stratum (Plot size: 1 m sq )				Column totals	100 (A)	200 (B)
1 Phragmites australis	100	Y	FACW	Prevalence Index =	= B/A =	2.00
2						
3				Hydrophytic Vege	etation Indic	ators:
4				Rapid test for h		vegetation
5				X Dominance tes		
6				X Prevalence ind	lex is ≤3.0*	
/				Morphological	•	
8				supporting data separate sheet		s or on a
10				·	,	actation*
···	100 =	Total Cove	er	Problematic hy (explain)		getation
Woody vine stratum (Plot size: 1 m sq )					ail and wation	d hydrology myst ha
1				*Indicators of hydric s present, unles	soil and wetlan	
2				Hydrophytic		
	0 =	Total Cove	er	vegetation present?	v	
Demonstra (Include of states and the set				present?	<u> </u>	
Remarks: (Include photo numbers here or on a separa	ate sneet)					

SOIL	
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(Inches)	Matrix		1	Re	dox Featu	ures				
	Color (moist)	%	Color (I	moist)	%	Type*	Loc**	Tex	ture	Remarks
			1							
	Į					'				
	J	<b>/</b>	<b></b>		┟────′	<b> </b> '	┨────┦			
	Į	!	<u> </u>		<u> </u>	<u> </u>				
	ıl	·!	I			'				
		, —								
	1	,			<b>├</b> ───		1 1			
	r	, <b></b>			┟───┘	<b> </b> '	┨────┦			
	<b>با</b>	لـــــــــــــــــــــــــــــــــــــ	<b></b>		<b>↓</b> '	<b> </b> '	<b></b>	<u> </u>		
	L	اا	l			<u> </u>				
'Type: C = C	Concentration, D :	= Deplet	ion, RM =	= Reduc	ed Matri	ix, MS =	Masked	Sand Grains	. **Locat	ion: PL = Pore Lining, M = Mat
Hydric So	il Indicators:							Indicate	ors for Probl	ematic Hydric Soils:
•	tisol (A1)			Sar	ndy Gleye	ed Matrix	x (S4)			dox (A16) ( <b>LRR K, L, R</b> )
	tic Epipedon (A2)		-		ndy Redo		(0)			7) ( <b>LRR K, L)</b>
	ck Histic (A3)		-		ipped Ma					t or Peat (S3) ( <b>LRR K, L, R</b> )
	( )		-		••	• •			-	
	Irogen Sulfide (A4		-		amy Muck	•	. ,			Masses (F12) ( <b>LRR K, L, R</b> )
	atified Layers (A5)	1	-		amy Gley		. ,		-	rk Surface (TF12)
2 cn	m Muck (A10)		-		pleted Ma	. ,		Oth	er (explain in	remarks)
Dep	oleted Below Dark	Surface	e (A11)	Re	dox Dark	Surface	; (F6)			
Thic	ck Dark Surface (A	A12)	_	Der	pleted Da	ark Surfa	ace (F7)	*Indic	atore of hydr	ophytic vegetation and wetland
San	ndy Mucky Minera	l (S1)	_	Re	dox Depr	ressions	(F8)			e present, unless disturbed or
	n Mucky Peat or I		រ)				•	· · <b>,</b> ·	009,	problematic
	Layer (if observe		,				π			P1
	ravel, ballast, fill	3a).				I		Hydric	c soil presen	10
Depth (inche		vined				- '		1150011	; son proce	
Remarks:						·				
Area maj gravel an		land, a	nd locat	ed alo	ng railro	oad em	ıbankme	ent. Probe	e refusal wi	thin 2-4 inches due to
HYDROLC	JGY			·						
Wetland Hy	drology Indicato									
-	cators (minimum	rs:	s <u>requirec</u>	l; <u>chec</u> ł	all that a	a <u>pply)</u>		Se	acondary Indi	
Prim <u>ary Indic</u>	· · · · · ·							<u> 00</u>	-conuary mu	cators (minimum of two require
					∆ouatic i	Eauna (B	13)	<u></u>		
X Surface \	Water (A1)					Fauna (B uatic Plar		<u></u>	Surface	Soil Cracks (B6)
X Surface V High Wa	Water (A1) ater Table (A2)			_	True Aqu	uatic Plar	nts (B14)		Surface X Drainage	Soil Cracks (B6) Patterns (B10)
X Surface V High Wat Saturatio	Water (A1) ater Table (A2) on (A3)			_	True Aqu	uatic Plar			Surface X Drainage Dry-Seas	Soil Cracks (B6) Patterns (B10) son Water Table (C2)
X Surface V High Wa Saturatio Water Ma	Water (A1) hter Table (A2) on (A3) larks (B1)				True Aqu Hydroge Oxidized	uatic Plar en Sulfide	nts (B14) e Odor (C1		Surface X Drainage Dry-Seas Crayfish	Soil Cracks (B6) Patterns (B10) son Water Table (C2) Burrows (C8)
X Surface V High War Saturatio Water Ma Sedimen	Water (A1) tter Table (A2) on (A3) larks (B1) nt Deposits (B2)				True Aqu Hydroge Oxidized (C3)	uatic Plar en Sulfide d Rhizosp	nts (B14) e Odor (C1 oheres on	I) Living Roots	Surface X Drainage Dry-Seas Crayfish Saturatic	Soil Cracks (B6) Patterns (B10) son Water Table (C2) Burrows (C8) on Visible on Aerial Imagery (C9)
X Surface V High War Saturatio Water Ma Sedimen	Water (A1) hter Table (A2) on (A3) larks (B1)				True Aqu Hydroge Oxidized (C3)	uatic Plar en Sulfide d Rhizosp	nts (B14) e Odor (C1	I) Living Roots	Surface X Drainage Dry-Seas Crayfish Saturatic	Soil Cracks (B6) Patterns (B10) son Water Table (C2) Burrows (C8)
X Surface V High War Saturatio Water Ma Sedimen Drift Dep	Water (A1) tter Table (A2) on (A3) larks (B1) nt Deposits (B2)				True Aqu Hydroge Oxidized (C3) Presence	uatic Plar en Sulfide d Rhizosp ce of Redu	nts (B14) e Odor (C1 oheres on uced Iron	I) Living Roots	X Drainage Dry-Seas Crayfish Saturatic	Soil Cracks (B6) Patterns (B10) son Water Table (C2) Burrows (C8) on Visible on Aerial Imagery (C9)
X Surface V High Wa Saturatio Water Ma Sedimen Drift Dep Algal Ma	Water (A1) tter Table (A2) on (A3) larks (B1) nt Deposits (B2) posits (B3)				True Aqu Hydroge Oxidized (C3) Presence	uatic Plar en Sulfide d Rhizosp ce of Redu	nts (B14) e Odor (C1 oheres on uced Iron	I) Living Roots (C4)	X Drainage Dry-Seas Crayfish Saturatic Stunted Geomor	Soil Cracks (B6) Patterns (B10) son Water Table (C2) Burrows (C8) on Visible on Aerial Imagery (C9) or Stressed Plants (D1)
X Surface V High Wa Saturatio Water Ma Sedimen Drift Dep Algal Ma Iron Dep	Water (A1) tter Table (A2) on (A3) larks (B1) nt Deposits (B2) posits (B3) tt or Crust (B4)	<u>of one is</u>	· (B7)		True Aqu Hydroge Oxidized (C3) Presence Recent II (C6)	uatic Plar en Sulfide d Rhizosp ce of Redu Iron Redu	nts (B14) e Odor (C1 oheres on uced Iron uction in T	I) Living Roots (C4)	X Drainage Dry-Seas Crayfish Saturatic Stunted Geomor	Soil Cracks (B6) Patterns (B10) son Water Table (C2) Burrows (C8) on Visible on Aerial Imagery (C9) or Stressed Plants (D1) ohic Position (D2)
X Surface V High War Saturatio Water Ma Sedimen Drift Dep Algal Mar Iron Depu Inundatio	Water (A1) tter Table (A2) on (A3) larks (B1) ht Deposits (B2) posits (B3) tt or Crust (B4) posits (B5) on Visible on Aeria	of one is			True Aqu Hydroge Oxidized (C3) Presence Recent II (C6) Thin Mud	uatic Plar en Sulfide d Rhizosp ce of Redu Iron Redu ick Surfac	nts (B14) e Odor (C1 oheres on uced Iron uction in T ce (C7)	I) Living Roots (C4)	X Drainage Dry-Seas Crayfish Saturatic Stunted Geomor	Soil Cracks (B6) Patterns (B10) son Water Table (C2) Burrows (C8) on Visible on Aerial Imagery (C9) or Stressed Plants (D1) ohic Position (D2)
X Surface V High War Saturatio Water Ma Sedimen Drift Dep Algal Mar Iron Depu Inundatio Sparsely	Water (A1) tter Table (A2) on (A3) larks (B1) tt Deposits (B2) oosits (B3) tt or Crust (B4) oosits (B5) on Visible on Aeria v Vegetated Conca	of one is I Imagery ve Surfac			True Aqu Hydroge Oxidized (C3) Presence Recent II (C6) Thin Muc Gauge o	uatic Plar en Sulfide d Rhizosp ce of Redu Iron Redu ick Surfac or Well Da	nts (B14) e Odor (C1 oheres on uced Iron uction in T ce (C7) ata (D9)	I) Living Roots (C4) ïilled Soils	X Drainage Dry-Seas Crayfish Saturatic Stunted Geomor	Soil Cracks (B6) Patterns (B10) son Water Table (C2) Burrows (C8) on Visible on Aerial Imagery (C9) or Stressed Plants (D1) ohic Position (D2)
X Surface V High War Saturatio Water Ma Sedimen Drift Dep Algal Mar Iron Dep Inundatio Sparsely Water-St	Water (A1) tter Table (A2) on (A3) larks (B1) tt Deposits (B2) oosits (B3) tt or Crust (B4) oosits (B5) on Visible on Aeria v Vegetated Concar tained Leaves (B9)	of one is I Imagery ve Surfac			True Aqu Hydroge Oxidized (C3) Presence Recent II (C6) Thin Muc Gauge o	uatic Plar en Sulfide d Rhizosp ce of Redu Iron Redu ick Surfac or Well Da	nts (B14) e Odor (C1 oheres on uced Iron uction in T ce (C7)	I) Living Roots (C4) ïilled Soils	X Drainage Dry-Seas Crayfish Saturatic Stunted Geomor	Soil Cracks (B6) Patterns (B10) son Water Table (C2) Burrows (C8) on Visible on Aerial Imagery (C9) or Stressed Plants (D1) ohic Position (D2)
