### LAKE COUNTY FOREST PRESERVES www.LCFPD.org



Preservation, Restoration, Education and Recreation

**DATE:** April 3, 2017

**MEMO TO:** Carol Calabresa, Chair

Planning Committee

FROM: Randall L. Seebach

Director of Planning and Preservation

**RECOMMENDATION:** Recommend approval of a Resolution approving an Intergovernmental Agreement between the Lake County Forest Preserve District (District) and the Metropolitan Water Reclamation District of Greater Chicago (MWRD) regarding Offsite Mitigation at Captain Daniel Wright Woods Forest Preserve.

#### **STRATEGIC DIRECTION SUPPORTED:** Conservation

**FINANCIAL DATA:** As specified in the attached agreement, MWRD will provide \$400,000.00 to the District which will be used to complete a mitigation project at Captain Daniel Wright Woods Forest Preserve (CDWW). The District will provide staff labor to perform the native seeding and manage the mitigation project.

**BACKGROUND:** In June 2016, the District Board approved an intergovernmental agreement with MWRD that will allow for the expansion of the existing flood control reservoir at Buffalo Creek Forest Preserve by 184 acre-feet and the construction of additional public access improvements at Buffalo Creek Forest Preserve (including 1.2 miles of new crushed stone trails, 0.5 miles of relocated trails, seven new boardwalks, two scenic overlooks and a 30-car expansion of the existing parking lot), tree planting and restoration of all disturbed areas. As part of their permit review of the proposed reservoir expansion, the United States Army Corps of Engineers (USACE) is requiring MWRD to perform offsite mitigation for unavoidable impacts to certain existing low quality wetlands.

District staff has been in negotiations with MWRD regarding mitigation of those reservoir expansion impacts at CDWW. District staff has prepared a mitigation plan for a portion of CDWW that includes the restoration/reestablishment of 24 acres of former wetlands and the enhancement of 65 acres of existing degraded wetlands. The overall goal of this mitigation/restoration project is to increase the sunlight levels at the ground level in order to improve the health of the herbaceous ground layer and allow for oak/hickory regeneration. Under the attached agreement, MWRD will pay \$400,000.00 to the District, and the District will cause the mitigation work and the necessary follow up maintenance and monitoring to be performed within the 89-acre parcel to achieve compliance with the USACE permit. Any funds left over after achieving compliance will be used for long-term maintenance of the restored area.

In addition, as a condition of the off-site mitigation, the USACE permit will require that the District record a conservation easement, deed restriction, or similar document limiting use of the restored portion of Captain Daniel Wright Woods in a manner consistent with the permit and mitigation work. If this agreement is approved, the first phase of the mitigation work (initial removal of invasive woody plants) will begin in the winter 2017/18.

**REVIEW BY OTHERS:** Executive Director, Chief Operations Officer, Director of Finance, Corporate Counsel

STATE OF ILLINOIS)	
)	SS
COUNTY OF LAKE )	

## BOARD OF COMMISSIONERS LAKE COUNTY FOREST PRESERVE DISTRICT REGULAR APRIL MEETING APRIL 11, 2017

#### MADAM PRESIDENT AND MEMBERS OF THE BOARD OF COMMISSIONERS:

Your **PLANNING COMMITTEE** presents herewith "a Resolution approving an Intergovernmental Agreement with the Metropolitan Water Reclamation District regarding Offsite Mitigation at Captain Daniel Wright Woods Forest Preserve," and requests its adoption.

PLANNING COMMITT	EE:	
Date:	Roll Call Vote: Ayes:	Nays:
	Voice Vote Majority Ayes;	Nays

### LAKE COUNTY FOREST PRESERVE DISTRICT LAKE COUNTY, ILLINOIS

## A RESOLUTION APPROVING AN INTERGOVERNMENTAL AGREEMENT WITH THE METROPOLITAN WATER RECLAMATION DISTRICT REGARDING OFFSITE MITIGATION AT CAPTAIN DANIEL WRIGHT WOODS FOREST PRESERVE

WHEREAS, on June 14, 2016, the Lake County Forest Preserve District (the "District") approved an intergovernmental agreement with the Metropolitan Water Reclamation District of Greater Chicago (the "MWRD") and the Village of Buffalo Grove pursuant to which the MWRD would (i) expand the capacity of a stormwater reservoir within a portion of certain property owned by the District and commonly known as Buffalo Creek Forest Preserve ("Buffalo Creek") and (ii) construct certain improvements within Buffalo Creek to enhance the public use of, and restore and preserve the natural features of, Buffalo Creek, including trails, bridges, boardwalks, overlooks, parking areas, grading, landscaping and restored areas; and

**WHEREAS,** MWRD's expansion of the stormwater reservoir will cause impacts to certain existing low quality wetlands located at Buffalo Creek and, as part of the permitting process for construction of the expanded reservoir, the U.S. Army Corps of Engineers (the "USACE") requires MWRD to accomplish offsite wetland mitigation for such impacts; and

**WHEREAS**, the District and MWRD have negotiated an intergovernmental agreement in the form attached hereto (the "Mitigation Agreement") pursuant to which:

- (i) MWRD would apply for the required Section 404 Permit under the United States Clean Water Act (the "Section 404 Permit") and the District would execute the Section 404 Permit, as the off-site mitigation sponsor,
- (ii) MWRD would mitigate impacts to wetlands at Buffalo Creek, and thereby comply with the Section 404 Permit, by paying the District to complete a restoration project (the "Restoration Project") at Captain Daniel Wright Woods Forest Preserve ("Wright Woods"),
- (iii) the Restoration Project would be completed pursuant to a mitigation plan approved by USACE and would include the restoration/reestablishment of 24 acres of former wetlands and the enhancement of 65 acres of existing degraded wetlands and the necessary maintenance and monitoring to satisfy the Section 404 Permit,
- (iv) MWRD will pay \$400,000.00 to the District, and the District will use such payment to cause the Restoration Project and the necessary follow up maintenance and monitoring to be performed within Wright Woods to achieve compliance with the Section 404 Permit, and
- (v) to the extent required by the Section 404 Permit, the District will record a restrictive covenant, conservation easement, deed restriction, or similar restriction

limiting use of the restored portion of Wright Woods in a manner consistent with the Section 404 Permit and Restoration Project (a "Restrictive Covenant"); and

**WHEREAS**, pursuant to Section 10 of Article VII of the Illinois Constitution of 1970, units of local government, such as the District and MWRD may contract or otherwise associate among themselves in any manner not prohibited by law or ordinance; and

**WHEREAS,** pursuant to the Intergovernmental Cooperation Act, 5 ILCS 220/1 et seq., any power, privilege, function, or authority exercised by a public agency, including the District and MWRD, may be exercised, combined, transferred, and enjoyed jointly with any other public agency to the extent not prohibited by law;

**NOW, THEREFORE, BE IT RESOLVED** by the Board of Commissioners of the Lake County Forest Preserve District, Lake County, Illinois THAT:

<u>Section 1</u>. <u>Recitals</u>. The recitals set forth above are incorporated as a part of this Resolution by this reference.

Section 2. Approval of the Mitigation Agreement. The Mitigation Agreement is hereby approved in substantially the form attached hereto. The President and Secretary of the District are authorized to execute and attest to the Agreement in substantially the form attached hereto . The District President and the District Secretary are hereby authorized and directed to execute and attest to the Restrictive Covenant, on behalf of the District, in a form approved by the District's Corporate Counsel. At such time that MWRD delivers a Section 404 Permit to the District that complies with the Mitigation Agreement, the District President (or her designee) is hereby authorized and directed to execute the Section 404 Permit on behalf of the District as an off-site mitigation sponsor.

<u>Section 3</u>. <u>Effective Date</u>. This Resolution shall be in full force and effect from and after its passage and approval in the manner provided by law.

. 2017

day of

	<del></del>
AYES:	
NAYS:	
APPROVED this day of	, 2017
ATTEST:	Ann B. Maine, President Lake County Forest Preserve District
Julie A. Gragnani, Secretary  Lake County Forest Preserve District	
Exhibit	

PASSED this

# INTERGOVERNMENTAL AGREEMENT BY AND BETWEEN THE METROPOLITAN WATER RECLAMATION DISTRICT OF GREATER CHICAGO AND LAKE COUNTY FOREST PRESERVE DISTRICT FOR CONSTRUCTION OF OFF-SITE WETLAND MITIGATION AT CAPTAIN DANIEL WRIGHT WOODS FOREST PRESERVE

**THIS INTERGOVERNMENTAL AGREEMENT** (hereinafter the "Agreement"), entered into by and between the Metropolitan Water Reclamation District of Greater Chicago, a unit of local government and body corporate and politic existing under the laws of the State of Illinois (hereinafter "MWRD") and Lake County Forest Preserve District, a body politic and corporate (hereinafter "LCFPD"), (hereinafter collectively known as the "Parties"),

#### WITNESSETH:

**WHEREAS,** the MWRD is a body corporate and politic organized and existing under the laws of the State of Illinois, 70 ILCS 2605/1 et seq.; and

**WHEREAS,** the LCFPD is a body politic and corporate, organized under the Downstate Forest Preserve District Act, 70 ILCS 805/0.001 et seq.; and

WHEREAS, MWRD, LCFPD, and the Village of Buffalo Grove, Illinois (the "Village") have approved (i) on December 20, 1973, an Intergovernmental Agreement for the acquisition of property and the construction, operation and maintenance of a flood retention reservoir known as the Buffalo Creek Reservoir, within LCFPD's property owned by LCFPD and commonly known as Buffalo Creek Forest Preserve (the "1973 Intergovernmental Agreement"); (ii) on December 17, 1984, an amendment to the Original Intergovernmental Agreement dated December 17, 1984 (the "1984 Amendment to Intergovernmental Agreement"; the 1973 Intergovernmental Agreement, as amended by the 1984 Amendment to Intergovernmental Agreement is the "Original Intergovernmental Agreement"); and (iii) on \_\_\_\_\_\_\_\_, 2017, an "Intergovernmental Agreement for Design, Construction, Use, Operation, and Maintenance of Stormwater and Recreational Improvements at the Buffalo Creek Forest Preserve (the "Construction Intergovernmental Agreement"); and

WHEREAS, pursuant to the Construction Intergovernmental Agreement, MWRD intends to expand the Buffalo Creek Reservoir (the "Expansion Project") and the Expansion Project will fill, discharge into, or cause certain other impacts to wetlands within Buffalo Creek Forest Preserve (the "Wetland Impacts"); and

**WHEREAS,** pursuant to the United States Clean Water Act, it is unlawful to fill, discharge into, or cause certain other impacts to wetlands, unless such impacts are authorized by a permit issued by the United States Army Corps of Engineers (the "USACE"), pursuant to Section 404 of the Clean Water Act (a "Section 404 Permit"), and the USACE may issue a Section 404 Permit if it determines that the applicant for the permit will adequately mitigate the impacts that will be caused to wetlands; and

WHEREAS, the MWRD and the LCFPD desire to enter into this agreement pursuant to which MWRD would pay \$400,000.00 (the "Wetland Mitigation Funds") to LCFPD that LCFPD would use for a wetland enhancement and restoration project (the "Mitigation Project") on a portion of certain property owned by LCFPD and commonly known as "Captain Daniel Wright Woods Forest Preserve," which portion is generally depicted on Exhibit A as the "Mitigation Site"; and

**WHEREAS,** the MWRD has filed an application to the USACE for a Section 404 Permit to allow the Wetland Impacts at the Buffalo Creek Forest Preserve (the "*Application*") so that it may proceed with the Expansion Project for the Buffalo Creek Reservoir; and

WHEREAS, in support of the Application, MWRD has proposed to mitigate the Wetland Impacts at the Buffalo Creek Forest Preserve, in whole, by causing to be performed all work (the "Mitigation Work") necessary to restore and enhance the Mitigation Site in accordance with Section VI of the "Project Mitigation Document" attached hereto and incorporated herein as Exhibit B (the "Mitigation Plan") and the maintenance, monitoring, and management work described in Section VII of the Mitigation Plan (the "Maintenance Work"); and

WHEREAS, MWRD represents that wetland bank mitigation is not currently available in the same watershed as the Wetland Impacts, desires that the Mitigation Work be performed to provide mitigation in the same watershed as the Wetland Impacts, and represents that the Mitigation Work is supported by regulatory and non-regulatory agencies; and

WHEREAS, the LCFPD is willing to (i) execute, as an off-site mitigation sponsor, a Section 404 Permit that (a) authorizes the Mitigation Work and Maintenance Work, (b) is effective (or is effective conditioned only on LCFPD's execution of it as an off-site mitigation sponsor), and (c) is otherwise consistent with this Agreement and acceptable to the LCFPD (an

"Acceptable 404 Permit") and (ii) accept the Wetland Mitigation Funds from MWRD, so that LCFPD can perform, or cause to be performed, the Mitigation Work and Maintenance Work at the Mitigation Site; and

**WHEREAS**, as a condition of the Section 404 Permit, LCFPD will be required to record a conservation easement, deed restriction, restrictive covenant or similar document limiting use of the Mitigation Site in a manner consistent with the Acceptable 404 Permit and the Mitigation Project (the "*Restrictive Covenant*"); and

**WHEREAS**, on January 19, 2017, the MWRD Board of Commissioners authorized the MWRD to enter into this Agreement with the LCFPD; and

**WHEREAS**, on April 11, 2017, the LCFPD Board of Commissioners authorized the LCFPD to enter into this Agreement with the MWRD; and

**WHEREAS**, the MWRD and the LCFPD, are public agencies within the meaning of the Illinois Intergovernmental Cooperation Act, 5 ILCS 220/1 *et seq.*; and

**WHEREAS**, Article VII, Section 10, of the 1970 Constitution of the State of Illinois encourages and provides for units of local government to contract and otherwise associate with other units of local government to exercise, combine or transfer any power or function in any manner not prohibited by law; and

**WHEREAS**, the MWRD and the LCFPD, have determined it is in the best interests of the Parties, as well as the residents and individuals served by the Parties to enter into this Agreement; and

WHEREAS, pursuant to the Original Intergovernmental Agreement, the MWRD and LCFPD have a history of working cooperatively for their mutual benefit and the benefit of their respective constituents and desire to enter into this Agreement to further cooperate in accordance with their respective rights and responsibilities described herein; and

**NOW, THEREFORE**, pursuant to the authorities recited above and all applicable authority, in consideration of the matters set forth in this Agreement, the mutual covenants and agreements contained in this Agreement, and other good and valuable consideration, the receipt and sufficiency of which is hereby acknowledged, MWRD and LCFPD hereby agree as follows:

#### <u>ARTICLE\_1.</u> <u>INCORPORATION OF RECITALS</u>.

The recitals set forth above are incorporated herein by reference and made a part hereof.