X Surface V High War Saturatio Water Ma Sedimen Drift Dep Algal Mar Iron Dep Inundatio Sparsely Water-St Field Obser	Water (A1) tter Table (A2) on (A3) larks (B1) tt Deposits (B2) oosits (B3) tt or Crust (B4) oosits (B5) on Visible on Aeria v Vegetated Concar tained Leaves (B9) <b>vations:</b>	of one is I Imagery ve Surfac )	ce (B8)		True Aqu Hydroge Oxidized (C3) Presence Recent II (C6) Thin Muc Gauge o	uatic Plar en Sulfide d Rhizosp ee of Redu Iron Redu Iron Redu ck Surfac or Well Da Explain in	nts (B14) e Odor (C1 oheres on uced Iron uction in T ce (C7) ata (D9) Remarks	I) Living Roots (C4) iilled Soils )	X Drainage Dry-Seas Crayfish Saturatic Stunted Geomory FAC-Net	Soil Cracks (B6) e Patterns (B10) son Water Table (C2) Burrows (C8) on Visible on Aerial Imagery (C9) or Stressed Plants (D1) ohic Position (D2) utral Test (D5)
X Surface V High War Saturatio Water Ma Sedimen Drift Dep Algal Mar Iron Dep Inundatio Sparsely Water-St Field Obser Surface wate	Water (A1) tter Table (A2) on (A3) larks (B1) at Deposits (B2) oosits (B3) at or Crust (B4) loosits (B5) on Visible on Aeria v Vegetated Concar tained Leaves (B9) <b>vations:</b> er present?	I Imagery ve Surfac ) Yes			True Aqu Hydroge Oxidized (C3) Presence Recent II (C6) Thin Muc Gauge o Other (E	uatic Plar en Sulfide d Rhizosp ee of Redu Iron Redu Iron Redu Iron Redu Explain in Depth (i	nts (B14) Odor (C1 oheres on uced Iron uction in T ce (C7) ata (D9) Remarks inches):	I) Living Roots (C4) ïilled Soils	X Drainage Dry-Seas Crayfish Saturatic Stunted Geomory FAC-Net	Soil Cracks (B6) e Patterns (B10) son Water Table (C2) Burrows (C8) on Visible on Aerial Imagery (C9) or Stressed Plants (D1) ohic Position (D2) utral Test (D5)
X Surface V High War Saturatio Water Ma Sedimen Drift Dep Algal Mar Iron Dep Inundatio Sparsely Water-St Field Obser Surface wate	Water (A1) tter Table (A2) on (A3) larks (B1) tt Deposits (B2) oosits (B3) tt or Crust (B4) oosits (B5) on Visible on Aeria v Vegetated Concar tained Leaves (B9) <b>vations:</b> er present? present?	I Imagery ve Surfac ) Yes Yes	x	No	True Aqu Hydroge Oxidized (C3) Presence Recent II (C6) Thin Muc Gauge o	uatic Plar en Sulfide d Rhizosp ee of Redu Iron Redu Iron Redu Iron Redu Explain in Depth (i Depth (i	nts (B14) Odor (C1 oheres on uced Iron uction in T ce (C7) ata (D9) Remarks inches): inches):	I) Living Roots (C4) iilled Soils ) 0-2	X Drainage Dry-Seas Crayfish Saturatic Stunted Geomory FAC-Net	Soil Cracks (B6) e Patterns (B10) son Water Table (C2) Burrows (C8) on Visible on Aerial Imagery (C9) or Stressed Plants (D1) ohic Position (D2) utral Test (D5)
X Surface V High War Saturatio Water Ma Sedimen Drift Dep Algal Mar Iron Dep Inundatio Sparsely Water-St Field Obser Surface wate Water table	Water (A1) tter Table (A2) on (A3) larks (B1) tt Deposits (B2) oosits (B3) tt or Crust (B4) oosits (B5) on Visible on Aeria v Vegetated Concar tained Leaves (B9) <b>vations:</b> er present? present? resent?	I Imagery ve Surfac ) Yes	ce (B8)		True Aqu Hydroge Oxidized (C3) Presence Recent II (C6) Thin Muc Gauge o Other (E	uatic Plar en Sulfide d Rhizosp ee of Redu Iron Redu Iron Redu Iron Redu Explain in Depth (i Depth (i	nts (B14) Odor (C1 oheres on uced Iron uction in T ce (C7) ata (D9) Remarks inches):	I) Living Roots (C4) iilled Soils )	X Drainage Dry-Seas Crayfish Saturatic Stunted Geomory FAC-Net	Soil Cracks (B6) e Patterns (B10) son Water Table (C2) Burrows (C8) on Visible on Aerial Imagery (C9) or Stressed Plants (D1) ohic Position (D2) utral Test (D5)
X Surface V High War Saturatio Water Ma Sedimen Drift Dep Algal Mar Iron Dep Inundatio Sparsely Water-St Field Obser Surface wate Saturation pr (includes car	Water (A1) tter Table (A2) on (A3) larks (B1) at Deposits (B2) oosits (B3) at or Crust (B4) loosits (B5) on Visible on Aeria v Vegetated Concar tained Leaves (B9) <b>vations:</b> er present? present? present? pillary fringe)	I Imagery ve Surfac ) Yes Yes	x X X	No No	True Aqu Hydroge Oxidized (C3) Presence Recent II (C6) Thin Muc Gauge o Other (E	uatic Plar en Sulfide d Rhizosp ee of Redu Iron Redu Iron Redu ck Surfac or Well Da Explain in Depth (i Depth (i	nts (B14) e Odor (C1 oheres on uced Iron uction in T ce (C7) ata (D9) Remarks inches): inches):	I) Living Roots (C4) iilled Soils ) 0-2 0	Surface X Drainage Dry-Seas Crayfish Saturatic Stunted Geomorp FAC-Net Ket hyd pres	Soil Cracks (B6) e Patterns (B10) son Water Table (C2) Burrows (C8) on Visible on Aerial Imagery (C9) or Stressed Plants (D1) ohic Position (D2) utral Test (D5)
X Surface V High War Saturatio Water Ma Sedimen Drift Dep Algal Mar Iron Dep Inundatio Sparsely Water-St Field Obser Surface wate Saturation pr (includes car	Water (A1) tter Table (A2) on (A3) larks (B1) tt Deposits (B2) oosits (B3) tt or Crust (B4) oosits (B5) on Visible on Aeria v Vegetated Concar tained Leaves (B9) <b>vations:</b> er present? present? resent?	I Imagery ve Surfac ) Yes Yes	x X X	No No	True Aqu Hydroge Oxidized (C3) Presence Recent II (C6) Thin Muc Gauge o Other (E	uatic Plar en Sulfide d Rhizosp ee of Redu Iron Redu Iron Redu ck Surfac or Well Da Explain in Depth (i Depth (i	nts (B14) e Odor (C1 oheres on uced Iron uction in T ce (C7) ata (D9) Remarks inches): inches):	I) Living Roots (C4) iilled Soils ) 0-2 0	Surface X Drainage Dry-Seas Crayfish Saturatic Stunted Geomorp FAC-Net Ket hyd pres	Soil Cracks (B6) e Patterns (B10) son Water Table (C2) Burrows (C8) on Visible on Aerial Imagery (C9) or Stressed Plants (D1) ohic Position (D2) utral Test (D5)
X Surface V High War Saturatio Water Ma Sedimen Drift Dep Algal Mar Iron Dep Inundatio Sparsely Water-St Field Obser Surface wate Saturation pr (includes car	Water (A1) tter Table (A2) on (A3) larks (B1) at Deposits (B2) oosits (B3) at or Crust (B4) loosits (B5) on Visible on Aeria v Vegetated Concar tained Leaves (B9) <b>vations:</b> er present? present? present? pillary fringe)	I Imagery ve Surfac ) Yes Yes	x X X	No No	True Aqu Hydroge Oxidized (C3) Presence Recent II (C6) Thin Muc Gauge o Other (E	uatic Plar en Sulfide d Rhizosp ee of Redu Iron Redu Iron Redu ck Surfac or Well Da Explain in Depth (i Depth (i	nts (B14) e Odor (C1 oheres on uced Iron uction in T ce (C7) ata (D9) Remarks inches): inches):	I) Living Roots (C4) iilled Soils ) 0-2 0	Surface X Drainage Dry-Seas Crayfish Saturatic Stunted Geomorp FAC-Net Ket hyd pres	Soil Cracks (B6) e Patterns (B10) son Water Table (C2) Burrows (C8) on Visible on Aerial Imagery (C9) or Stressed Plants (D1) ohic Position (D2) utral Test (D5)
X Surface V High War Saturatio Water Ma Sedimen Drift Dep Algal Mar Iron Dep Inundatio Sparsely Water-St Field Obser Surface wate Saturation pr (includes car	Water (A1) tter Table (A2) on (A3) larks (B1) at Deposits (B2) oosits (B3) at or Crust (B4) loosits (B5) on Visible on Aeria v Vegetated Concar tained Leaves (B9) <b>vations:</b> er present? present? present? pillary fringe)	I Imagery ve Surfac ) Yes Yes	x X X	No No	True Aqu Hydroge Oxidized (C3) Presence Recent II (C6) Thin Muc Gauge o Other (E	uatic Plar en Sulfide d Rhizosp ee of Redu Iron Redu Iron Redu ck Surfac or Well Da Explain in Depth (i Depth (i	nts (B14) e Odor (C1 oheres on uced Iron uction in T ce (C7) ata (D9) Remarks inches): inches):	I) Living Roots (C4) iilled Soils ) 0-2 0	Surface X Drainage Dry-Seas Crayfish Saturatic Stunted Geomorp FAC-Net Ket hyd pres	Soil Cracks (B6) e Patterns (B10) son Water Table (C2) Burrows (C8) on Visible on Aerial Imagery (C9) or Stressed Plants (D1) ohic Position (D2) utral Test (D5)