#### <u>ARTICLE\_2.</u> <u>EXECUTION OF ACCEPTABLE 404 PERMIT.</u>

Upon the approval by the USACE of an Acceptable 404 Permit, MWRD shall execute the Acceptable 404 Permit and deliver it to LCFPD. LCFPD shall promptly execute the Acceptable 404 Permit as an off-site mitigation sponsor and return it to MWRD.

#### ARTICLE\_3. PERFORMANCE OF MITIGATION WORK.

- A. Scope of Work. After MWRD and LCFPD execute the Acceptable 404 Permit, and after MWRD pays the Wetland Mitigation Funds to LCFPD, as provided in Article 4, LCFPD shall cause the Mitigation Work and Maintenance Work to be completed in accordance with the Mitigation Plan and the Acceptable 404 Permit by either (i) performing the Mitigation Work and Maintenance Work itself through its own forces, (ii) causing the Mitigation Work and Maintenance Work to be performed by a contractor, or (iii) a combination of (i) and (ii). After it completes the Mitigation Work and Maintenance Work, LCFPD shall notify MWRD of such completion. Thereafter, MWRD shall promptly seek from USACE a letter of completion or closure (or its equivalent) stating that the Mitigation and Maintenance Work has been completed in accordance with the Acceptable 404 Permit (a "Completion Letter").
- **B.** Contracting Requirements. If the LCFPD engages a contractor to complete the Mitigation Work or the Maintenance Work, or any portion thereof, the LCFPD shall (i) engage such contractor through applicable procurement laws, including the LCFPD's own procurement requirements, (ii) in accordance with such requirements, for any portion of the Mitigation Work or Maintenance Work with a value more than \$25,000, publicly award a contract for the Mitigation Work or Maintenance Work to the lowest responsible bidder, after publicly advertising for, and obtaining, competitive, sealed bids for such work, and (iii) for all Mitigation Work with a value of more than \$50,000, require a payment bond and performance bond, as required by the Public Construction Bond Act.
- C. <u>Permits.</u> The parties acknowledge that, to the best of their current knowledge, no federal, state, county, or local permits, consents, or approvals are required for the

Mitigation Work and the Maintenance Work ("Additional Permit"), except for the Acceptable 404 Permit. However, if any Additional Permit is required, LCFPD, at its cost, shall obtain the Additional Permits and MWRD will reasonably cooperate with LCFPD in LCFPD's efforts to obtain such Additional Permits.

#### D. Mitigation, Maintenance, and Monitoring Requirements.

- (i) LCFPD shall comply with all requirements as set forth in the Mitigation Plan, including but not limited to, the Maintenance Plan (Section VII); Performance Standards, including Vegetation and Hydrology requirements (Section VIII); Monitoring and reporting requirements (Section IX); Long Term Management requirements (Section X); and Adaptive Management performance, if needed (Section XI). LCFPD shall also comply with any and additional mitigation, monitoring, management, maintenance requirements set forth in the Acceptable 404 Permit. If at any time USACE lawfully determines that LCFPD's performance under the Mitigation Plan or LCFPD's mitigation, monitoring, management, and maintenance under the Acceptable 404 Permit is deficient, LCFPD shall take all steps necessary to remedy said deficiencies to the satisfaction of the USACE.
- (ii) In the event that LCFPD fails to (i) complete the Mitigation Work by the date required by the Acceptable 404 Permit, (ii) complete the Maintenance Work by the date required by the Acceptable 404 Permit, or (iii) otherwise perform the Mitigation Work or Maintenance Work as required by this Agreement, the MWRD may issue a notice to LCFPD directing such completion or performance and describing such failure in reasonable detail. If, within thirty (30) business days after receipt of such notice, LCFPD does not (i) demonstrate that the Mitigation Work or Maintenance Work has been completed or that it has performed the Mitigation Work or Maintenance Work as required by this Agreement (as the case may be) or (ii) commence or cause to be commenced the work necessary to complete the Mitigation Work, complete the Maintenance Work, or cure such failure (as the case may be), then LCFPD is in default ("Default") and MWRD may serve LCFPD with a notice demanding a refund of all Wetland Mitigation Funds, in which case,

within sixty (60) days after such request, LCFPD shall refund to MWRD all Wetlands Mitigation Funds that have been paid by MWRD to LCFPD.

**E.** <u>Copies of Reports.</u> LCFPD shall provide to MWRD copies of all Mitigation Plan Annual Reports submitted to USACE, and the Year 5 letter and final report.

#### ARTICLE\_4. PAYMENT.

- **A.** The MWRD will pay the Wetland Mitigation Funds to LCFPD within thirty (30) days after the following three conditions have been met, (collectively, the "Mitigation Payment Conditions"):
  - (i) execution of this Agreement;
  - (ii) execution of the Acceptable 404 Permit by all necessary parties; and
  - (iii) award of the construction contract to perform the work described in the Expansion Project.
- **B.** LCFPD shall use all of the Wetland Mitigation Funds exclusively for (i) the Mitigation Work, (ii) if Wetland Mitigation Funds remain after the Mitigation Work is complete, for Maintenance Work, and (iii) if Wetland Mitigation Funds remain after the Maintenance Work is complete, for further maintenance of the Mitigation Site. LCFPD assumes the risk that the cost of the Mitigation Work and Maintenance Work may exceed \$400,000 and, in the event of such excess costs, LCFPD shall, despite such excess costs, complete the Mitigation Work and Maintenance Work as required by the Acceptable 404 Permit and MWRD will not be required to pay any such excess costs.
- C. In the event that USACE suspends or revokes the Acceptable 404 Permit due to LCFPD's failure to comply with all the terms and conditions for LCFPD's mitigation, monitoring, management, and maintenance under the Acceptable 404 Permit, the MWRD will be entitled to a refund of the entire payment of \$400,000.00.

#### ARTICLE\_5. TERM.

This Agreement will be effective as of the Effective Date, as defined in Article 8, and will terminate (i) if MWRD sends to LCFPD a written notice of termination prior to MWRD tendering an Acceptable 404 Permit to LCFPD, (ii) at LCFPD's option, if more than 30 days have elapsed after (a) execution of both the Agreement and the Acceptable 404 Permit and (b)

award of the construction contract to perform the work described in the Expansion Project, but MWRD has failed to deliver all Wetland Mitigation Funds to LCFPD, (iii) at either Party's option, if all Mitigation Payment Conditions have not been satisfied on or before June 30, 2018, or (iv) if the USACE issues a Completion Letter and LCFPD sends to MWRD a written notice of termination.

#### ARTICLE\_6. INDEMNIFICATION

- A. <u>LCFPD Obligations</u>. LCFPD shall indemnify, defend, and hold harmless MWRD and its president, commissioners, officers, employees, servants, and agents ("MWRD Indemnified Parties") from and against any and all claims, actions, causes of action, suits, orders, losses, costs, liabilities, damages, and expenses incurred, including reasonable attorney's fees, costs and disbursements suffered, or sustained at any time after the Effective Date and in perpetuity as a result of, or relating to, injury to or death of persons or loss or damage to property (collectively, the "Claims") arising from the negligent act or omission of LCFPD, for which an MWRD Indemnified Party may become or is alleged to be liable (irrespective of whether any such MWRD Indemnified Party is a party to such Claim), except to the extent a Claim arises out of the negligence or fault of the MWRD Indemnified Party.
- **B.** <u>MWRD Obligations.</u> MWRD shall indemnify, defend, and hold harmless LCFPD and its president, commissioners, officers, employees, servants, and agents ("*LCFPD Indemnified Parties*") from and against any and all Claims arising from the negligent act or omission of the MWRD, for which a LCFPD Indemnified Party may become or is alleged to be liable (irrespective of whether any such LCFPD Indemnified Party is a party to such Claim), except to the extent a Claim arises out of the negligence or fault of the LCFPD Indemnified Party.
- **C. No Waiver of Immunity.** A Party's indemnification obligation will not be deemed to waive or limit any immunity or other defense.

#### <u>ARTICLE\_7.</u> <u>REPRESENTATIONS AND WARRANTIES.</u>

**A.** Representations of LCFPD. LCFPD covenants, represents and warrants, as of the Effective Date and throughout the term of this Agreement, as follows:

- (i) LCFPD has full authority to execute, deliver and perform or cause to be performed this Agreement;
- (ii) LCFPD owns the fee simple interest in the Mitigation Site; and
- (iii) in addition to the Wetland Mitigation Funds, it has financial resources and capabilities necessary to ensure that the Mitigation Work and Maintenance Work will be completed;
- (iv) that the individuals signing this Agreement and all other documents executed on behalf of LCFPD are duly authorized to sign same on behalf of and to bind the LCFPD; and
- (v) the execution and delivery of this Agreement, consummation of the transactions provided for herein, and the fulfillment of the terms hereof will not result in any breach of any of the terms or provisions of or constitute a default under any agreement of the LCFPD or any instrument to which the LCFPD is a party or by which LCFPD is bound or any judgment, decree, or order of any court or governmental body or any applicable law, rule, or regulation.
- **B.** Representations of MWRD. MWRD covenants, represents and warrants, as of the Effective Date and throughout the term of this Agreement, as follows:
  - (i) MWRD has full authority to execute, deliver and perform or cause to be performed this Agreement;
  - (ii) the individuals signing this Agreement and all other documents executed on behalf of the MWRD are duly authorized to sign same on behalf of and to bind the MWRD; and
  - (iii) the execution and delivery of this Agreement, consummation of the transactions provided for herein, and the fulfillment of the terms hereof will not result in any breach of any of the terms or provisions of or constitute a default under any agreement of the MWRD or any instrument to which the MWRD is a party or by which the MWRD is bound or any judgment, decree, or order of any court or governmental body or any applicable law, rule, or regulation.

#### ARTICLE\_8. GENERAL PROVISIONS.

- A. Compliance with Laws; Governing Law. In exercising their rights under this Agreement, the Parties shall comply with all applicable federal, state, and local laws. This Agreement shall be governed by, and enforced in accordance with, the internal laws, but not the conflicts of laws rules, of the State of Illinois. The Parties agree that, pursuant to Section 20 of the Downstate Forest Preserve District Act, 70 ILCS 805/20, and LCFPD Ordinance No. 2257 enacted pursuant thereto, to the extent that local regulations (as opposed to USACE or other federal regulations) apply to the Mitigation Work and Maintenance Work, the Mitigation Work and Maintenance Work is subject to the building codes and regulations of the County of Lake, and not that of any municipality.
- B. <u>Hazardous Materials</u>. MWRD and LCFPD covenant and agree that: (i) they and their officers, partners, agents, employees and contractors shall comply with any and all federal, state, and local laws, ordinances, codes, rules and regulations that prohibit, restrict or regulate any material defined therein as a hazardous, radioactive, toxic or carcinogenic substance, pollutant, contaminant or material (collectively, "*Hazardous Materials*") in connection with the Captain Daniel Wright Woods Forest Preserve; and (ii) they and their officers, partners, agents, employees and contractors shall not, and shall not permit or otherwise authorize any other person to, handle, bury, store, retain, refine, produce, spill, allow to seep, leak, escape, leach, pump, pour, emit, empty, discharge, inject, dump, transfer, release or otherwise dispose of or deal with Hazardous Materials in, on, under or about the Captain Daniel Wright Woods Forest Preserve. The provisions of this Article shall survive any expiration or earlier termination of this Agreement.
- C. Nature, Survival and Transfer of Obligations. This Agreement may be recorded by LCFPD, at no cost to MWRD, against the Mitigation Site. The provisions of this Agreement shall run with and bind the Mitigation Site and shall bind, inure to the benefit of, and be enforceable by LCFPD and MWRD, and any of their respective legal representatives, heirs, grantees, and successors, including any successor governing boards. The LCFPD shall record with the Lake County Recorder of Deeds the Restrictive Covenant in a form approved by the USACE and shall ensure that the Mitigation Site is used in accordance with the Restrictive Covenant, which may include passive recreational uses.

D. Enforcement.

(i) **Breach.** For any breach of this Agreement, MWRD or LCFPD may, in law or

in equity, by suit, action, or any other proceeding, enforce or compel the

performance of this Agreement and seek any appropriate remedy, including,

without limitation, specific performance, mandamus, or money damages.

Venue. Venue for any judicial action filed by MWRD or LCFPD related to (ii)

this Agreement will be in the Circuit Court of Cook County, Illinois.

E. Notice. Any notice or communication required or permitted to be given under this

Agreement shall be in writing and shall be delivered: (i) personally, (ii) overnight by a

reputable overnight courier, (iii) by certified mail, return receipt requested, and deposited

in the U.S. Mail, postage prepaid, or (iv) by electronic mail. Electronic mail notices shall

be deemed valid only to the extent that they are (a) actually received by the individual to

whom addressed and (b) followed by delivery of actual notice in the manner described in

either (i), (ii) or (iii) above within three business days thereafter at the appropriate

address set forth below. Unless otherwise expressly provided in this Agreement, notices

shall be deemed received upon the earlier of (a) actual receipt; (b) one business day after

deposit with an overnight courier as evidenced by a receipt of deposit; or (c) three

business days following deposit in the U.S. Mail, as evidenced by a return receipt. By

notice complying with the requirements of this Article, each Party shall have the right to

change the address or the addressee, or both, for all future notices and communications to

such Party, but no notice of a change of addressee or address shall be effective until

actually received. Notices and communications to LCFPD shall be addressed to, and

delivered at, the following address:

Lake County Forest Preserve District

1899 West Winchester Road

Libertyville, IL 60048

Attention: Executive Director

With a copy to:

Matthew E. Norton, Esq.

Burke, Warren, MacKay & Serritella

330 N. Wabash Avenue, Suite 2100

Chicago, IL 60611-3607

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Notices and communications to MWRD shall be addressed to, and delivered at, the following addresses:

Office of the Director of Engineering Metropolitan Water Reclamation District of Greater Chicago 100 East Erie Street Chicago, IL 60611-3154

With a copy to:

General Counsel Metropolitan Water Reclamation District of Greater Chicago 100 East Erie Street Chicago, IL 60611-3154

The foregoing shall not be deemed to invalidate any notice actually received.