Project/Site Lake Calumet CTA Red Line Extension	City/0	County:	Cook		Sampling Date:	8/19/2015
Applicant/Owner: CTA/MWRD		State:	Illin	ois	Sampling Point:	18
Investigator(s): J Mengler, V Mosca		Se	ection, Towns	ship, Range:	T37N F	R14E S27
Landform (hillslope, terrace, etc.): dite	ch	Lo	cal relief (co	ncave, conve	(, none):	ditch
Slope (%): Lat: 41.667289	)	Long:	-87.600	100	Datum:	
Soil Map Unit Name: urban land-orthents clayey comp	lex, nearly l	level	NV	VI Classificatio	on:	none
Are climatic/hydrologic conditions of the site typical for	r this time o	f the year?	Y (	lf no, explain	in remarks)	
Are vegetation, soil Y, or hydrol	ogy	significantly	disturbed?	Y Are "nor	mal circumstances	n
Are vegetation, soil, or hydrol				N present?		Y
SUMMARY OF FINDINGS				(If neede	ed, explain any ans	wers in remarks.)
Hydrophytic vegetation present? Y						
Hydric soil present?		Is the sa	ampled area	within a wet	land? Y	
Wetland hydrology present? Y			-		Wetland 14	
Remarks: (Explain alternative procedures here or in a	senarate re		•	-		
		. ,				
Relied primarily upon vegetation and landsca	pe positio	n due to dry	/ time of se	eason, and r	mostly urbanland	d/fill for substrate.
VEGETATION Use scientific names of plan	ts.					
	Absolute	Dominant	Indicator	Domina	nce Test Workshe	et
Tree Stratum (Plot size: 9 m )	% Cover	Species	Status	Number of D	ominant Species tha	ıt
1					, FACW, or FAC:	3 (A)
2				Total Nur	nber of Dominant	
3				Species	Across all Strata:	<u>3</u> (B)
4					ominant Species tha	
5				are OBL	, FACW, or FAC:	100.00% (A/B)
Sopling/Shrub stratum (Dist size: 4.6 m )	0	= Total Cover		Brovalo	nce Index Worksh	oot
Sapling/Shrub stratum (Plot size: 4.6 m )					Cover of:	eet
2			<u> </u>	OBL spe		1 = 0
3					pecies 100 x	
4				FAC spe	·	3 = 0
5				FACU sp		4 = 0
	0	= Total Cover		UPL spe	cies 0 x	5 = 0
Herb stratum (Plot size: 1 m sq )	)			Column	totals 100 (A	A) 200 (B)
1 Phragmites australis	100	Y	FACW	Prevaler	nce Index = B/A =	2.00
2						
3					nytic Vegetation Ir	
4					d test for hydrophy	-
5 6					iinance test is >509 alence index is ≤3.	
6 7						
8					phological adaptation	, u
9			·······		arate sheet)	
10					lematic hydrophyti	c vegetation*
	100	= Total Cover		(exp		J
Woody vine stratum (Plot size: 1 m sq )	)			*Indicato	rs of hydric soil and we	tland hydrology must be
1 Vitis riparia	20	Y	FACW	p	resent, unless disturbe	, ,,
2 Convolvulus sepium	15	Y	FAC	-	rophytic etation	
	35	= Total Cover		-	ent? Y	
Remarks: (Include photo numbers here or on a separa	ate sheet)			· ·		
, , , , , , , , , , , , , , , , , , , ,	/					

SOIL	
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SOIL									Sa	ampling Point:	18
Profile Desc	cription: (Descri	ibe to th	ne depth r	needec	to doci	ument th	ne indica	tor or confirm	the abser	nce of indicators.	.)
Depth	Matrix				dox Feati		· · · · · ·		· · · · · ·		
(Inches)	Color (moist)	%	Color (m	noist)	%	Type*	Loc**	Textu	re	Rema	arks
							<u> </u> !				
							<b>T</b> '				
	i l			-			1				
	1						1			İ	
	·						1				
	1 1		<u> </u>		+	<u> </u>	<b>├</b> ──┤			l	
			<u> </u>			<u> </u>	+				
			<u> </u>		$\vdash$	<u> </u>					
*Tvpe: (; = (	Concentration, D =	– Denle'	tion RM =	Reduc	ced Matr	iv MS =	Masked	Sand Grains	**1 oca	tion: PL = Pore Lin	ning M = Matrix
-	bil Indicators:	· Depice	.1011, 13191	Neuuu		X, IVIO -	Maarcu			lematic Hydric So	-
•	tisol (A1)			Sar	ndy Gleye	ed Matri	v (S4)			edox (A16) (LRR K	
	tic Epipedon (A2)		-		ndy Redo		x (04)			500X (A10) (LKK N 57) (LRR K, L)	<b>(, Ε, Ι(</b> )
	••• •••		-		-					at or Peat (S3) ( <b>LR</b>	DEKID)
	ck Histic (A3) Irogen Sulfide (A4	4 \	-		ipped Ma amy Mucł	. ,			•	e Masses (F12) ( <b>LK</b>	,
	atified Layers (A5)	,	_				. ,		-	ark Surface (TF12)	
	m Muck (A10)		-		amy Gley pleted Ma				r (explain in		)
	bleted Below Dark	Curfac	~ (^11)		dox Dark	. ,			(ехріант н	Temars	
	ck Dark Surface (A		= (A II) _		pleted Da		. ,				
			-				• •		,	rophytic vegetation	
	ndy Mucky Mineral m Mucky Peat or F		2) <u> </u>		dox Depr	65510115	(го)	hydrolo	ogy must b	present, unless problematic	disturbed or
	-		<i>)</i>				<del></del>			problematic	
	Layer (if observe ravel, ballast, fill	ia):						Hydric f	soil presen	nt?	
Depth (inche		ined				•			Jon prese.		
Remarks:						·					
			,				-	,			
-	pped as urban	land, a	and locate	ed bet	tween g	gravel re	oads.	Probe refusa	al within 2	2-4 inches due to	o gravel and
fill.											
HYDROLO											
-	drology Indicator										
Primary India	cators (minimum o	of one is	s required;	<u>check</u>	all that a	apply)		Sec		icators (minimum o	of two required)
X Surface	Water (A1)				Aquatic	Fauna (B	313)	_	Surface	Soil Cracks (B6)	
High Wa	ater Table (A2)				True Aq	uatic Plar	nts (B14)		X Drainage	e Patterns (B10)	
Saturatio	. ,				_Hydroge	n Sulfide	e Odor (C1	1) _	_ `	son Water Table (C	;2)
	larks (B1)					d Rhizosp	oheres on	Living Roots	_ `	Burrows (C8)	
	nt Deposits (B2)				(C3)			_		on Visible on Aerial	0,000
Drift Dep	oosits (B3)				Presenc	e of Red	luced Iron	(C4)		or Stressed Plants	(D1)
	at or Crust (B4)					iron Redu	uction in T	Filled Soils	_ '	phic Position (D2)	
	oosits (B5)				(C6)			_	FAC-Net	utral Test (D5)	
	on Visible on Aerial		, ,		Thin Mu	ick Surfac	ce (C7)				
	Vegetated Concav		ce (B8)		Gauge o	or Well Da	ata (D9)				
	tained Leaves (B9)	1			Other (E	xplain in	Remarks	;)			
Field Obser		Vaa	~	No		Depth (	(inchoo):	0.2	We	tland	
Surface wate Water table		Yes Yes	X	No No	X		(inches): (inches):	0-2		irology	
Saturation p	•	Yes	Х	No			(inches):	0	-	sent? Y	,
("	المعالية المتعالية المعالية ا					-					—

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

Remarks:

(includes capillary fringe)

Project/Site Lake Calumet CTA Red Line Extension	City/C	County:	Cook		Sampling Date:	8/19/2015
Applicant/Owner: CTA/MWRD		Stat	te: Illin	iois	Sampling Point:	19
Investigator(s): J Mengler, V Mosca			Section, Towns	ship, Range:	T37N R	14E S27
Landform (hillslope, terrace, etc.): dite	ch		Local relief (cor	ncave, convex	(, none):	ditch
Slope (%): Lat: 41.667289	)	Long:	-87.600	100	Datum:	
Soil Map Unit Name: urban land-orthents clayey comp	lex, nearly l			VI Classificatio	on:	none
Are climatic/hydrologic conditions of the site typical fo	r this time of	f the year	?Y (	lf no, explain i	in remarks)	
Are vegetation , soil Y , or hydrol	ogy	significar	ntly disturbed?	Y Are "per	mal circumstances"	
			problematic?	N present?		Y
SUMMARY OF FINDINGS				(If neede	ed, explain any ans	wers in remarks.)
Hydrophytic vegetation present? N					· ·	
Hydric soil present?		Is the	e sampled area	within a wet	land? N	
Wetland hydrology present? N			es, optional we			
Remarks: (Explain alternative procedures here or in a	separate re		<i>*</i> 1	-		
Relied primarily upon vegetation and landsca	pe positior	n due to	dry time of se	eason, and r	nostly urbanland	/fill for substrate.
VEGETATION Use scientific names of plan	ts.					
	Absolute	Domina	nt Indicator	Domina	nce Test Workshe	et
Tree Stratum (Plot size: 9 m )	% Cover	Species		Number of D	ominant Species tha	ł
1 Morus alba	40	Y	FAC		, FACW, or FAC:	3 (A)
2 Acer negundo	20	Y	FAC	Total Nun	nber of Dominant	
3				Species /	Across all Strata:	<u> </u>
4				Percent of De	ominant Species that	
5				are OBL,	, FACW, or FAC:	<u>50.00%</u> (A/B)
	60 =	= Total Co	ver	<u> </u>		
Sapling/Shrub stratum (Plot size: 4.6 m ) 1 Prunus serotina	15	V	FACU	Total % (	nce Index Worksho	eet
2	15	Y	FACU	OBL spe		1 = 0
3				FACW s		
4				FAC spe		
5				FACU sp		
	15 =	Total Co	ver	UPL spe		5 = 0
Herb stratum (Plot size: 1 m sq )	)			Column	totals 100 (A	) <u>330</u> (B)
1 Eupatorium rugosum	10	Y	FACU	Prevalen	nce Index = B/A =	3.30
2 Arctium minus	10	Y	FACU			
3 Geum laciniatum	5	Y	FACW		nytic Vegetation In	
4				· · ·	d test for hydrophy	•
5 6					iinance test is >50% alence index is ≤3.0	
6 7						
8					phological adaptation	
9					arate sheet)	
10					lematic hydrophytic	vegetation*
	25 =	Total Co	ver	(expl		
Woody vine stratum (Plot size: 1 m sq )				*Indicator	rs of hydric soil and wet	land hydrology must be
1				р	resent, unless disturbed	
2				-	rophytic	
	0 =	= Total Co	ver	-	etation ent? N	
Remarks: (Include photo numbers here or on a separa	ate sheet)			1		-