- **F.** <u>Time Is of the Essence</u>. Time is of the essence in the performance of this Agreement.
- **G.** Exhibits. Exhibits A and B attached to this Agreement are, by this reference, incorporated in and made a part of this Agreement.
- H. <u>Amendments and Modifications</u>. This Agreement may not be modified, changed or deleted unless in writing and executed by MWRD and LCFPD. Any amendment to this Agreement must be approved by the Parties' governing Boards.
- I. <u>Severability</u>. It is hereby expressed to be the intent of the Parties to this Agreement that should any provision, covenant, agreement, or portion of this Agreement or its application to any person, entity, or property be held invalid by a court of competent jurisdiction, the remaining provisions of this Agreement and the validity, enforceability, and application to any person, entity, or property shall not be impaired thereby, but the remaining provisions shall be interpreted, applied, and enforced so as to achieve, as near as may be, the purpose and intent of this Agreement to the greatest extent permitted by applicable law.
- J. No Third Party Beneficiary. This Agreement is entered into solely for the benefit of the Parties, and nothing in this Agreement is intended, either expressly or impliedly, to provide any right or benefit of any kind whatsoever to any person or entity that is not a Party or to acknowledge, establish or impose any legal duty to any third party. Nothing herein shall be construed as an express or implied waiver of any common law or statutory

- immunities or privileges of LCFPD or MWRD, or any of their respective officials, officers or employees.
- **K.** Effective Date. This Agreement becomes effective on the Effective Date, which shall be the date upon which the last signature is affixed hereto.
- L. <u>No Assignment</u>. No Party may assign any rights or duties under this Agreement without the prior express written consent of the other Parties.
- M. Entire Agreement. This Agreement and its respective exhibits, the Original Intergovernmental Agreement, and the Construction Intergovernmental Agreement, contain the entire agreements among the Parties regarding the subject matter hereof. As provided in the Construction Intergovernmental Agreement, in the event of a conflict between the Original Intergovernmental Agreement and the Construction Intergovernmental Agreement, the Construction Intergovernmental Agreement controls. All negotiations between the Parties are merged in this Agreement, and there are no understandings or agreements, verbal or written, other than those incorporated in this Agreement, the Original Intergovernmental Agreement, and the Construction Intergovernmental Agreement.

IN WITNESS WHEREOF, the Metropolitan Water Reclamation District of Greater Chicago and Lake County Forest Preserve District, the Parties hereto, have each caused this Agreement to be executed by their duly authorized officers, duly attested and their seals hereunto affixed on the dates specified below.

#### LAKE COUNTY FOREST PRESERVE DISTRICT

BY:	DATE:	
Its: President		
Attest: By:	DATE: _	
Its: Secretary		

Its: Secretary

#### METROPOLITAN WATER RECLAMATION DISTRICT OF GREATER CHICAGO

Chairman of the Committee on Finance	
Executive Director	
ATTEST:	
Cll.	Date:
Clerk	
APPROVED AS TO ENGINEERING, OPERAT	ΓΙΟΝS, AND TECHNICAL MATTERS:
	Date:
Engineer of Stormwater Management	- ***
	Date:
Assistant Director of Engineering	
Director of Engineering	Date:
APPROVED AS TO FORM AND LEGALITY:	
	Data
Head Assistant Attorney	Date:
	Date:
General Counsel	

#### INDEX OF EXHIBITS

Exhibit A General Depiction of the Mitigation Site

Exhibit B Mitigation Plan

## EXHIBIT A GENERAL DEPICTION OF MITIGATION SITE

### Exhibit A

Lak e County Forest Preserve District 1899 W Winchester Rd Libertyville, IL 60048 847-367-6640 www.lcfpd.org

Feet 0 375 750 1,500

#### Legend

Forest Preserve Property ● County Existing Multi-Use Path

• •

Mitigation Site

Courtesy Copy Only.

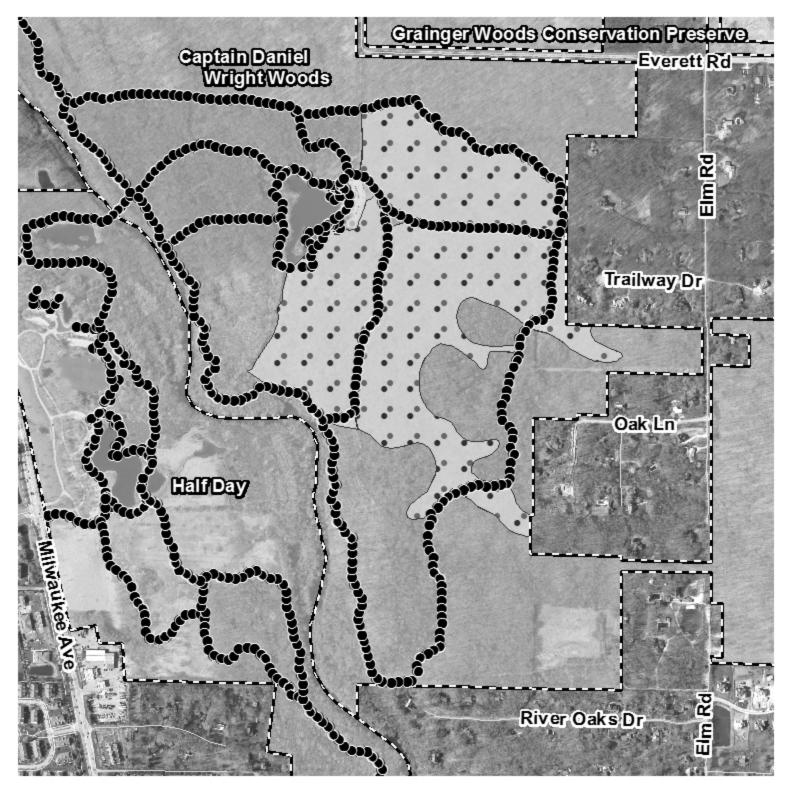
Property boundaries indicated are provided for general location purposes. Wetland and flood limits shown are approximate and should not be used to determine setbacks for structure or as a basis for purchasing property.

2015 Aerial Photo



Prepared using information from: Lake County Department of Information & Technology: GIS/Mapping Division 18 North County Street Waukegan, Illinois 60085-4357 847-377-2373

Map Prepared 25 January 2017



## EXHIBIT B MITIGATION PLAN



# PROJECT MITIGATION DOCUMENT

## CAPTAIN DANIEL WRIGHT WOODS FOREST PRESERVE

USACE LRC-2014-00193 LAKE COUNTY, ILLINOIS

For Mitigation of Wetland Loss at Buffalo Creek Forest Preserve Reservoir Expansion Project by Metropolitan Water Reclamation District of Greater Chicago

#### PREPARED BY:

Lake County Forest Preserve District 1899 West Winchester Road Libertyville, IL 60048

**JUNE 16, 2016** 

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#### **INTRODUCTION**

The Metropolitan Water Reclamation District of Greater Chicago (MWRD) is proposing an expansion of the existing Buffalo Creek Retention Reservoir at Buffalo Creek Forest Preserve in Lake County, Illinois. The project is located north of Lake Cook Road and west of Arlington Heights Road in Section 31, Township 43 North, Range 11 East, and 3rd P.M. The project is further located by the G.P.S. decimal coordinates of Latitude Lat. 42.15714 and Longitude -87.98993. The project requires a Section 404 Individual Permit and compensatory wetland mitigation. This Project Mitigation Document (PMD) pertains to the off-site permittee responsible mitigation to be implemented at the Captain Daniel Wright Woods Forest Preserve in unincorporated Lake County, Illinois (Exhibit 1). The Captain Daniel Wright Woods Forest Preserve property is owned by the Lake County Forest Preserve District (LCFPD). This PMD is required by the Army Corps of Engineers' (USACE) Individual Permit authorization. This document follows the required 12 mitigation plan components that need to be addressed under the federal Mitigation Rule.

#### I. OBJECTIVES

#### A. Impact Site - Schaeffer Road and Lake Cook Road

Direct and indirect impacts to the wetlands will result from grading and other development aspects of the project. The purpose of the proposed project is to expand the flood storage capacity of the existing Buffalo Creek Reservoir by approximately 184-acre feet. The permanent impacts to 2.7 acres of wetland/waters on the project site will require compensatory wetland mitigation in the amount of 4.05 acres. Mitigation will be provided off-site by the restoration (reestablishment of former wetland) and enhancement (existing degraded wetland to be enhanced) of wetlands at Captain Daniel Wright Woods Forest Preserve. The plan includes 6 acres of restoration potential mitigation credit and 16.25 acres of enhancement potential mitigation credit.

#### B. Mitigation Site - Off-site

The entire 89-acre off-site mitigation project site is owned by the LCFPD as shown in Exhibit 1. It is bounded to the east by additional Forest Preserve and single family residences, to the north by additional Forest Preserve, Everett Road and Grainger Woods Forest Preserve, to the west by the Des Plaines River River and additional Forest Preserve, and to the south by additional Forest Preserve. The goals and objectives for this permittee responsible mitigation site are to compensate for functional and biological values lost from the project impacts. The goal is to restore the areas of histic soils to historical conditions

and enhance the hydric soils by improving the native vegetation cover, removing woody invasive and weedy native and non-native plant species, and improve habitat for native species of waterfowl, amphibians, reptiles, and vegetation. Restoration and enhancement of the site is expected to have a positive effect on wildlife and water quality values of the Des Plaines River in Lake County.

Specific project objectives include:

- 1. Reduce cover and density of aggressive invasive and native woody plant species.
- 2. Re-establish coverage of native herbaceous vegetation species and limit the establishment of invasive species.
- 3. Restore hydrological conditions to the histic soils by using native vegetation and invasive species removal to encourage infiltration which increases the hydroperiods of these northern flatwood soils.

The proposed mitigation will enhance 65-acres of existing hydric soil wetlands (northern flatwoods and seasonally flooded waterways) and 24 acres of histic soil wet woodlands buffer, and will expand upon recently completed restoration work that was initiated in the winter of 2015 at the Preserve by the Forest Preserve'.

#### Sustainable Design

Soils in the mitigation area are hydric and histic soils that have had their hydrology altered by the presence of invasive woody vegetation and lack of infiltration due to loss of herbaceous vegetation. The propose restoration and enhancement of the vegetative composition of the wetlands is expected to change as a result of invasive species control, increased herbaceous cover, and long-term maintenance activities, such as prescribed burning and management of woody regrowth will have positive effects upon the hydrology, wetlands and watershed benefits.

#### **Agency Clearance Letters**

The Captain Daniel Wright Woods project site will be submitted for state biological clearance through the Illinois Department of Natural Resource's EcoCAT. No ground disturbance, e.g., grading, will be part of this project so a cultural clearance request has not been submitted to the Illinois Historic Preservation Agency.

#### Watershed Objectives

Regional Permit Program-General Condition 22 (K) states "Where an appropriate watershed plan is available, the applicant shall address in writing how the proposed activity is aligned with the relevant water quality, hydrologic and aquatic resource protection recommendations in the watershed plan". This project is within the watershed of the Des Plaines River (subwatershed is the lower Des Plaines River), which does not have a watershed plan.

#### Likely Future Adjacent Land Uses and Compatibility

No future development is anticipated to the east, north, west, or south as these areas are already developed and Forest Preserve and so the proposed wetland mitigation is highly compatible.

#### II. SITE SELECTION

The off-site permittee responsible mitigation site was identified as a viable site because:

- 1. The site is already owned by LCFPD;
- 2. Wetlands on the Forest Preserve property immediately adjacent to the proposed reservoir development will be indirectly impacted;
- 3. The site is a priority for restoration and enhancement by LCFPD;
- 4. The site is within the Des Plaines River watershed in Lake County.
- 5. Regulatory and non-regulatory agencies support the use of this site for permittee responsible mitigation instead of wetland bank mitigation.

Once the five year vegetation management and monitoring activities are completed, the native vegetation will be in a much improved condition to compete with invasive species. However, for the improvements to be self sustaining, occasional long term management activities will be necessary and have been committed to by the Forest Preserve after the five year management and monitoring period.

#### III. SITE PROTECTION INSTRUMENT

The LCFPD shall ensure that the mitigation shall not be made subject to any future construction and/or fill activities. The only allowable activities on the site will be for the purposes of enhancing or maintaining the mitigation area and passive recreation.

#### IV. BASELINE INFORMATION

#### **Mapping Resources**

The Lake County Lidar topographic data indicates that the northern flatwoods enhancement areas within the proposed project site are at 649 feet to 654 feet in elevation (the DPR is at 645 feet) with the wetland swales traversing the upland areas and ultimately into the DPR (Exhibit 2). The Lake County Wetland Inventory map indicates the presence of a wetland complex on the project site that is identified as Advanced Identification (ADID) wetlands (Exhibit 3). ADID wetlands are considered High Quality Aquatic Resources (HQAR). The NRCS Lake County Soil Survey (Exhibit 5) indicates mapped hydric and histic soils on the project site. The hydric soils are identified as Pella silt loam (153), Peotone silty clay loam (330), and Montgomery silty clay (465). Histic soils include Nappanee silt loam (228A) and Aptakistic and Nappanee silt loams (982A).

#### Wetland Investigation

Field assessment visits by LCFPD staff occurred during the winter and spring of 2015-2016. No formal wetland delineation has been conducted. However, wetland boundaries (northern flatwoods and wooded wetland swales) have been estimated based on these field visits and available mapping resources (Exhibit 5).

#### Jurisdictional Determination

The site wetlands have a hydrologic connection to the Des Plaines River, a Waters of the U. S. as regulated by the USACE. A written jurisdictional determination has not been requested from the USACE.

#### **Existing Hydrology**

The mitigation site drains west to the Des Plaines River. The hydrology will be enhanced at the mitigation site.

#### **Existing Vegetation**

The parcel contains an over story of mixed hardwoods that include various oak (*Quercus*) species, shagbark hickory (*Carya ovata*), black walnut (*Juglans nigra*) and Sugar Maple (*Acre saccharum*). This parcel has been invaded by exotic (non-native) and opportunistic (native invasive) species such as common buckthorn (*Rhamnus cathartica*), green ash (*Fraxinus pennsylvanica*), elm (*Ulmus* spp), and eastern cottonwood (*Populus deltoides*). The understory shrub community is relatively depauperate due to the invasion of exotic species, but contains some native species including, but not limited to, choke cherry (*Prunus virginiana*), wild gooseberry (*Ribes missouriense*) and hawthorns (*Crataegus* spp). Detailed vegetative surveys of herbaceous vegetation have been conducted within the parcel; however, in general, native herbaceous cover is sparse,

again due to the shade created by exotic and opportunistic woody plants. Table 1 provides a list of species found within the northern flatwoods of Unit B. The flatwoods in units A and C have little native vegetation due to the dense overstory of buckthorn. In 2015 Unit B was cleared of buckthorn and other invasive species. The wooded wetland swales within the project area are for the most part unvegetated with little to no vegetation from the swale into the upland community. The upland woodland buffer areas in units A, B and C are sparsely vegetated. Table 2 provides a list of species observed in the upland buffer areas.

#### **Existing Soils**

As presented in the Lake County Soil Survey, the hydric soil in the proposed mitigation is predominately Pella silt loam, over wash (153). The Pella series consists of very deep, poorly drained soils formed in loamy or silty sediments and the underlying stratified loamy glacial sediments on lake plains, outwash plains, and till plains and Montgomery silty clay loam which is poorly drained formed from lacustrine deposits and located on toe slopes and stream terraces. The surrounding soil is Nappanee silt loam 228A which is highly impermeable and is dominated by hydric inclusions.

#### Existing Wildlife Usage

Wildlife observations at the site are listed in table 3.

#### Historic and Current Land Use

A review of several historical aerial photographs 1939 to 2014 on Lake County Maps Online website, indicates that the project site has been a forest and subject to little or no row crop tillage. Possible historic land use of the project site was grazing and woodlot. Current land use is open space.

#### **Current Owner**

LCFPD is the current property owner.

#### Watershed Context/Surrounding Land Use

The mitigation site is east of the Des Plaines River. As previously mentioned the adjacent land use is residential and open space.

#### V. CREDIT DETERMINATION METHODOLOGY

The primary goal of this project is to provide mitigation in the same watershed as the proposed impacts and in close proximity to the impact site for functional replacement of the impacted wetlands. The

enhancement of wetlands and uplands on a Forest Preserve will compensate for at least the 16 -acres of mitigation credit that are required.

#### Potential Mitigation Credit Generation

Hydric Soil Wetland Enhancement 65-acres x 0.25 = 16.25 acres

Histic Soil Restoration 24 acres  $\times 0.25 = 6$  acres

TOTAL POTENTIAL MITIGATION CREDIT 22.25 ACRES

#### VI. MITIGATION WORK PLAN

Vegetation management for invasive trees and shrubs will consist of girdling, cutting, and burning debris pilesin Units A and C followed by herbicide treatments to the cut stumps. Undesirable herbaceous plants in all units will be treated with herbicide. Implementation of this work plan will take place concurrent with the impacts authorized by the Section 404 permit for the grocery store project and will be implemented no later than one year of permitted impact.

#### Grading and Soil Management

If after the vegetation management there are areas of bare soil susceptible to erosion, appropriate soil erosion and sediment control measures will be implemented and maintained throughout the duration of the project. No grading is proposed.

#### Water Control

No water control structures are proposed or necessary.

#### **Site Access**

Site access will be provided by the LCFPD via existing recreational trails and parking lots

#### **Initial Control of Invasive Species**

Initial clearing of exotic and invasive woody species of units A and C (unit B was cleared in 2015) will take place. Invasive and weedy species are prevalent throughout the parcel and will need to be controlled prior to the installation of native plant species to promote the establishment and growth of desirable species.

During the winter, invasive or low quality woody species will be controlled through mechanical removal and chemical treatment. Target species will be cut at the base and treated with an herbicide appropriate for

species and site conditions. Cut material will be stacked and burned on-site. All required local and state permits will be acquired prior to burning activities. All undesirable species will be targeted for removal including common buckthorn, honeysuckle, green ash, elm and cottonwood. Woody resprouts will be controlled early in the first growing season with follow-up foliar applications.

#### Planting Plan

The proposed communities, northern flatwoods, seasonally wet wooded swales, and dry mesic upland will be seeded in units A, B, and C. These communities are shown on the Mitigation Plan (Exhibit 5) and will be represented by a mosaic of the various vegetation community types. Native seed shall adhere to LCFPD seed/plant provenance specifications to preserve and utilize local genotypes from a specific geographic area with similar geography and climate. Native seed lists are provided in Appendix A.

Native seed material will be hand or mechanically broadcasted in late fall, evenly throughout all communities after woody species control is completed during the winter months.

#### VII. MAINTENANCE PLAN

Management will be conducted both before and after seed and plant installation activities to help promote the establishment of native species. Both mechanical and chemical weed control methods will be performed according to needs. After native species installation has been completed, spot treatments will be made with appropriate herbicides to effectively control the weeds commonly associated with upland and wetland plant communities.

Target species within the mitigation include, but are not limited to common buckthorn (*Rhamnus* spp.), honeysuckle species (*Lonicera* spp.), teasel (*Dipsacus* spp.), garlic mustard (*Alliaria petiolata*), field thistle (*Cirsium arvense*), common burdock (*Arctium minus*), reed canary grass (*Phalaris arundinacea*), purple loosestrife (*Lythrum salicaria*), cattail (*Typha spp.*), and common reed (*Phragmites australis*). Persons performing herbicide treatments during the execution of this plan will have obtained a current herbicide applicator or operator license and meet the Forest Preserves' experience requirements for weedy or non-native species identification and management. All herbicides will be applied in strict accordance with label restrictions.

#### **SCHEDULE**

Table 1 includes a tentative schedule of management activities for the mitigation.

#### Table 1. Tentative Schedule of Management and Monitoring Activities

Task	2016											
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Woody Clearing											X	X
Herbicide Application												
Task	2017											
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Woody Clearing	X	X										
Seed Installation											X	X
Vegetation Monitoring					X	X		X	X			
Invasive Species				X	X	X						
Control				**	**	**	X	X	X	X		
Adaptive Management As needed				X	X	X	X	X	X	X		
Task	2018											
Mania Mania	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Vegetation Monitoring					X	X		X	X			
Invasive Species				X	X	X						
Control							X	X	X	X		
Controlled Burning										X	X	
Task	2019											
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Vegetation Monitoring					X	X		X	X			
Invasive Species				X	X	X		71				
Control							X	X	X	X		
Controlled Burning										X	X	
Task	2020											
	Ica	Feb	Mar	A	Marr	Tu-	T.,1	Ana	Som	Oct	Nov	Dec
	Jan	reb	iviar	Apr	May X	Jun X	Jul	Aug	Sep	OCI	INOV	Dec
Vegetation Monitoring								X	X	1		
Invasive Species				X	X	X	37	37	37	N/		
Control Controlled Burning			X	X	X		X	X	X	X X	X	
Task	2021		Λ	Λ	Λ				-	Α	Λ	
I USIN	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
		1		1		X						<u> </u>
Vocatation Moditaria					X	Λ		$\mathbf{v}$	v			
Vegetation Monitoring Invasive Species Control				X	X	X	X	X	X	X		

#### VIII. PERFORMANCE STANDARDS

#### **VEGETATION**

The following performance criteria are consistent the USACE Permittee Responsible Compensatory Mitigation Requirements.

- 1. Species selected for the planting shall be native to the county where the mitigation site is located (ref. Swink and Wilhelm, Plants of the Chicago Region, 1994), and shall be appropriate for the hydrologic zone to be planted. A minimum number of native perennial species proposed for establishment shall be present within each plant community to meet certification, as follows:
  - Northern flatwoods and Wet Wooded Swales– minimum of 35 native perennial species
  - Uplands within the 25-acre mitigation site minimum of 25 native perennial species
- 3. At least 50% of the required minimum number of species shall occur at a 10% frequency or greater, within each plant community zone or area. Multiple transects within a given plant community may be combined for this frequency analysis.
- 4. A native mean coefficient of conservatism value (native mean C) of greater than or equal to 3.5 shall be achieved in each separate vegetated plant community (e.g. northern flatwoods, wet wooded swales and upland dry mesic woodland) and as measure over the entire mitigation site area. Native plant species coefficients of conservatism are designated in Swink, Floyd and Gerould Wilhelm, Plants of the Chicago Region (Indianapolis: Indiana Academy of Science, 4<sup>th</sup> edition, 1994).
- 5. The native floristic quality index value (native FQI) shall be greater than or equal to 20 in <u>each</u> <u>separate</u> vegetated community zone and as measured over the entire mitigation site. The floristic quality assessment method is described in Swink and Wilhelm <u>Plants of the Chicago Region</u>. Steps #4 and #5 are evaluated based on the overall plant community inventories as well as transect summaries. If a portion of the site has achieved compliance with the performance standards, the standard shall be maintained in that portion until the final compliance sign off for the mitigation site.
- 6. No area over the entire mitigation site greater than 1 square meter shall be devoid of vegetation, as measured by aerial coverage, unless specified on approved mitigation plans. This standard does not apply to vernal pools that exist or may develop.
- 7. None of the three most dominant plant species in any of the wetland community zones may be nonnative species or weedy species, including but not limited to *Typha angustifolia*, *Typha X glauca*, *Phragmites australis*, *Lythrum salicaria*, *Salix interior*, or *Phalaris arundinacea*, unless otherwise indicated on

- the approved mitigation plan. These species shall not cumulatively comprise more than 5% of the total percent cover (not relative cover) for each community.
- 8. The native perennial species within each wetland plant community shall represent at least 80% of the total dominance measure. A lower percent native perennial species of the total dominance measure may be acceptable if it is demonstrated with transect data that the remaining dominance percentage is by native annual and biennial wetland plant species and the FQI and mean C standards are exceeded.
- 9. A vegetation map of the mitigation site based on as-built drawings developed at the completion of implementation shall be submitted. This information shall be descriptive and define the limits of all vegetation areas by community type, based on field observations. The permanent transects shall be shown on this map. Representative photographs of each vegetation area by general community zone shall be submitted to the USACE.

#### **HYDROLOGY**

Consistent with the USACE's Wetlands Delineation Manual (1987) and the Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Midwest Region-Version 2.0 (2010), all areas to receive restoration credit as wetland plant communities shall have soils saturated within 12 inches or less of the ground surface for at least 12.5% of the growing season as defined in this Interagency Coordination Agreement (2008). To meet this standard the mitigation site shall demonstrate inundated or saturated soils for 23 consecutive days during the growing season. In addition to this minimum, hydrology data should reflect a hydrologic regime that is appropriate to the native plant community proposed for establishment. Some of the wetlands that exist or may develop are ephemral wetlands and that typical wetland hydrology may not be achievable. These may be wet before the growing season begins and dry out, but these would support wooded wetland species. The six proposed monitoring well locations are shown on Exhibit 5. Final locations for the monitoring wells will be field-identified.

#### IX. MONITORING REQUIREMENTS

#### Monitoring

Vegetation data will be collected using quadrat sampling and meander search methods annually during midsummer (July/August) to assess overall vegetative site quality. For quadrat sampling, a sufficient number of straight-line sampling transects will be established across all community types to achieve a representative amount of plant frequency and coverage data. A meander search will be performed to provide a comprehensive species list. Representative photographs will be taken to further illustrate conditions. The results of the meander search will be evaluated using the Chicago Region FQA Calculator version September 29, 2014 (Herman, B., Sliwinski, R. and S. Whitaker. 2013. Chicago Region FQA (Floristic Quality Assessment) Calculator. U. S. Army Corps of Engineers, Chicago, IL).

Mitigation inspections will include ongoing attention to any erosion or sediment problems. The risk of any such problems will lessen as site vegetative cover increases and matures. Repairs will be conducted promptly to prevent small erosion problems from becoming larger problems. Minor grading, supplemental seeding and use of appropriate erosion control blanket will be needed in any areas where erosion persists.

#### MONITORING REPORT

An annual report describing results of sampling and an evaluation of performance will be submitted by January 31st of the year following each management season. The monitoring report will include the following information:

- 1. Representative photographs of the mitigation.
- 2. A summary of management activities performed during the year.
- 3. Tabular statistics of the vegetation surveys.
- 4. The discussion will include a review of progress in meeting goals and performance standards, and the adaptive management actions to deal with any shortfalls. If any of the performance standards are not met in any year, a detailed explanation and proposed corrective measures will be provided.

#### X. LONG TERM MANAGEMENT PLAN

The LCFPD will be responsible for long term management and will annually inspect the mitigation site to identify any needed management activities. Management activities will then be conducted by LCFPD, by contracts they award, or other means.

#### XI. ADAPTIVE MANAGEMENT PLAN

The LCFPD is responsible for adaptive management of the mitigation site. If necessary, additional seeds/plants will be installed after the first and/or second growing seasons. This supplemental seeding/planting will be intended to assist the plant community in areas with low vegetative density or

diversity and will allow for modifications (add or delete) to be made to the seed list based on community development.

#### XII. FINANCIAL ASSURANCES

The site is owned by LCPFD and it will be responsible for providing the necessary financial assurances to ensure that the approved mitigation is constructed and that management and monitoring and long term plans are properly funded. The LCFPD will be responsible to implement the long term management and that the site is maintained.

#### **COMPLETION**

In addition to the annual reports, a letter will be sent at the end of Year 5 to the USACE as notification that the work described in the management section has been completed. The final report will be included documenting the achievement of the above performance criteria and the success of the project. The letter will request receipt of written confirmation from the USACE indicating that the Plan has been carried out to the USACE's satisfaction.