SOIL	
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Profile Des	cription: (Descr	ibe to th	ne depth need	led to doci	ument th	ne indica	tor or confirm t	the absence of	indicators.)
Depth	Matrix		F	Redox Feat	ures				
(Inches)	Color (moist)	%	Color (mois	t) %	Type*	Loc**	Texture	9	Remarks
*Type: C = 0	Concentration, D	= Deplet	tion, RM = Red	duced Matr	ix, MS =	Masked	Sand Grains.	**Location: P	L = Pore Lining, M = Matrix
Hydric So	il Indicators:						Indicators	for Problemati	c Hydric Soils:
Hist	tisol (A1)		5	Sandy Gley	ed Matrix	(S4)	Coast I	Prairie Redox (A	16) ( <b>LRR K, L, R</b> )
Hist	tic Epipedon (A2)	I		Sandy Redo	ox (S5)		Dark S	urface (S7) (LR	R K, L)
Blac	ck Histic (A3)			Stripped Ma	atrix (S6)		5 cm M	lucky Peat or Pe	eat (S3) (LRR K, L, R)
	Irogen Sulfide (A	4)		.oamy Muc	. ,		Iron-Ma	anganese Mass	es (F12) ( <b>LRR K, L, R</b> )
Stra	atified Layers (A5	)		.oamy Gley	ed Matri	x (F2)		hallow Dark Sur	
	n Muck (A10)	,		Depleted M		. ,		explain in rema	
	pleted Below Darl	k Surfac		Redox Dark	• •				- /
	ck Dark Surface (			Depleted Da		. ,			
	dy Mucky Minera			Redox Depi		• •			c vegetation and wetland ent, unless disturbed or
	n Mucky Peat or					( - )	nyarolog		ematic
	Layer (if observ		/					•	
	avel, ballast, fill	cu).					Hvdric so	oil present?	
Depth (inche		nined			-				
Remarks:					_				
		م امیدا							
fill.	pped as urban	land, a	and located I	between g	gravel r	bads.	Probe refusal	within 2-4 inc	hes due to gravel and
1111.									
HYDROLO	DGY								
-	drology Indicato								
Primary Indi	cators (minimum	of one is	s required; che	eck all that	apply)		<u>Seco</u>	ndary Indicators	(minimum of two required
Surface	Water (A1)		_	Aquatic	Fauna (B	13)		Surface Soil Cr	acks (B6)
High Wa	ter Table (A2)		_	True Aq	uatic Plar	nts (B14)		Drainage Patte	rns (B10)
Saturatio	on (A3)		_	Hydroge	en Sulfide	Odor (C1	1)	Dry-Season Wa	ater Table (C2)
Water M	larks (B1)			Oxidized	d Rhizosp	heres on	Living Roots	Crayfish Burrow	vs (C8)
Sedimer	nt Deposits (B2)		_	(C3)				Saturation Visit	ole on Aerial Imagery (C9)
Drift Dep	oosits (B3)			Presenc	e of Red	uced Iron	(C4)	Stunted or Stre	ssed Plants (D1)
Algal Ma	t or Crust (B4)			Recent	Iron Redu	ction in T	illed Soils	Geomorphic Po	osition (D2)
Iron Dep	osits (B5)		_	(C6)				FAC-Neutral Te	est (D5)
Inundatio	on Visible on Aeria	I Imager	y (B7)	Thin Mu	ick Surfac	ce (C7)		_	
Sparsely	Vegetated Conca	ve Surfa	ce (B8)	Gauge o	or Well Da	ata (D9)			
Water-S	tained Leaves (B9	)	-	Other (E	Explain in	Remarks	)		
Field Obser	vations:								
Surface wat	•	Yes	Nc		Depth (	,		Wetland	
Water table	•	Yes	No		Depth (	,		hydrolog	
Saturation p	pillary fringe)	Yes	No	<u> </u>	Depth (	inches).		present?	<u> </u>
	corded data (stre	am dauc	e monitorina	well aerial	nhotos	previous	inspections) if a	available <sup>.</sup>	
		3	, . ,	,	,,				
<u> </u>									
Remarks:									

No evidence of hydrology observed, Ground cover mostly dry undisturbed leaf litter.

Project/Site Lake Calumet CTA Red Line Extension	City/C	County:	Cook	i i i i i i i i i i i i i i i i i i i	Sampling Date:	8/19/2015
Applicant/Owner: CTA/MWRD		Sta	te: Illir	ois	Sampling Point:	20
Investigator(s): J Mengler, V Mosca			Section, Towns	ship, Range:	T37N F	R14E S27
Landform (hillslope, terrace, etc.): dite	ch		Local relief (co	ncave, conve	k, none):	ditch
Slope (%): Lat: 41.671562	2	Long:	-87.607	147	Datum:	
Soil Map Unit Name: urban land-orthents clayey comp				VI Classificatio	on:	none
Are climatic/hydrologic conditions of the site typical fo	r this time of	f the year	?Y (	If no, explain	in remarks)	
Are vegetation, soilY, or hydrol	ogy	significa	ntly disturbed?	Y Aro "por	mal circumstancos	
Are vegetation , soil , or hydrol				N present?		Ý
SUMMARY OF FINDINGS	··· <u> </u>	-		(If neede	ed, explain any ans	wers in remarks.)
Hydrophytic vegetation present? Y					· · · · ·	
Hydric soil present?		Is the	e sampled area	within a wet	land? Y	
Wetland hydrology present? Y			-		Wetland 15	
Remarks: (Explain alternative procedures here or in a	senarate re			-		
Relied primarily upon vegetation and landsca	pe positior	n due to	dry time of se	eason, and i	mostly urbanlan	d/fill for substrate.
VEGETATION Use scientific names of plan	ts.					
	Absolute	Domina	nt Indicator	Domina	nce Test Worksho	eet
Tree Stratum (Plot size: 9 m )	% Cover	Specie		Number of D	ominant Species that	at
1					, FACW, or FAC:	1 (A)
2				Total Nur	mber of Dominant	
3				Species	Across all Strata:	<u> </u>
4					ominant Species that	
5				are OBL	, FACW, or FAC:	(A/B)
Sapling/Shrub stratum (Plot size: 4.6 m	=	Total Co	over	Broyalo	nce Index Worksh	
	)				Cover of:	leet
2				OBL spe		1 = 0
3					pecies 100 x	
4				FAC spe	·	3 = 0
5				FACU s	pecies 0 x	4 = 0
	0 =	Total Co	over	UPL spe	ecies 0 x	5 = 0
Herb stratum (Plot size: 1 m sq	)			Column	`	A) <u>200</u> (B)
1 Phragmites australis	100	Y	FACW	Prevaler	nce Index = B/A =	2.00
2						
3					hytic Vegetation I	
4					id test for hydrophy hinance test is >50°	-
5 6					valence index is ≤3	
7						
8					phological adaptati porting data in Rem	
9					arate sheet)	
10				Prob	lematic hydrophyti	c vegetation*
	100 =	Total Co	over	(exp		-
Woody vine stratum (Plot size: 1 m sq	)			*Indicato	ors of hydric soil and we	etland hydrology must be
1					present, unless disturbe	ed or problematic
2		Table		-	rophytic etation	
	0 =	Total Co	over	-	sent? Y	
Remarks: (Include photo numbers here or on a separ	ate sheet)			1		