## EXHIBIT 1. PROJECT LOCATION

# Legend Prepared using information from: Lake County Department of Information & Technology: GIS/Mapping Division 18 North County Street Waukegan, Illinois 60085-4357 847-377-2373 Project Area Project Area Nature Preserves Map Prepared 16 June 2016 Forest Preserve Boundaries Feet 1,100 2,200 550 Grainger/Woods Nature Preserve Lloyd's Woods Nature Preserve Elm Road Woods Elm Road Woods Nature Preserve

### EXHIBIT 2. TOPOGRAPHIC MAP

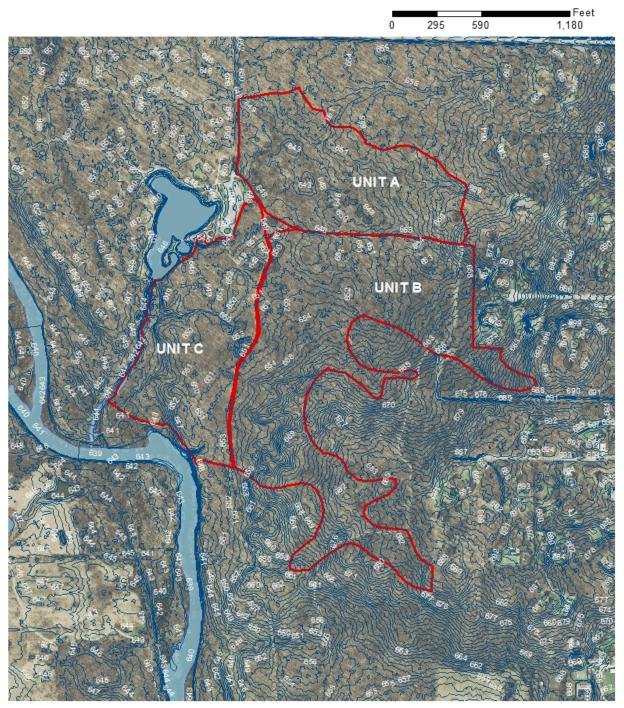
# Legend

1-Foot Topo

DesPlaines River

Lak e County Forest Preserve District 1899 W Winchester Rd Libertyville, IL 60048 847-387-8640 www.lcfpd.org Prepared using information from: Lake County Department of Information & Technology: GIS/Mapping Division 18 North County Street Waukegan, Illinois 60085-4357 847-377-2373





#### EXHIBIT 3. LAKE COUNTY WETLANDS AND ADID WETLANDS

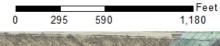
## Legend

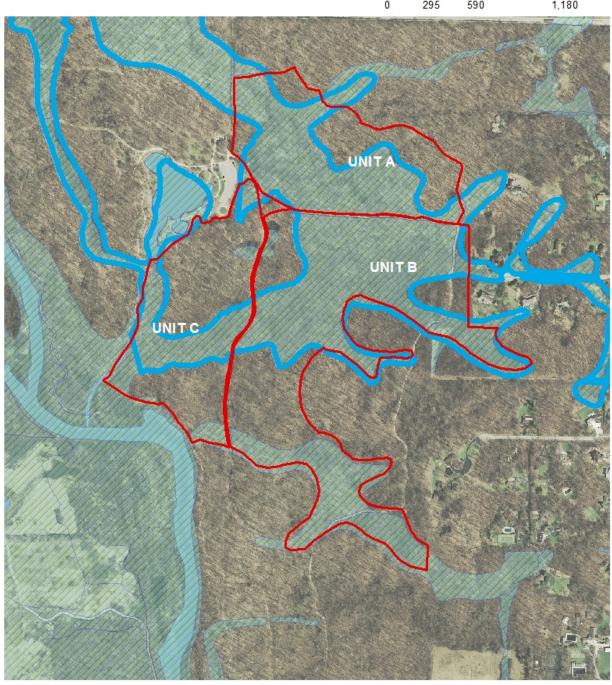
Lake County Wetlands ADID Wetlands DesPlaines River

Lak e County Forest Preserve District 1899 W Winchester Rd Libertyville, IL 60048 847-367-6640 www.lcfpd.org

Prepared using information from:
Lake County Department of Information
& Technology: GIS/Mapping Division
18 North County Street Waukegan, Illinois 60085-4357 847-377-2373







#### EXHIBIT 4. WETLAND SOILS

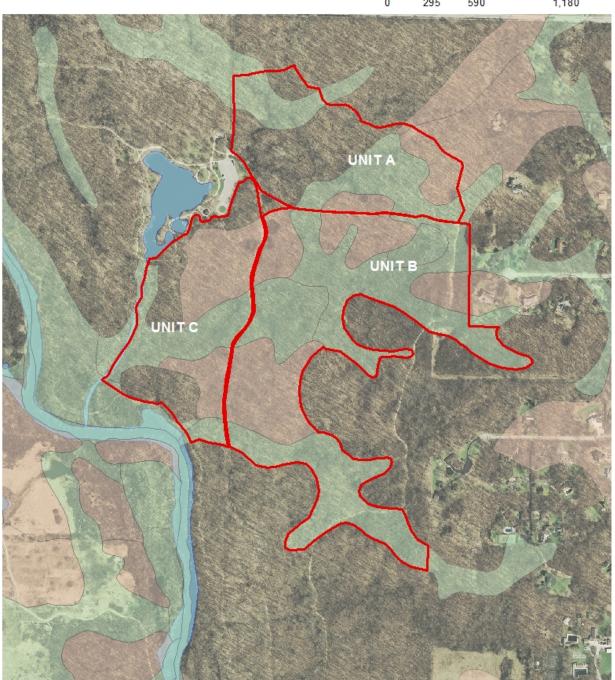
# Legend

DesPlaines River
Hydric Soils
Histic Soils

Lake County Forest Preserve District 1899 W Winchester Rd Libertyville, IL 60048 847-367-6640 www.lcfpd.org Prepared using information from: Lake County Department of Information & Technology: GIS/Mapping Division 18 North County Street Waukegan, Illinois 60085-4357 847-377-2373







#### EXHIBIT 5. PROPOSED MITIGATION ENHANCEMENT AREAS BY COMMUNITY TYPE

# Legend

## **Project Area**

#### Community Enhancement Areas

Northem Flatwoods/ Wooded Wetland Swales

Upland Woodland Buffer

Prepared using information from: Lake County Department of Information & Technology: GIS/Mapping Division 18 North County Street Waukegan, Illinois 60085-4357 847-377-2373



			Feet
0	295	590	1,180

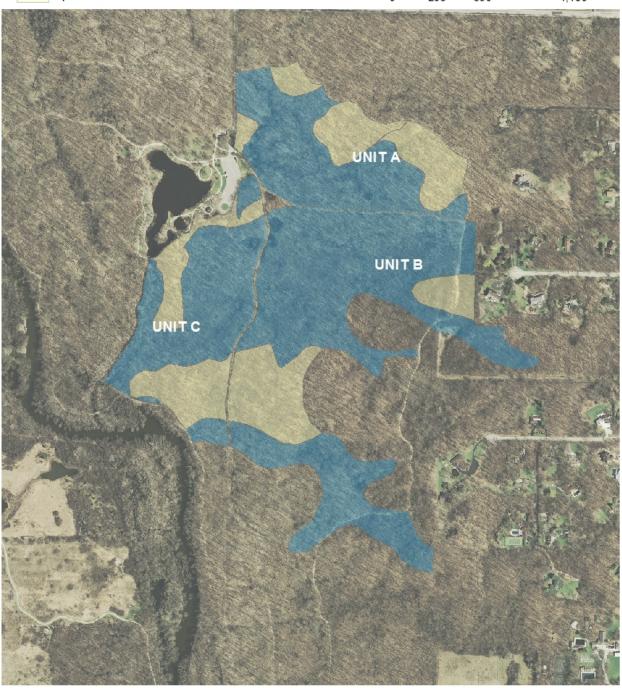


Table 1. Plants Observed in the Northern Flatwoods of Unit B

Plant Species	WETNESS	NAT/ADV	COMMON NAME
Arisaema dracontium	FACW	Native	Green Dragon
Arisaema triphyllum	FACW-	Native	Jack-In-The-Pulpit
Aster lateriflorus	FACW-	Native	Side-flowering Aster
Caltha palustris	OBL	Native	Marsh Marigold
Chelone glabra	OBL	Native	Turtlehead
Cinna arundinacea	FACW	Native	Common Wood Reed
Circaea lutetiana canadensis	FACU	Native	Enchanter's Nightshade
Cornus obliqua	FACW+	Native	Blue-fruited Dogwood
Carex blanda	FAC	Native	Common Wood Sedge
Carex bromoides	[OBL]	Native	Brome Hummock Sedge
Carex cristatella	FACW+	Native	Crested Oval Sedge
Carex davisii	FAC+	Native	Awned Graceful Sedge
Carex grayi	FACW+	Native	Common Bur Sedge
Carex haydenii	OBL	Native	Long-scaled Tussock Sedge
Carex projecta	FACW+	Native	Loose-headed Oval Sedge
Carex radiata	[FAC-]	Native	Straight-styled Wood Sedge
Carex stipata	OBL	Native	Common Fox Sedge
Dioscorea villosa	FAC-	Native	Wild Yam
Epilobium coloratum	OBL	Native	Cinnamon Willow Herb
Erigeron strigosus	[UPL]	Native	Daisy Fleabane
Eupatorium maculatum	OBL	Native	Spotted Joe Pye Weed
Fraxinus nigra	FACW+	Native	Black Ash
Fragaria virginiana	FAC-	Native	Wild Strawberry
Galium tinctorium	OBL	Native	Stiff Bedstraw
Geum canadense	FAC	Native	Wood Avens
Glyceria striata	[FACW]	Native	Fowl Manna Grass
Impatiens capensis	FACW	Native	Orange Jewelweed
Juncus tenuis	[FACU+]	Native	Path Rush
Lonicera tatarica	[UPL]	Adventive	Tartarian Honeysuckle
Lysimachia ciliata	FACW	Native	Fringed Loosestrife
Oxalis stricta	UPL	Native	Common Wood Sorrel
Parthenocissus quinquefolia	FAC-	Native	Virginia Creeper
Phalaris arundinacea	FACW+	Adventive	Reed Canary Grass
Pilea pumila	FACW	Native	Clearweed
Polygonum virginianum	FAC	Native	Woodland Knotweed
Polygonum hydropiperoides	OBL	Native	Mild Water Pepper
Potentilla simplex	FACU-	Native	Common Cinquefoil
Quercus bicolor	FACW+	Native	Swamp White Oak
Ranunculus abortivus	FACW-	Native	Small-flowered Buttercup
Ranunculus septentrionalis	FACW+	Native	Swamp Buttercup
Rhamnus cathartica	FACU	Adventive	Common Buckthorn
Rhamnus frangula	FAC+	Adventive	Glossy Buckthorn
Rhus radicans	FAC+	Native	Poison Ivy
Ribes americanum	FACW	Native	Wild Black Currant
Saxifraga pensylvanica	FACW	Native	Swamp Saxifrage
Solidago gigantea	FACW	Native	Late Goldenrod
Sphenopholis intermedia	FAC	Native	Slender Wedge Grass
Stachys palustris homotricha	OBL	Native	Woundwort
Taraxacum officinale	FACU	Adventive	Common Dandelion
Viola sororia	FAC-	Native	Common Blue Violet
Vitis riparia	FACW-	Native	Riverbank Grape
Zizia aurea	FAC+	Native	Golden Alexanders
zizia aurea	TACT	INALIVE	LOOIGEH VICYGHAELS

Table 2. Plants Observed in the Dry Mesic Uplands

Plant Species	W	WETNESS	NAT/ADV	COMMON NAME
Agrimonia gryposepala	2	FACU+	Native	Tall Agrimony
Alliaria petiolata	0	FAC	Adventive	Garlic Mustard
Allium tricoccum	3	FACU	Native	Wild Leek
Arisaema triphyllum	-2	FACW-	Native	Jack-In-The-Pulpit
Asclepias syriaca	5	UPL	Native	Common Milkweed
Aster lateriflorus	-2	FACW-	Native	Side-flowering Aster
Aster shortii	5	UPL	Native	Short's Aster
Bidens frondosa	-3	FACW	Native	Common Beggar's Ticks
Carya ovata	3	FACU	Native	Shagbark Hickory
Cinna arundinacea	-3	FACW	Native	Common Wood Reed
Circaea lutetiana canadensis	3	FACU	Native	Enchanter's Nightshade
Carex blanda	0	FAC	Native	Common Wood Sedge
Carex cephalophora	3	FACU	Native	Short-headed Bracted Sedge
Carex grayi	-4	FACW+	Native	Common Bur Sedge
Carex grisea	1	[FAC-]	Native	Wood Gray Sedge
Carex hirtifolia	5	UPL	Native	Hairy Wood Sedge
0 1 1 1 1		TIDI	N. C	Weak-stemmed Wood
Carex laxiculmis	5	UPL	Native	Sedge
Carex normalis	0	[FAC]	Native	Spreading Oval Sedge
Carex pensylvanica	5	UPL	Native	Common Oak Sedge
Carex projecta	-4	FACW+	Native	Loose-headed Oval Sedge
Carex rosea	5	UPL	Native	Curly-styled Wood Sedge
Carex woodii	5	[UPL]	Native	Wood'S Stiff Sedge
Epilobium coloratum	-5	OBL	Native	Cinnamon Willow Herb
Erechtites hieracifolia	3	FACU	Native	Fireweed
Festuca obtusa	2	FACU+	Native	Nodding Fescue
Fraxinus americana	3	FACU	Native	White Ash
Fraxinus nigra	-4	FACW+	Native	Black Ash
Fragaria virginiana	1	FAC-	Native	Wild Strawberry
Galium concinnum	5	[UPL]	Native	Shining Bedstraw
Geranium maculatum	5	[UPL]	Native	Wild Geranium
Geum canadense	0	FAC	Native	Wood Avens
Glyceria striata	-3	[FACW]	Native	Fowl Manna Grass
Hackelia virginiana	1	FAC-	Native	Stickseed
Impatiens capensis	-3	FACW	Native	Orange Jewelweed
Juncus tenuis	2	[FACU+]	Native	Path Rush
Leersia virginica	-3	FACW	Native	White Grass
Lonicera prolifera	5	UPL	Native	Yellow Honeysuckle
Ostrya virginiana	4	FACU-	Native	Hop Hornbeam
Oxalis stricta	5	UPL	Native	Common Wood Sorrel
Parthenocissus quinquefolia	1	FAC-	Native	Virginia Creeper
Pilea pumila	-3	FACW	Native	Clearweed
Polygonum virginianum	0	FAC	Native	Woodland Knotweed
Polygonum hydropiperoides	-5	OBL	Native	Mild Water Pepper
Potentilla simplex	4	FACU-	Native	Common Cinquefoil

Prunus serotina	3	FACU	Native	Wild Black Cherry
Quercus alba	0	FAC	Native	White Oak
Quercus rubra	3	FACU	Native	Red Oak
Ranunculus septentrionalis	-4	FACW+	Native	Swamp Buttercup
Rhamnus cathartica	3	FACU	Adventive	Common Buckthorn
Rhamnus frangula	-1	FAC+	Adventive	Glossy Buckthorn
Rhus radicans	-1	FAC+	Native	Poison Ivy
Rosa multiflora	3	FACU	Adventive	Multiflora Rose
Rubus occidentalis	5	UPL	Native	Black Raspberry
Smilacina racemosa	3	FACU	Native	Feathery False Solomon's Seal
Solidago altissima	3	FACU	Native	Tall Goldenrod
Solidago ulmifolia	5	UPL	Native	Elm-leaved Goldenrod
Taraxacum officinale	3	FACU	Adventive	Common Dandelion
Torilis japonica	5	UPL	Adventive	Japanese Hedge Parsley
Trillium grandiflorum	5	UPL	Native	Large-flowered Trillium
Ulmus rubra	0	FAC	Native	Slippery Elm
Viola sororia	1	FAC-	Native	Common Blue Violet
Vitis riparia	-2	FACW-	Native	Riverbank Grape

Table 3. Wildlife Species Observed in Wright Woods Forest Preserve

Wildlife Type	Common Name	WildlifeSpecies	LastOfDate
Amphibian			
	American Toad	Anaxyrus americanus	01-Jun-00
	Blue-spotted Salamander	Ambystoma laterale	01-Jun-00
	Boreal Chorus Frog	Pseudacris maculata	03-Apr-01
	Grey Treefrog Complex	Hyla versicolor-chrysoscelis	01-Jun-00
	Northern Leopard Frog	Lithobates pipiens	25-Apr-01
	Spring Peeper	Pseudacris crucifer	23-Oct-07
	Wood Frog	Lithobates sylvatica	05-Apr-97
Bird			
	American Crow	Corvus brachyrhynchos	11-Jul-97
	American Goldfinch	Carduelis tristis	11-Jul-97
	American Robin	Turdus migratorius	11-Jul-97
	American Woodcock	Scolopax minor	
	Black-capped Chickadee	Poecile atricapillus	11-Jul-97
	Blue Jay	Cyanocitta cristata	11-Jul-97
	Brown Creeper	Certhia americana	
	Brown-headed Cowbird	Molothrus ater	11-Jul-97
	Cedar Waxwing	Bombycilla cedrorum	11-Jul-97
	Common Grackle	Quiscalus quiscula	11-Jul-97
	Downy Woodpecker	Picoides pubescens	11-Jul-97
	Eastern Wood-Pewee	Contopus virens	11-Jul-97
	Gray Catbird	Dumetella carolinensis	11-Jul-97
	Great Crested Flycatcher	Myiarchus crinitus	11-Jul-97
	Hermit Thrush	Catharus guttatus	

	Harris Warr	Tuesdadatas and a	
	House Wren	Troglodytes aedon	
	Indigo Bunting	Passerina cyanea	11-Jul-97
	Killdeer	Charadrius vociferus	11-Jul-97
	Least Flycatcher	Empidonax minimus	11-Jul-97
	Mourning Dove	Zenaida macroura	11-Jul-97
	Northern Cardinal	Cardinalis cardinalis	11-Jul-97
	Northern Flicker	Colaptes auratus	11-Jul-97
	Northern Waterthrush	Seiurus noveboracensis	11-Jul-97
	Ovenbird	Seiurus aurocapillus	11-Jul-97
	Red-bellied Woodpecker	Melanerpes carolinus	11-Jul-97
	Red-eyed Vireo	Vireo olivaceus	11-Jul-97
	Rose-Breasted Grosbeak	Pheucticus Iudovicianus	11-Jul-97
	Rufous-sided Towhee, Eastern Towhee	Pipilo erythrophthalmus	11-Jul-97
	White-breasted Nuthatch	Sitta carolinensis	11-Jul-97
	Wood Duck	Aix sponsa	
	Wood Thrush	Hylocichla mustelina	11-Jul-97
Crayfish			
	Digger Crayfish	Fallicambarus fodiens	
Mammal			
	Eastern Cottontail	Sylvilagus floridanus	
	White-tailed Deer	Odocoileus virginianus	
Reptile			
	Brown Snake	Storeria dekayi	01-Jun-00
	Common Garter Snake	Thamnophis sirtalis	01-Jun-00
	Redbelly Snake	Storeria occipitomaculata	01-Jun-00