SOIL	
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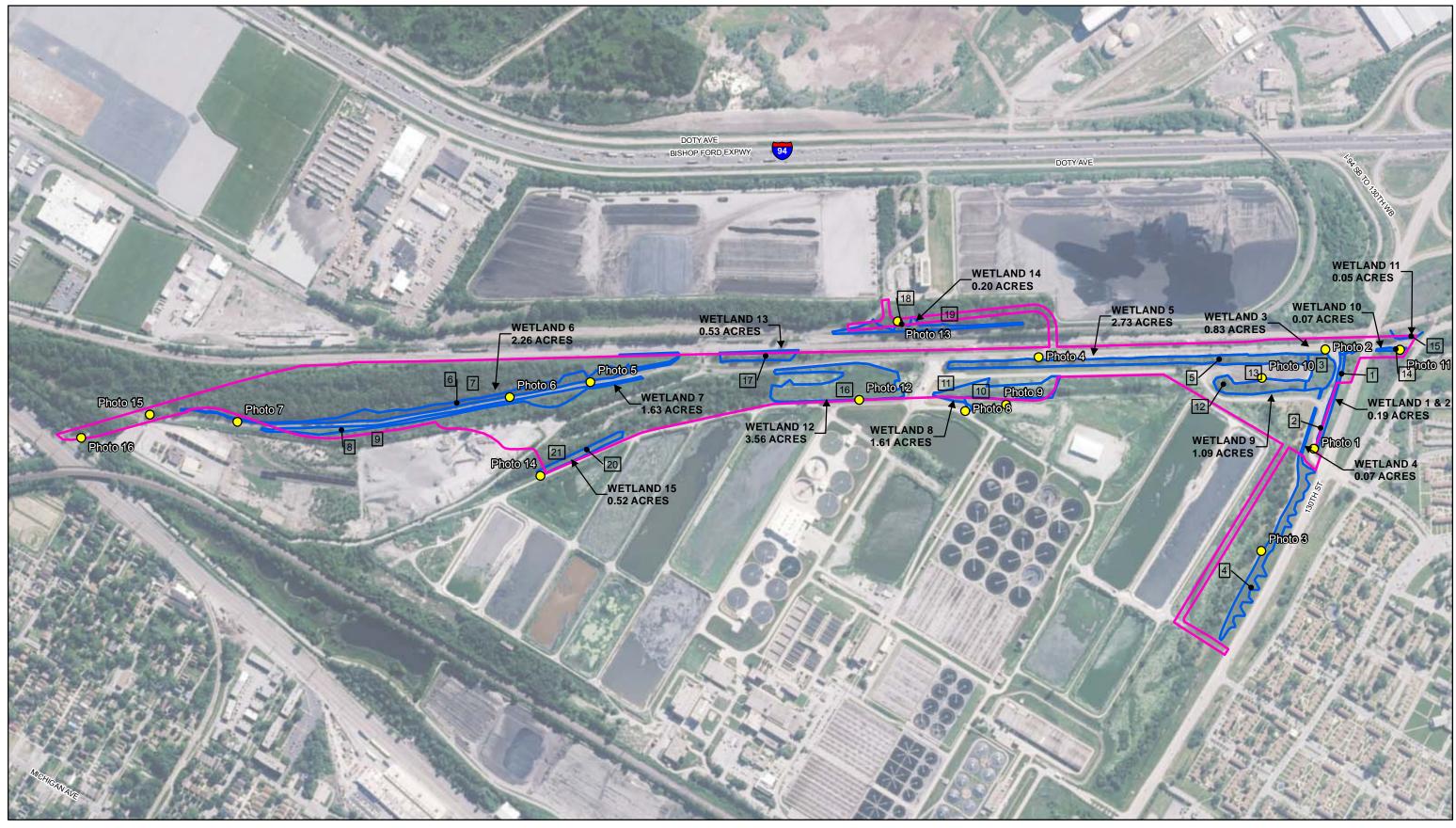
Profile Des	cription: (Descr	ibe to th	ne depth needed	to docu	ument th	e indica	tor or confirm th	he abser	nce of indicators.)
Depth	Matrix		Rec	lox Feat	ures				
(Inches)	Color (moist)	%	Color (moist)	%	Type*	Loc**	Texture		Remarks
*Type: C = (	Concentration D	= Denlei	tion, RM = Reduc	ed Matri	iv MS =	Masked	Sand Grains	**Locat	ion: PL = Pore Lining, M = Matrix
	il Indicators:	- Depiei			ix, ivio –	Maskeu			ematic Hydric Soils:
-			Sor		od Motrix	(64)			•
	isol (A1)				ed Matrix	(34)			dox (A16) ( <b>LRR K, L, R</b> )
	ic Epipedon (A2)			idy Redo					7) ( <b>LRR K, L)</b>
	ck Histic (A3)			•••	atrix (S6)			•	t or Peat (S3) (LRR K, L, R)
	rogen Sulfide (A			-	ky Minera	• •		0	Masses (F12) (LRR K, L, R)
	atified Layers (A5	)			ed Matriz	• •			rk Surface (TF12)
2 cr	n Muck (A10)		Dep	pleted Ma	atrix (F3)		Other (e	explain in	remarks)
Dep	leted Below Dark	k Surfac	e (A11) Red	lox Dark	Surface	(F6)			
Thio	ck Dark Surface (	A12)	Dep	pleted Da	ark Surfa	ce (F7)	*Indicator	s of hvdr	ophytic vegetation and wetland
San	dy Mucky Minera	al (S1)	Rec	lox Depr	ressions	(F8)			e present, unless disturbed or
5 cr	n Mucky Peat or	Peat (S3	3)					-	problematic
Restrictive	Layer (if observ	ed):							
	avel, ballast, fill						Hydric soi	il presen	it?
Depth (inche	es): not determ	nined							
Remarks: Area ma and fill.	pped as urban	land, a	and along stee	o road e	embank	ment.	Probe refusal	within 2	2-4 inches due to gravel
HYDROLO									
-	drology Indicato								
Primary Indi	cators (minimum	of one is	s required; check	all that a	<u>apply)</u>		<u>Secon</u>	dary Indi	cators (minimum of two required
X Surface	Water (A1)			Aquatic	Fauna (B	13)		Surface	Soil Cracks (B6)
High Wa	iter Table (A2)			True Aq	uatic Plar	nts (B14)	X	Drainage	e Patterns (B10)
Saturatio	on (A3)			Hydroge	n Sulfide	Odor (C1	)	Dry-Seas	son Water Table (C2)
Water M	arks (B1)			Oxidized	Rhizosn	heres on	Living Roots		Burrows (C8)
Sedimer	t Deposits (B2)			(C3)				Saturatio	on Visible on Aerial Imagery (C9)
Drift Dep	oosits (B3)			Presenc	e of Redu	uced Iron	(C4)	Stunted	or Stressed Plants (D1)
	t or Crust (B4)			Pocont I	ron Pedu	etion in T	illed Soils	Geomor	phic Position (D2)
- Č	osits (B5)			(C6)	IOII Reuu				utral Test (D5)
· ·	on Visible on Aeria	l Imager	v (B7)	•	ck Surfac	e (C7)		•	
	Vegetated Conca	• •		•	or Well Da	. ,			
· ·	tained Leaves (B9				Explain in	. ,	)		
Field Obser	<b>`</b>	)				I CEITIAI KS	)	1	
Surface wat		Yes	No	Х	Depth (i	nches):		Wet	tland
Water table	•	Yes	No	X	Depth (i			hyd	rology
Saturation p	resent?	Yes	X No		Depth (i	nches):	0	pre	sent? Y
	pillary fringe)		_						
Describe red	corded data (strea	am gaug	ge, monitoring we	ll, aerial	photos,	previous	inspections), if a	vailable:	
Remarks:									
. tomanto.									

Project/Site Lake Calumet CTA Red Line Extension	City/	County:	Cool	ĸ	Sampling Date:	8/19/2015
Applicant/Owner: CTA/MWRD		Sta	te: Illir	nois	Sampling Point:	21
Investigator(s): J Mengler, V Mosca			Section, Town	ship, Range:	T37N I	R14E S27
Landform (hillslope, terrace, etc.): di	tch		Local relief (co	ncave, convex	(, none):	ditch
Slope (%): Lat: 41.67156	2	Long:	-87.607	147	Datum:	
Soil Map Unit Name: urban land-orthents clayey com	plex, nearly			VI Classificatio	on:	none
Are climatic/hydrologic conditions of the site typical f	or this time of	of the year	? Y	(If no, explain i	in remarks)	
Are vegetation , soil Y , or hydro	ology	significa	ntly disturbed?	Y Are "per	mal circumstances	. 11
	ology		problematic?	N present?		γ Y
SUMMARY OF FINDINGS				(If neede	ed, explain any ans	swers in remarks.)
Hydrophytic vegetation present? N						
Hydric soil present?		Is the	e sampled area	a within a wet	land? N	
Wetland hydrology present? N			, ves, optional we			
Remarks: (Explain alternative procedures here or in	a conarato r		,,			
Remarks. (Explain alternative procedures here of in	a separate i	eport.)				
Relied primarily upon vegetation and landsc	ape positio	n due to	dry time of se	eason, and r	mostly urbanlan	d/fill for substrate.
VEGETATION Use scientific names of pla	nts					
		Domino	at Indiantar	Domina	nce Test Worksh	eet
<u>Tree Stratum</u> (Plot size: 9 m )	Absolute % Cover	Domina Specie			ominant Species th	
1		·			, FACW, or FAC:	2 (A)
2	·			Total Nur	mber of Dominant	
3					Across all Strata:	4 (B)
4				Percent of D	ominant Species that	at
5				are OBL,	, FACW, or FAC:	50.00% (A/B)
	0	= Total Co	over			
Sapling/Shrub stratum (Plot size: 4.6 m	)				nce Index Worksh	neet
1 Rhamnus cathartica	80	Y	FAC		Cover of:	4
2 Morus alba 3	20	Y	FAC	OBL spe		
3				FACW s FAC spe	·	2 = 0 3 = 300
	·			FACU spe		4 = 120
·	100	= Total Co	over	UPL spe		5 = 0
Herb stratum (Plot size: 1 m sq	)			Column		A) 420 (B)
1 Glechoma hederacea	15	Y	FACU	Prevaler	nce Index = B/A =	3.23
2 Arctium minus	15	Y	FACU			
3				Hydroph	nytic Vegetation I	ndicators:
4				Rapi	id test for hydroph	ytic vegetation
5					inance test is >50	
6				Prev	alence index is ≤3	.0*
7					phological adaptat	
8	·				porting data in Ren	narks or on a
9 10					arate sheet)	
	30	= Total Co		Prob (exp	elematic hydrophyt Iain)	ic vegetation*
Woody vine stratum (Plot size: 1 m sq	)			<u> </u>	,	attained based of the state
1	, ,				rs of hydric soil and wo present, unless disturbe	etland hydrology must be ed or problematic
2					rophytic	
	0	= Total Co	over	-	etation	
				pres	sent? N	_
Remarks: (Include photo numbers here or on a sepa	rate sheet)					

SOIL	
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Depth (Inches)	Matrix		R	edox Fea	tures				
,	Color (moist)	%	Color (moist)	%	Type*	Loc**	Textu	ıre	Remarks
			,						
*Type: C = C	Concentration, D	= Deplet	ion, RM = Redı	iced Mati	rix, MS =	Masked S			on: PL = Pore Lining, M = Mati
Hydric So	il Indicators:						Indicator	s for Proble	ematic Hydric Soils:
Hist	tisol (A1)		Sa	andy Gley	ed Matriz	x (S4)	Coas	t Prairie Re	dox (A16) ( <b>LRR K, L, R</b> )
Hist	tic Epipedon (A2)	1	Sa	andy Red	ox (S5)		Dark	Surface (S7	') ( <b>LRR K, L)</b>
Blac	ck Histic (A3)		St	ripped Ma	atrix (S6)	)	5 cm	Mucky Pear	t or Peat (S3) ( <b>LRR K, L, R</b> )
Hyd	Irogen Sulfide (A	4)	Lc	amy Muc	ky Miner	al (F1)	Iron-I	Manganese	Masses (F12) (LRR K, L, R)
Stra	atified Layers (A5	)	Lc	amy Gle	yed Matri	x (F2)	Very	Shallow Da	rk Surface (TF12)
2 cr	m Muck (A10)		De	epleted M	latrix (F3	)	Othe	r (explain in	remarks)
	leted Below Darl	k Surface		edox Darl				· ·	,
	ck Dark Surface (		· · ·	epleted D		. ,			
	dy Mucky Minera			edox Dep		• •			ophytic vegetation and wetland e present, unless disturbed or
	n Mucky Peat or	. ,				()	Tiyuru	•••	problematic
		•				1			
	Layer (if observer avel, ballast, fill	ea):					Hydric	soil presen	12
Depth (inche		nined			-		Hyunc	son presen	
Remarks:					-				
Area ma and fill.	pped as urban	land, a	ind along stee	ep road	embanl	kment.	Probe refus	al within 2	2-4 inches due to gravel
and fill.		land, a	along stee	ep road	embanl	kment.	Probe refus	al within 2	2-4 inches due to gravel
and fill.			nd along stee	ep road	embanl	kment.	Probe refus	sal within 2	2-4 inches due to gravel
and fill. HYDROLO Wetland Hy	DGY	ors:				kment.			2-4 inches due to gravel
and fill. HYDROLO Wetland Hy Primary India	DGY drology Indicato cators (minimum	ors:		k all that				condary Indi	
and fill. HYDROLC Wetland Hy Primary India Surface	DGY drology Indicato cators (minimum Water (A1)	ors:		<u>k all that</u>	apply) Fauna (E	313)		condary India	cators (minimum of two require Soil Cracks (B6)
and fill. HYDROLO Wetland Hy Primary India Surface	DGY drology Indicato cators (minimum Water (A1) tter Table (A2)	ors:		<u>k all that</u> Aquatic True Ac	<u>apply)</u> Fauna (E quatic Pla	313) nts (B14)	<u>Sec</u>	condary India	cators (minimum of two require Soil Cracks (B6) Patterns (B10)
and fill. HYDROLO Wetland Hy Primary India Surface High Wa Saturatio	DGY drology Indicato cators (minimum Water (A1) ater Table (A2) on (A3)	ors:		k all that Aquatic True Ac Hydroge	<u>apply)</u> Fauna (E quatic Pla en Sulfide	313) nts (B14) ≎ Odor (C1	<u>Sec</u> - - ) _	condary India Surface S Drainage Dry-Seas	cators (minimum of two require Soil Cracks (B6) Patterns (B10) son Water Table (C2)
and fill. HYDROLO Wetland Hy Primary India Surface High Wa Saturatio Water M	DGY drology Indicato cators (minimum Water (A1) tter Table (A2) on (A3) larks (B1)	ors:		k all that Aquatic True Ac Hydroge Oxidize	<u>apply)</u> Fauna (E quatic Pla en Sulfide	313) nts (B14) ≎ Odor (C1	<u>Sec</u>	condary India Surface S Drainage Dry-Seas Crayfish	cators (minimum of two require Soil Cracks (B6) Patterns (B10) son Water Table (C2) Burrows (C8)
and fill. HYDROLO Wetland Hy Primary India Surface High Wa Saturatic Water M Sedimen	DGY drology Indicato cators (minimum Water (A1) tter Table (A2) on (A3) larks (B1) nt Deposits (B2)	ors:		k all that Aquatic True Ac Hydroge Oxidize (C3)	<u>apply)</u> Fauna (E quatic Plai en Sulfide d Rhizosp	313) nts (B14) 9 Odor (C1 9 bheres on	Sec 	ondary India Surface S Drainage Dry-Seas Crayfish Saturatio	cators (minimum of two require Soil Cracks (B6) Patterns (B10) son Water Table (C2) Burrows (C8) n Visible on Aerial Imagery (C9)
and fill. HYDROLO Wetland Hy Primary India Surface V High Wa Saturatio Water M Sedimen Drift Dep	DGY drology Indicato cators (minimum Water (A1) ater Table (A2) on (A3) larks (B1) at Deposits (B2) posits (B3)	ors:		k all that Aquatic True Ac Hydrogu Oxidize (C3) Presend	<u>apply)</u> Fauna (E quatic Pla en Sulfide d Rhizosp ce of Red	313) nts (B14) 9 Odor (C1 9heres on uced Iron	Sec 	ondary India Surface S Drainage Dry-Seas Crayfish Saturatio Stunted c	cators (minimum of two require Soil Cracks (B6) Patterns (B10) ton Water Table (C2) Burrows (C8) n Visible on Aerial Imagery (C9) or Stressed Plants (D1)
and fill. HYDROLO Wetland Hy Primary India Surface T High Wa Saturatio Water M Sedimen Drift Dep Algal Ma	DGY drology Indicato cators (minimum Water (A1) ater Table (A2) on (A3) larks (B1) at Deposits (B2) posits (B3) at or Crust (B4)	ors:		k all that Aquatic True Ac Hydrogu Oxidize (C3) Presend Recent	<u>apply)</u> Fauna (E quatic Pla en Sulfide d Rhizosp ce of Red	313) nts (B14) 9 Odor (C1 9 bheres on	Sec 	Condary India Surface S Drainage Dry-Seas Crayfish Saturatio Stunted c Geomorp	Cators (minimum of two require Soil Cracks (B6) Patterns (B10) son Water Table (C2) Burrows (C8) n Visible on Aerial Imagery (C9) or Stressed Plants (D1) whic Position (D2)
and fill. HYDROLO Wetland Hy Primary India Surface ' High Wa Saturatio Water M Sedimen Drift Dep Algal Ma Iron Dep	DGY drology Indicato cators (minimum Water (A1) tter Table (A2) on (A3) larks (B1) at Deposits (B2) posits (B3) tt or Crust (B4) posits (B5)	ors: of one is	s required; chec	k all that Aquatic True Ac Hydrogu Oxidize (C3) Presend Recent (C6)	apply) Fauna (E quatic Plai en Sulfide d Rhizosp ce of Red Iron Redu	313) nts (B14) Odor (C1 oheres on uced Iron uction in T	Sec 	Condary India Surface S Drainage Dry-Seas Crayfish Saturatio Stunted c Geomorp	cators (minimum of two require Soil Cracks (B6) Patterns (B10) ton Water Table (C2) Burrows (C8) n Visible on Aerial Imagery (C9) or Stressed Plants (D1)
and fill. HYDROLO Wetland Hy Primary India Surface ' High Wa Saturatic Water M Sedimen Drift Dep Algal Ma Iron Dep Inundatio	DGY drology Indicato cators (minimum Water (A1) tter Table (A2) on (A3) larks (B1) at Deposits (B2) posits (B3) at or Crust (B4) posits (B5) on Visible on Aeria	ors: of one is	s required; chec	k all that Aquatic True Ac Hydrogu Oxidize (C3) Presend Recent (C6) Thin Mu	apply) Fauna (E quatic Plaı en Sulfide d Rhizosp ce of Red Iron Redu uck Surfac	313) nts (B14) c Odor (C1 oheres on uced Iron uction in T ce (C7)	Sec 	Condary India Surface S Drainage Dry-Seas Crayfish Saturatio Stunted c Geomorp	Cators (minimum of two require Soil Cracks (B6) Patterns (B10) son Water Table (C2) Burrows (C8) n Visible on Aerial Imagery (C9) or Stressed Plants (D1) whic Position (D2)
and fill. HYDROLO Wetland Hy Primary India Surface ' High Wa Saturatic Water M Sedimen Drift Dep Algal Ma Iron Dep Inundatio	DGY drology Indicato cators (minimum Water (A1) tter Table (A2) on (A3) larks (B1) at Deposits (B2) posits (B3) tt or Crust (B4) posits (B5)	ors: of one is	s required; chec	k all that Aquatic True Ac Hydrogu Oxidize (C3) Presend Recent (C6) Thin Mu Gauge	apply) Fauna (E quatic Plau en Sulfide d Rhizosp ce of Red Iron Redu uck Surfac or Well D	313) nts (B14) e Odor (C1 oheres on uced Iron uction in T ce (C7) ata (D9)	Sec - - - - - - - - - - - - -	Condary India Surface S Drainage Dry-Seas Crayfish Saturatio Stunted c Geomorp	Cators (minimum of two require Soil Cracks (B6) Patterns (B10) son Water Table (C2) Burrows (C8) n Visible on Aerial Imagery (C9) or Stressed Plants (D1) whic Position (D2)
and fill. HYDROLO Wetland Hy Primary India Surface T High Wa Saturatio Water M Sedimen Drift Dep Algal Ma Iron Dep Inundatio Sparsely Water-S	DGY drology Indicato cators (minimum Water (A1) ther Table (A2) on (A3) larks (B1) ht Deposits (B2) oposits (B3) th or Crust (B4) posits (B5) on Visible on Aeria v Vegetated Conca tained Leaves (B9	ors: of one is I Imagery ve Surfac	s required; chec	k all that Aquatic True Ac Hydrogu Oxidize (C3) Presend Recent (C6) Thin Mu Gauge	apply) Fauna (E quatic Plau en Sulfide d Rhizosp ce of Red Iron Redu uck Surfac or Well D	313) nts (B14) c Odor (C1 oheres on uced Iron uction in T ce (C7)	Sec - - - - - - - - - - - - -	Condary India Surface S Drainage Dry-Seas Crayfish Saturatio Stunted c Geomorp	Cators (minimum of two require Soil Cracks (B6) Patterns (B10) son Water Table (C2) Burrows (C8) n Visible on Aerial Imagery (C9) or Stressed Plants (D1) whic Position (D2)
and fill. HYDROLO Wetland Hy Primary India Surface V High Wa Saturatio Water M Sedimen Drift Dep Algal Ma Iron Dep Inundatio Sparsely Water-S Field Obser	DGY drology Indicato cators (minimum Water (A1) ther Table (A2) on (A3) larks (B1) th Deposits (B2) oposits (B3) th or Crust (B4) posits (B5) on Visible on Aeria v Vegetated Conca tained Leaves (B9 vations:	ors: of one is il Imagery ve Surfac )	s required; chec 	k all that Aquatic True Ac Hydrogu Oxidize (C3) Presend Recent (C6) Thin Mu Gauge Other (F	apply) Fauna (E quatic Plar en Sulfide d Rhizosp ce of Red Iron Redu Jron Redu Jron Redu Jron Well D Explain in	B13) Ints (B14) Odor (C1 oheres on uced Iron uction in T ce (C7) ata (D9) Remarks	Sec - - - - - - - - - - - - -	Crayfish Saturatio Crayfish Saturatio Stunted o Geomorp FAC-Neu	Cators (minimum of two required Soil Cracks (B6) Patterns (B10) ton Water Table (C2) Burrows (C8) In Visible on Aerial Imagery (C9) or Stressed Plants (D1) whic Position (D2) ttral Test (D5)
and fill.  HYDROLO Wetland Hy Primary India Surface High Wa Saturatic Water M Sedimen Drift Dep Algal Ma Iron Dep Inundatic Sparsely Water-S Field Obser Surface wate	DGY drology Indicato <u>cators (minimum</u> Water (A1) tter Table (A2) on (A3) larks (B1) tt Deposits (B2) oosits (B3) tt or Crust (B4) iosits (B5) on Visible on Aeria v Vegetated Conca tained Leaves (B9 vations: er present?	Il Imagery ve Surfac ) Yes	s required; chec (B7) (B7) (B7) (Ce (B8) (Data (B7) (Ce (B8))	k all that Aquatic True Ac Hydrogu Oxidize (C3) Presend Recent (C6) Thin Mu Gauge Other (I	apply) Fauna (E quatic Plar en Sulfide d Rhizosp ce of Red Iron Redu uck Surfac or Well D Explain in	313) nts (B14) e Odor (C1 oheres on uced Iron uction in T ce (C7) ata (D9) Remarks) inches):	Sec - - - - - - - - - - - - -	Crayfish Saturatio Stunted c Geomorp FAC-Neu	cators (minimum of two require Soil Cracks (B6) Patterns (B10) ton Water Table (C2) Burrows (C8) In Visible on Aerial Imagery (C9) or Stressed Plants (D1) whic Position (D2) ttral Test (D5)
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#### Photograph Locations