# APPENDIX A

SPECIES LISTS FOR SEED

	t Preserve																
Mitigation Plan - Native Seed Installs for Mitigation of Wetland Loss at B	ation		politan W	/ater		North	ern Fla	atwoods/Wood	led Wetlan	d Swales							
declamation District	ariao creek rotest reserte reser	ton Expansion Project by Metro	pontan r					Units, ~66 A	cres				odland Buffer			Total	-
pecies (Graminoids)	spp substitutions; DF/DH	Common Name	Status	С	seeds/oz	qty./:	lbs.	seeds/acre	subt oz.	otal lbs.		lbs.	seeds/ acre	subt oz.	otal lbs.	Nee oz.	eded
romus pubescens	Bromus purgans	Woodland Brome	FACU+	5	7,300			0	0.00	0.00		1.8	210,240	0.00	43.20	0.00	
alamagrostis canadensis arex blanda	DF	Blue Joint Grass COMMON WOOD SEDGE	OBL FAC	3	203,000 12,500	0.2		40,600	13.20	0.83	2		25,000	0.00 48.00	0.00 3.00	13.20 48.00	┢
arex brevior		Plains Oval Sedge	FACU	4	29,000			0	0.00	0.00	- 1		29,000	24.00	1.50	24.00	
arex buxbaumii arex cephalophora		Dark-Scaled Sedge Short-Headed Bracted Sed.	OBL FACU	9	14,500 32,000	3		43,500	198.00	12.38	0.9		28,800	0.00 21.60	0.00	198.00 21.60	
arex crus-corvi		Crowfoot Fox Sedge	OBL	10	13,100	3		39,300	198.00	12.38	0.9		0	0.00	0.00	198.00	
arex davisii		Awned Graceful Sedge	FAC+ FACU+	7	9,000	4		36,000	264.00	16.50	3		27,000	72.00	4.50	336.00	-
arex gracillima arex granularis		PURPLE-SHEATHED GRACE Pale Sedge	FACU+	10 4	102,000 15,800	0.3		30,600	19.80 0.00	0.00	0.3 2.1		30,600 33,180	7.20 50.40	0.45 3.15	27.00 50.40	۳
arex grayi			FACW+	7	1,200	5		6,000	330.00	20.63			0	0.00	0.00	330.00	
arex hirsutella arex jamesii		Hairy Green Sedge Grass Sedge	UPL	4	18,000 8,700			0	0.00	0.00	2		36,000 17,400	48.00 48.00	3.00	48.00 48.00	┈
Carex lacustris		Common Lake Sedge	OBL	6	29,000	2		58,000	132.00	8.25			0	0.00	0.00	132.00	
Carex Iupulina Carex molesta		Common Hop Sedge Field Oval Sedge	OBL FAC+	7	3,500 25,000	10 1.6		35,000 40,000	660.00 105.60	41.25 6.60			0	0.00	0.00	660.00 105.60	-
arex moiesta Carex muskingumensis		Field Oval Sedge		-2	81,300	0.6		48,780	39.60	2.48			0	0.00	0.00	39.60	
Carex normalis		Spreading Oval Sedge	FAC	5	25,000	2		50,000	132.00	8.25	1.6		40,000	38.40	2.40	170.40	
arex pellita arex pensylvanica	Carex languinosa	Broad-Leaved Wooly Sedg. Penn./Common Oak Sedge	OBL UPL	5	25,800 35,400	1		25,800	66.00	4.13 0.00	0.8		28,320	0.00 19.20	0.00	66.00 19.20	٠
arex projecta		Loose-heahed Oval Sedge	FACW+	4	134,500	0.3		40,350	19.80	1.24			0	0.00	0.00	19.80	
Carex radiata Carex rosea		Straight-Styled Wood Sedge Curly-Styled Wood Sedge	FAC- UPL	6	41,200 37,400	1		41,200	66.00	4.13 0.00	0.7		26,180	0.00	0.00	66.00 16.80	-
Carex sparganioides		LOOSE-HEADED BRACTED S	FAC	3	19,000			0	0.00	0.00	1.8		34,200	43.20	2.70	43.20	
Carex sprengelii		Long-Beaked Sede	FACU	9	10,000			0	0.00	0.00	2.5		25,000	60.00	3.75		
Carex squarrosa Carex stipata		Narrow-leaved Cattail Se. Common Fox Sedge	OBL	10 3	23,400 35,300	2		46,800 35,300	132.00 66.00	8.25 4.13			0	0.00	0.00	132.00 66.00	-
Carex tenera		Narrow-Leaved Oval Sedg.	FAC-	8	20,000			0	0.00	0.00	1.5		30,000	36.00	2.25	36.00	
Carex tribuloides		Awl-Fruited Oval Sedge	FACW+	3	119,400	0.4		47,760	26.40	1.65			0	0.00	0.00	26.40	1
Carex vulpinoidea Cinna arundinacea		Brown Fox Sedge Common Wood Reed	OBL FACW	5	117,300 56,700	0.4 1.5		46,920 85,050	26.40 99.00	1.65 6.19	2		113,400	48.00	3.00	26.40 147.00	
lymus canadensis		Canada Wild Rye	FAC-	4	5,000	8		40,000	528.00	33.00		5	400,000	0.00	120.00	528.00	
lymus villosus lymus virginicus		Silky Wild Rye Virginia Wild Rye	FACU FACW-	5	7,700 4,200		2	201,600	0.00	0.00		1 2	123,200 201,600	0.00	24.00 72.00	0.00	1
estuca obtusa		Nodding Fescue	FACU+	5	4,200 15,000		3	201,000	0.00	0.00		- 3	201,600	43.20	2.70	43.20	
ilyceria striata		Fowl Manna Grass	FACW	4	144,600	0.5		72,300	33.00	2.06	0.6		86,760	14.40	0.90	47.40	Г
Hystrix patula uncus tenuis		Bottlebrush Grass Path Rush	UPL FACU+	5	6,100 1,000,000			0	0.00	0.00	0.1	3	292,800 100,000	0.00 2.40	72.00 0.15	0.00 2.40	۲
uzula multiflora		Common Wood Rush	FACU	7				0	0.00	0.00	0.1		0	2.40	0.15	2.40	
phenopholis intermedia		Slender Wedge Grass	FAC	4	283,500	0.3		85,050	19.80	1.24	0.3		85,050	7.20	0.45	27.00	
					Graminoi			1,195,910				$\vdash$	2,050,730				
					Graminoio Gramin			27.45 6.01				-	47.08 15.49			-	
					Grainii								13/4)				
						North	ern Fla	atwoods/Wood		d Swales						Total	
						qty./:	acre	Units, ~66 A	cres subt	otal	Upl atv.	and Wo acre	odland Buffer	Units, ~24	Acres		l Am eded
pecies (Forbs)	spp substitutions; DF/DH	Common Name	Status	С	seeds/oz	oz.		seeds/ acre	oz.	lbs.		lbs.	seeds/ acre	oz.	lbs.	oz.	l
ctaea pachypoda		White Baneberry	UPL	7	3,000			0	0.00	0.00	1.2		3,600	28.80	1.80	28.80	
gastache nepetoides grimonia gryposepala		Yellow Giant Hyssop	FACU	5	92,300			0	0.00	0.00	0.7		64,610	16.80 12.00	1.05 0.75	16.80 12.00	-
dlium canadense		Wild Onion/Garlic	FACU	2	580			0	0.00	0.00	7		4,060	168.00	10.50	168.00	
dlium tricoccum	DF	Wild Leek	FACU	7	1,400			0	0.00	0.00	8		11,200	192.00	12.00	192.00	
unemone quinquefolia urisaema triphyllum	DF	Wood Anemone Jack-in-the-Pulpit	UPL FACW-	7	17,000			0	0.00	0.00	0.8		13,600 1,290	19.20 72.00	1.20 4.50	19.20 72.00	⊨
sarum canadense		Wild Ginger	UPL	7				0	0.00	0.00	1		0	24.00	1.50	24.00	T
Aster cordifolius	DF	Heart-Leaved Aster	UPL	7	135,600			0	0.00	0.00			61,020	10.80	0.68	10.80	
Aster drummondii	DF DF	Drummond's Aster	FACU FACW-	4	68,300 225,000	0.4		90,000	0.00 26.40	0.00	0.9		61,470	21.60	1.35 0.00	21.60	₩
Aster lateriflorus Aster sagittifolius	DF	Side-Flowering Aster Arrow-Leaved Aster	UPL	5	109,000	0.4		90,000	0.00	0.00	0.6		65,400	14.40	0.90	14.40	۲
Caltha palustris		Marsh Marigold	OBL	5	41,100	2		82,200	132.00	8.25			0	0.00	0.00	132.00	
Camassia scilloides		Wild Hyacinth Tall Bellflower	FAC+	6	6,200			0	0.00	0.00	3		18,600	72.00	4.50	72.00 24.00	4
Campanula americana Cephalanthus occidentalis			FAC														
			OBI.	5	452,500 8,600	0.5		4 300	0.00	2.06	- 1		452,500	24.00	1.50		+
Thelone glabra		Buttonbush Turtlehead	OBL	5	8,600 87,600	0.5		4,300 70,080	33.00 52.80	2.06 3.30	1		452,500 0 0	0.00	0.00	33.00 52.80	
Thelone glabra Cicuta maculata		Buttonbush Turtlehead Water Hemlock	OBL OBL	5 8 6	8,600 87,600 12,000				33.00 52.80 330.00	2.06 3.30 20.63	1		0 0	0.00 0.00 0.00	0.00 0.00 0.00	33.00 52.80 330.00	
Cicuta maculata Cryptotaenia canadensis		Buttonbush Turtlehead Water Hemlock Honewort	OBL OBL FAC	6	8,600 87,600 12,000 7,000			70,080	33.00 52.80 330.00 0.00	2.06 3.30 20.63 0.00	1		0 0 0 7,000	0.00 0.00 0.00 24.00	0.00 0.00 0.00 1.50	33.00 52.80 330.00 24.00	
Cicuta maculata Cryptotaenia canadensis Desmodium glutinosum		Buttonbush Turtlehead Water Hemlock	OBL OBL FAC UPL		8,600 87,600 12,000 7,000 840			70,080	33.00 52.80 330.00 0.00 0.00	2.06 3.30 20.63 0.00 0.00	1 5		0 0	0.00 0.00 0.00 24.00 120.00	0.00 0.00 0.00 1.50 7.50	33.00 52.80 330.00 24.00 120.00	
Cicuta maculata Cryptotaenia canadensis Desmodium glutinosum Dioscorea villosa Eupatorium purpureum	DF	Buttonbush Turtlehead Water Hemlock Honewort Pointed Tick Trefoil Wild Yam Purple Joe Pye Weed	OBL OBL FAC UPL FAC- UPL	6 2 5 7	8,600 87,600 12,000 7,000 840 6,100 50,600			70,080 60,000 0	33.00 52.80 330.00 0.00 0.00 396.00 0.00	2.06 3.30 20.63 0.00 0.00 24.75 0.00	1 5		0 0 7,000 4,200 0 60,720	0.00 0.00 0.00 24.00 120.00 0.00 28.80	0.00 0.00 0.00 1.50 7.50 0.00 1.80	33.00 52.80 330.00 24.00 120.00 396.00 28.80	
Cicuta maculata Tryptotaenia canadensis Desmodium glutinosum Dioscorea villosa iupatorium purpureum iupatorium rugosum	DF DF	Buttonbush Turtlehead Water Hemlock Honewort Pointed Tick Trefoil Wild Yam Purple Joe Pye Weed White Snakeroot	OBL OBL FAC UPL FAC- UPL UPL	6 2 5 7 7 4	8,600 87,600 12,000 7,000 840 6,100 50,600 122,300			70,080 60,000 0	33.00 52.80 330.00 0.00 0.00 396.00 0.00	2.06 3.30 20.63 0.00 0.00 24.75 0.00 0.00			0 0 7,000 4,200 0 60,720 36,690	0.00 0.00 24.00 120.00 0.00 28.80 7.20	0.00 0.00 1.50 7.50 0.00 1.80 0.45	33.00 52.80 330.00 24.00 120.00 396.00 28.80 7.20	
Cicuta maculata Cryptotaenia canadensis Desmodium glutinosum Dioscorea villosa		Buttonbush Turtlehead Water Hemlock Honewort Pointed Tick Trefoil Wild Yam Purple Joe Pye Weed	OBL OBL FAC UPL FAC- UPL UPL UPL	6 2 5 7	8,600 87,600 12,000 7,000 840 6,100 50,600 122,300 4,900			70,080 60,000 0	33.00 52.80 330.00 0.00 0.00 396.00 0.00 0.00	2.06 3.30 20.63 0.00 0.00 24.75 0.00 0.00			0 0 7,000 4,200 0 60,720	0.00 0.00 24.00 120.00 0.00 28.80 7.20 48.00	0.00 0.00 0.00 1.50 7.50 0.00 1.80 0.45 3.00	33.00 52.80 330.00 24.00 120.00 396.00 28.80 7.20 48.00	
Ticuta maculata Tryptotaenia canadensis Sesmodium glutinosum Joscorea villosa  upatorium purpureum Jupatorium rugosum Feranium maculatum Jelianthus divaricatus		Buttonbush Turtichead Water Hemlock Honewort Pointed Tick Trefoil Wild Yam Purple Joe Pye Weed White Snakeroot Wild Geranium Woodland Sunflower Pale-Leawed Sunflower	OBL OBL FAC UPL FAC- UPL UPL UPL UPL UPL UPL	6 2 5 7 7 4 4	8,600 87,600 12,000 7,000 840 6,100 50,600 122,300 4,900 4,800			70,080 60,000 0	33.00 52.80 330.00 0.00 0.00 396.00 0.00 0.00 0.00	2.06 3.30 20.63 0.00 0.00 24.75 0.00 0.00 0.00 0.00			0 0 7,000 4,200 0 60,720 36,690 9,800 0 13,200	0.00 0.00 24.00 120.00 0.00 28.80 7.20 48.00 0.00 72.00	0.00 0.00 1.50 7.50 0.00 1.80 0.45 3.00 0.00 4.50	33.00 52.80 330.00 24.00 120.00 396.00 28.80 7.20 48.00 72.00	
Sicuta maculata "Orpptotaenia canadensis besmodium glutinosum Joscoroca villosa upatorium purpurcum upatorium rugosum Jeranium maculatum Helianthus divaricatus Jelianthus strumosus Jeraceleum nasimum		Buttonbush Turtlehead Water Hemlock Honewort Pointed Tick Trefoil Wild Yam Purple Joe Pye Weed White Snakeroot Wild Genanium Woodland Sunflower Pale-Leawed Sunflower Cow Parsnip	OBL OBL FAC UPL FAC- UPL UPL UPL UPL UPL UPL UPL UPL	6 2 5 7 7 4 4 5 5 5	8,600 87,600 12,000 7,000 840 6,100 50,600 122,300 4,900 4,800 4,400 2,700			70,080 60,000 0	33.00 52.80 330.00 0.00 0.00 396.00 0.00 0.00 0.00 0.00	2.06 3.30 0.00 0.00 24.75 0.00 0.00 0.00 0.00 0.00			0 0 7,000 4,200 0 60,720 36,690 9,800	0.00 0.00 24.00 120.00 0.00 28.80 7.20 48.00 0.00 72.00 96.00	0.00 0.00 1.50 7.50 0.00 1.80 0.45 3.00 0.00 4.50 6.00	33.00 52.80 330.00 24.00 120.00 396.00 28.80 7.20 48.00 0.00 72.00 96.00	
Sicuta maculata Typottaenia canadensis besmodium glutinosum bioscocra villosa upatorium purpureum upatorium rugosum ieranium maculatum leilanthus divaricatus leilanthus strumosus leraneum maximum lykytophyllum virginianum		Buttonbush Turtichead Water Hemlock Honewort Pointed Tick Trefoil Wild Yam Pupple Joe Pye Weed White Snakeroot Wild Grannium Woodland Sunflower Pale-Leaved Sunflower Cow Parsnip Virginia Waterleaf	OBL OBL FAC UPL FAC- UPL UPL UPL UPL UPL UPL UPL UPL FAC	6 2 5 7 7 4 4	8,600 87,600 12,000 7,000 840 6,100 50,600 122,300 4,900 4,400 2,700 2,800		2	70,080 60,000 0 36,600 0 0 0 0 0 0	33.00 52.80 330.00 0.00 0.00 396.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00	2.06 3.30 0.00 0.00 24.75 0.00 0.00 0.00 0.00 0.00 0.00 0.00			0 0 7,000 4,200 0 60,720 36,690 9,800 0 13,200	0.00 0.00 24.00 120.00 0.00 28.80 7.20 48.00 0.00 72.00 96.00 0.00	0.00 0.00 1.50 7.50 0.00 1.80 0.45 3.00 0.00 4.50 6.00 0.00	33.00 52.80 330.00 24.00 120.00 396.00 28.80 7.20 48.00 0.00 72.00 96.00 0.00	
Cicuta maculata Dryptotaenia canadensis Sesmodium glutinosum Dioscorca xillosa Eupatorium purpureum Eupatorium rugosum Eranium maculatum Helianthus divaricatus Helianthus strumosus		Buttonbush Turtlehead Water Hemlock Honewort Pointed Tick Trefoil Wild Yam Purple Joe Pye Weed White Snakeroot Wild Genanium Woodland Sunflower Pale-Leawed Sunflower Cow Parsnip	OBL OBL FAC UPL FAC- UPL UPL UPL UPL UPL UPL UPL UPL	6 2 5 7 7 4 4 5 5 5	8,600 87,600 12,000 7,000 840 6,100 50,600 122,300 4,900 4,800 4,400 2,700		2	70,080 60,000 0	33.00 52.80 330.00 0.00 0.00 396.00 0.00 0.00 0.00 0.00	2.06 3.30 0.00 0.00 24.75 0.00 0.00 0.00 0.00 0.00			0 0 7,000 4,200 0 60,720 36,690 9,800 0 13,200	0.00 0.00 24.00 120.00 0.00 28.80 7.20 48.00 0.00 72.00 96.00	0.00 0.00 1.50 7.50 0.00 1.80 0.45 3.00 0.00 4.50 6.00	33.00 52.80 330.00 24.00 120.00 396.00 28.80 7.20 48.00 0.00 72.00 96.00	
icuta maculata '/pytotaenia canadenasi besmodium glutinosum //oscorea sillosa upatorium purpureum upatorium rugosum ienatium rugosum leinatium divaricatus leilanthus strumosus leracleum maximum tydorophyllum virginianum tis virginica shrevei opyrum biternatum illium michigamense		Buttonbush Turrichead Water Hemlock Honewort Pointed Tick Trefoil Wild Yam Purple Joe Pye Weed White Snakeroot Wild Geranium Woodland Sunflower Pale-Leaved Sunflower Cow Parsnip Virginia Waterleaf Blue Flag Pris False Rue Anemone Turk's Cap/Michigan Lily	OBL OBL FAC UPL FAC- UPL	6 2 5 7 7 4 4 5 5 5 5 5 5 5 5	8,600 87,600 12,000 7,000 840 6,100 50,600 122,300 4,900 4,800 2,700 2,800 1,100 7,100		2	70,080 60,000 0 36,600 0 0 0 0 0 0	33.00 52.80 330.00 0.00 396.00 0.00	2.06 3.30 0.00 0.00 24.75 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0			0 0 7,000 4,200 0 60,720 36,690 9,800 0 13,200	0.00 0.00 24.00 120.00 0.00 28.80 7.20 48.00 0.00 72.00 96.00 0.00 24.00 0.00	0.00 0.00 0.00 1.50 7.50 0.00 1.80 0.45 3.00 0.00 4.50 6.00 0.00 1.50 0.00	33.00 52.80 330.00 120.00 396.00 28.80 7.20 48.00 72.00 96.00 0.00 0.00 0.00 24.00 66.00	