Exhibit: 10

Exhibit Title:





#### Photograph 1:

Wetland 1 looking east from west end.



#### Photograph 2:

Existing fly dumping piles along Cottage Grove Road and edge of Wetland 3.

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#### 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.

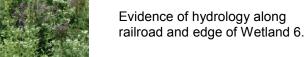
Project Number: 15-0218

Hey and Associates, Inc. Engineering, Ecology and Landscape Architecture Project Name: CTA Red Line Extension



#### Photograph 5:

Wetland 6 along railroad looking south.



Photograph 6:



Project Number: 15-0218

Hey and Associates, Inc. Engineering, Ecology and Landscape Architecture Project Name: CTA Red Line Extension



#### Photograph 7:

Remnant prairie plants in Wetland 7 along railroad.

Photograph 8:

Mowed edge of Wetland 8.

Project Number: 15-0218

Hey and Associates, Inc. Engineering, Ecology and Landscape Architecture Project Name: CTA Red Line Extension





#### Photograph 9:

Existing upland gravel area next to Wetland 8.

Photograph 10:

Wetland 9.

Project Number: 15-0218

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Exhibit Title:Exhibit:Representative Photographs#10



# Existing trash piles in Wetland 10.

Photograph 11:



Photograph 12:

Wetland 12.

Project Number: 15-0218

Hey and Associates, Inc. Engineering, Ecology and Landscape Architecture Project Name: CTA Red Line Extension

Exhibit Title:Exhibit:Representative Photographs#10



Photograph 13:

Wetland 14.



Photograph 14:

Wetland 15.

Project Number: 15-0218



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#### Photograph 15:

Upland in northwest finger of project area looking north.

Photograph 16:

Northwest extent of project area.

Project Number: 15-0218

Hey and Associates, Inc.

Engineering, Ecology and Landscape Architecture

Project Name: **CTA Red Line Extension**