Sicuta maculata Typotacania canadensis besmodium glutinosum Bioscorea sillosa upatorium purpurcum upatorium rugosum beranium maculatum lelianthas divaricatus lelianthas strumouss feras-leum maximum ykytorphyllum viganianum is virginica shrevei opyrum biternatum illium michiganense dithospermum latifolium		Buttonbush Turtichead Water Hemlock Honewort Pointed Tick Trefoil Wild Yam Pumple Joe Pye Weed White Snakeroot Wild Geranium Woodland Sunflower Pale-Leawed Sunflower Cow Parsinp Wrignia Waterleaf Blue Flag Iris False Ruc Anemone Turk's Cap'Michigan Lily American Gromwell	OBL OBL OBL FAC UPL FAC- UPL	6 2 5 7 7 4 4 5 5 5 5 5 5 8	8,600 87,600 7,000 840 6,100 50,600 122,300 4,800 4,800 2,700 11,000 11,000 7,100 1,300	6	2	70,080 60,000 0 0 36,600 0 0 0 0 0 0 0 0 0 0 0 0 0 0 7,100 0 0	33.00 52.80 330.00 0.	2.06 3.30 0.00 0.00 24.75 0.00 0.00 0.00 0.00 0.00 0.00 132.00 0.00 4.13			0 0 7,000 4,200 0 60,720 36,690 9,800 0 13,200	0.00 0.00 24.00 120.00 0.00 28.80 7.20 48.00 0.00 72.00 96.00 0.00 0.00 24.00 0.00 144.00	0.00 0.00 0.00 1.50 7.50 0.00 1.80 0.45 3.00 0.00 4.50 6.00 0.00	33.00 52.80 330.00 24.00 120.00 28.80 7.20 48.00 72.00 96.00 0.00 0.00 0.00 0.00 144.00	
icuta maculata 'ryptotaenia canadenais besmodium glutinosum hoscorea sillosa upatorium purpureum upatorium rugosum ieianthum divariatus leilanthus divaricatus leilanthus strumosus leracleum maximum jystorohyllum vigrinium is virginica shrevei oopvum hiernatum illium michiguaense idhospermum latifolium obelia cardinalis		Buttonbush Turrichead Water Hemlock Honewort Pointed Tick Trefoil Wild Yam Purple Joe Pye Weed White Snakeroot Wild Geranium Woodland Sunflower Pale-Leaved Sunflower Cow Parsnip Virginia Waterleaf Blue Flag Pris False Rue Anemone Turk's Cap/Michigan Lily	OBL OBL FAC UPL FAC- UPL	6 2 5 7 7 4 4 5 5 5 5 5 5 5 5	8,600 87,600 12,000 7,000 840 6,100 50,600 122,300 4,900 4,800 2,700 2,800 1,100 7,100		2	70,080 60,000 0 36,600 0 0 0 0 0 0 0 0 35,200	33.00 52.80 330.00 0.00 396.00 0.00	2.06 3.30 0.00 0.00 24.75 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0			0 0 7,000 4,200 0 60,720 36,690 9,800 0 13,200	0.00 0.00 24.00 120.00 0.00 28.80 7.20 48.00 0.00 72.00 96.00 0.00 24.00 0.00	0.00 0.00 0.00 1.50 7.50 0.00 1.80 0.45 3.00 0.00 4.50 6.00 0.00 1.50 0.00	33.00 52.80 330.00 120.00 396.00 28.80 7.20 48.00 72.00 96.00 0.00 0.00 0.00 24.00 66.00	
icuta maculata Typtotaenia candenais beamodium glutinosum Dioscorea villosa uputorium pupureum uputorium rugosum Fennium maculatum Jelianthus divaricatus Jelianthus divaricatus Jelianthus divaricatus Jelianthus strumosus Jera-leum maximum Jydyrobyllum visinianum Jis virginica shrevei Jooyyum bircantum Julium michiganense Julium michiganense Julium michiganense Julium diobelia carinlalis Jobelia infata Jobelia sinfata		Buttonbush Turtichead Water Hemlock Honewort Pointed Tick Trefoil Wild Yam Purple Joe Pye Weed White Snakeroot Wild Geranium Woodland Sunflower Pale-Leawed Sunflower Cow Parsnip Wrignia Waterleaf Blue Flag Iris False Rue Anemone Turk's Cap/Michigan Lily American Gromwell Cardinal Flower Indian Tobacco Great Blue Lobelia	OBL OBL FAC UPL FAC- UPL	6 2 5 7 7 4 4 4 5 5 5 5 5 5 5 7 7 4 4 4 7 7 7 8 8 8 8 8 8 8 8 8 8 8 8	8,600 87,600 12,000 7,000 840 6,100 50,600 4,900 4,800 2,700 11,000 11,100 11,000 477,800 497,500	0.8 5 6 1 0.2 0.2 0.2	2	70,080 60,000 0 36,600 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	33.00 52.80 30.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 1.00 0.00 0.00 1.0	2.06 3.30 20.63 0.00 0.00 0.00 0.00 0.00 0.00 0.00	0.3 2 3 4		0 0 7,000 4,200 0 60,720 36,690 9,800 0 13,200	0.00 0.00 24.00 120.00 28.80 7.20 48.00 0.00 72.00 96.00 0.00 24.00 0.00 144.00 0.00 0.00 0.00	0.00 0.00 1.50 7.50 0.00 1.50 0.00	33.00 52.80 330.00 24.000 396.00 27.20 48.00 0.00 0.00 0.00 0.00 0.00 144.00 13.20 13.20 13.20	
Cicta maculata Typotacnia canadensis besmodium glutinosum Boscocrea sillosa upatorium purpurcum upatorium rugosum ieranium maculatum lelianthas divaricatus lelianthas strumosus fera-leum maximum skytoptobylum wigninaum is stripnica shrevei opyrum biternatum illium michiganense dithospermum latifolium obelia cardinalis obelia inflata obelia inflata obelia inflata		Buttonbush Turtichead Water Hemlock Honewort Pointed Tick Trefoil Wild Yam Pumple Joe Pye Weed White Snakeroot Wild Geranium Woodland Sunflower Pale-Leawed Sunflower Cow Parsinp Wrignia Waterleaf Blue Flag Iris False Ruc Anemone Turk's Cap'Michigan Lily American Gromwell Cardinal Flower Indian Hower Indian Hokeco Great Blue Lobelia Common Water Horehound	OBL OBL FAC UPL UPL UPL UPL UPL UPL UPL UPL UPL FAC OBL UPL FAC+ UPL OBL FACW- FACW-	6 2 5 7 7 4 4 5 5 5 5 5 5 5 7 7 4 4 4 6 9 9 7 9 9 7 9 9 7 9 9 9 9 9 9 9 9 9 9	8,600 87,600 12,000 7,000 840 6,100 50,600 122,300 4,900 2,700 2,800 1,100 11,000 7,100 13,00 477,800 497,500 496,700 182,500	0.8 5	2	70,080 60,000 0 0 36,600 0 0 0 0 0 0 0 0 0 0 0 0 7,100 0 99,500	33.00 52.80 330.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 1.00 0.00 0.00 1.	2.06 3.30 0.00 0.00 0.00 0.00 0.00 0.00 0	0.3 2 3 4		0 0 7,000 4,200 0 60,720 36,690 9,800 0 13,200	0.00 0.00 0.00 24.00 120.00 28.80 7.20 48.00 0.00 72.00 96.00 0.00 24.00 0.00 144.00 0.00 0.00 0.00 0.00 0.00 0.00	0.00 0.00 0.00 1.50 7.50 0.00 1.80 0.45 3.00 0.00 4.50 6.00 0.00	33.00   52.80   24.00   224.00   7.20   48.00   7.20   96.00   24.00   0.00   0.00   24.00   13.20   13.20   13.20   26.40   2	
icuta maculata Typtotaenia canadensis besmodium glutinosum Dioscocrea villosa upatorium pupureum upatorium rugosum ienatum rugosum leinatinas divaricatus leilaathas krivaricatus leilaathas krivaricatus leilaathas strumosus leracleum maximum ykytophyllum visinianum is virginica shrevei opyrum biternatum ilitum michiganeme ilituo sermum latifolium obelia cardinalis obelia inflata obelia inflata obelia siphilitica yeopus americanus yeyopus mericanus yeyopus americanus		Buttonbush Turtichead Water Hemlock Honewort Florinted Tick Trefoil Wild Yam Purple Joe Pye Weed White Snakeroot Wild Geranium Woodland Sunflower Pale-Leawed Sunflower Cow Parsnip Virginia Waterleaf Blue Flag Iris False Roe Anemone Turk's Cap'Rhichigan Lily American Gromwell Cardinal Flower Indian Tobacco Great Blue Lobelia Common Water Horchoud Fringed Loosetrife	OBL OBL FAC UPL UPL UPL UPL UPL UPL UPL UPL UPL FAC OBL UPL FAC OBL FACV FACW FACW FACW FACW FACW FACW FACW	6 2 5 7 7 4 4 5 5 5 5 5 5 8 6 9 7 4 6 5	8,600 87,600 12,000 7,000 7,000 840 6,100 50,600 122,300 4,900 2,700 11,100 11,100 1,300 477,800 496,700 182,500 39,000	0.8 5 6 1 0.2 0.2 0.2	2	70,080 60,000 0 36,600 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	33.00 52.80 330.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 1.00 0.	2.06 3.30 0.00 0.00 0.00 0.00 0.00 0.00 0	0.3 2 3 4		0 0 0,7,000 4,200 0 0,60,720 36,699 9,800 0 0 13,200 0 0 11,200 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	0.00 0.00 24.00 120.00 120.00 7.20 48.00 0.00 72.00 96.00 0.00 24.00 0.00 0.00 0.00 0.00 0.00	0.00 0.00 1.50 7.50 0.00 1.80 0.45 3.00 0.00 4.50 6.00 0.00 1.50 0.00	33.000 52.80 330.000 24.000 120.000 396.000 72.000 72.000 0.000 0.000 0.000 144.000 13.200 13.200 13.200 13.200 13.200 13.200 13.200 13.200 13.200 13.200 13.200 13.200	
Cicta maculata Typtotacnia canadensis besmodium glutinosum Noscorea sillosa upatorium purpureum upatorium rugosum ieranium maculatum leitanthas strumosus leitanthas leit		Buttonbush Turtichead Water Hemlock Honewort Fointed Tick Trefoil Wild Yam Purple Joe Pye Weed White Snakeroot Wild Gernaium Woodland Sunflower Pale-Leaved Sunflower Cow Parsinp Wrignia Waterleaf Blue Flag Iris False Ruc Anemone Turk's Cap'Michigan Lily American Gromwell Cardinal Flower Indian Flower Indian Flowec Great Blue Lobelia Common Water Horehound Fringed Loosetrife Lussewort/Wood Betony	OBL OBL FAC UPL UPL UPL UPL UPL UPL UPL UPL UPL FAC OBL FAC+ OBL FACW+ OBL FACW+ OBL	6 2 5 7 7 4 4 5 5 5 5 5 5 5 7 7 4 4 4 6 9 9 7 9 9 7 9 9 7 9 9 9 9 9 9 9 9 9 9	8,600 87,600 12,000 7,000 7,000 840 6,100 50,600 122,300 4,900 2,700 1,100 1,300 1,300 477,800 497,500 39,000 34,500 40,000	0.8 5 6 1 0.2 0.2 0.2	2	70,080 60,000 0 0 36,600 0 0 0 0 0 0 0 0 0 0 0 0 7,100 0 99,500	33.00 52.80 330.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 1.00 0.00 0.00 1.	2.06 3.30 0.00 0.00 0.00 0.00 0.00 0.00 0	0.3 2 3 4 1 6		0 0 7,000 4,200 0 60,720 36,690 9,800 0 13,200	0.00 0.00 24.00 24.00 28.80 7.20 48.00 0.00 0.00 0.00 0.00 0.00 0.00 0.	0.00 0.00 0.00 1.50 7.50 0.00 1.80 0.45 3.00 0.00 4.50 6.00 0.00	33.000 52.80 330.000 24.000 120.000 396.000 72.000 72.000 0.000 0.000 0.000 144.000 13.200 13.200 13.200 13.200 13.200 13.200 13.200 13.200 13.200 13.200 13.200 13.200	
Cicta maculata Typtotacnia canadensis besmodium glutinosum Noscorea sillosa upatorium purpureum upatorium rugosum ieranium maculatum leitanthus strumosus leitanthus leitanthus leitanthus leitanthus lium michiganenes lium michiganen		Buttonbush Turtichead Water Hemlock Honewort Pointed Tick Trefoil Wild Yam Purple Joe Pye Weed White Snakeroot Wild Gernaium Woodland Sunflower Pale-Leawed Santlower Cow Parsnip Virginia Waterleaf Blue Flag Iris False Rue Anemone Turk's Cap Michigan Lily American Gromwell Cardinal Flower Indian Flower Indian Flowec Great Blue Lobelia Common Water Horchound Fringed Loosetrife Lousewort/Wood Betony Fen Betony Fonglove Beard Tongue	OBL OBL OBL FAC UPL FAC- UPL UPL UPL UPL UPL UPL UPL FAC OBL UPL FAC+ UPL OBL FACU- FACW+ OBL FACW+ OBL FACW+ OBL FACW+	6 2 5 7 7 4 4 4 5 5 5 5 5 5 8 6 9 7 4 6 5 4 6 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9	8,600 12,000 7,000 7,000 8,404 6,100 122,300 4,900 4,800 1,100 1,100 11,000 11,000 477,800 497,500 495,500 34,500 40,000 31,500	0.8 5 6 1 0.2 0.2 0.2	2	70,080 60,000 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	33.00 52.80 330.00 0.00 0.00 0.00 0.00 0.00 0.00	2.06 3.30 0.00 0.00 0.00 0.00 0.00 0.00 0	0.3 2 3 4 1 6		0 0 0,7,000 4,200 0 0,60,720 36,699 9,800 0 0 13,200 0 0 11,200 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	0.00 0.00 0.00 24.00 120.00 0.00 0.00 0.00 0.00 0.00 0.00	0.00 0.00 0.00 0.00 1.50 7.50 0.45 3.00 0.00	33.000 32.800 24.000 24.000 28.800 0.000 7.200 96.000 96.000 24.000 24.000 13.200 13.200 7.200 13.200 7.200 13.200 7.2	
icuta maculata yytotaenia canadensis esmodium glutinosum koacorea villora upatorium prepurcum quotorium prepurcum quotorium prepurcum elianthus divaricutus elianthus divaricutus elianthus vitumosus eracleum maximum yytotophyllum viginianum is virginica shrevei opyrum biternatum ilium michiganense ilium michiganense ilium michiganense obelia cardinalis obelia cardinalis obelia siphilitica ycoppa samericanus ysimachia ciliuta edicularis canadensis edicularis lanceolata enstemon digitalis enstemon digitalis enstemon digitalis enstemon digitalis		Buttonbush Turtichead Water Hemlock Honewort Pointed Tick Trefoil Wild Yam Purple Joe Pye Weed White Snakeroot Wild Geranium Woodland Sunflower Pael-Leaved Sunflower Pael-Leaved Sunflower False Rus Anemone Turk's Cap'Michigan Lily American Gromwell Cardnal Flower Indian Tobacco Great Blue Lobelia Common Water Horehound Fringed Loosettrife Lousewort/Wood Betony Fonglowe Beard Tongue	OBL OBL FAC UPL UPL UPL UPL UPL UPL FAC OBL UPL FAC+ UPL FAC OBL FACW+ OBL FACW+ OBL FACCU- OBL	6 2 5 7 7 4 4 4 5 5 5 5 5 5 5 7 7 4 4 6 6 9 9 7 4 6 6 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9	8,600 87,600 12,000 7,000 8,404 6,100 122,300 122,300 4,900 2,800 1,1000 11,000 477,800 497,500 39,000 39,000 113,000 113,000 113,000 113,000 113,000 113,000	0.8 5 6 1 0.2 0.2 0.2	2	70,080 60,000 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	33.00 52.80 330.00 0.00 396.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 13.20 13.20 26.40 132.00 0.00 132.00 132.00	2.06 3.30 0.00 0.00 0.00 0.00 0.00 0.00 0	0.3 2 3 4 1 6		0 0 0 7,000 4,200 0 0 0 36,690 0 0 11,200 0 0 0 11,000 0 0 0 0 0 0 0 0 0 0 0 0	0.00 0.00 24.00 120.00 0.00 28.80 7.20 48.00 96.00 0.00 24.00 0.00 0.00 144.00 0.0	0.00 0.00 0.00 1.50 7.50 0.00 1.80 0.45 3.00 0.00 0.00 0.00 1.50 0.00	33.000 52.80	
icuta maculata yyptotaenia canadensis esamodium glutinosum hotocorea villosa upatorium purpureum upatorium rugosum eranium maculatum eliandhus daviatum eliandhus el		Buttonbush Turtlehead Water Hemlock Hone wort Pointed Tick Trefoil Wild Yam Purple Joe Pye Weed White Snakeroot Wild Ceramiun Woodland Sunflower Pale-Leaved Sanflower Pale-Leaved Sanflower Pale-Leaved Sanflower Pale-Leaved Sanflower Pale-Leaved Sanflower Cow Parsinjo Virginia Waterleaf Blue Flag Iris False Rue Amenone Turk's Cap-Michigan Lily American Gromwell Cardinal Flower Indian Tobacco Great Blue Lobelia Common Water Horebound Fringed Loosetrife Lousewort/Wood Betony Fen Betony Foxglow Beard Tongue Ditch Stonecrop Blue/Woodland Phlox	OBL OBL OBL FAC UPL FAC- UPL UPL UPL UPL UPL UPL UPL FAC OBL UPL FAC+ UPL OBL FACU- FACW+ OBL FACW+ OBL FACW+ OBL FACW+	6 2 5 7 7 4 4 4 5 5 5 5 5 5 8 6 9 7 4 6 5 4 6 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9	8,600 12,000 7,000 7,000 8,404 6,100 122,300 4,900 4,800 1,100 1,100 11,000 11,000 477,800 497,500 495,500 34,500 40,000 31,500	0.8 5 6 1 0.2 0.2 0.2	2	70,080 60,000 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	33.00 52.80 330.00 0.00 0.00 0.00 0.00 0.00 0.00	2.06 3.30 0.00 0.00 0.00 0.00 0.00 0.00 0	0.3 2 3 4 1 1 6 0.3 0.5		0 0 0 7,000 4,200 0 0 0 0 0 7,000 0 0 0 0 0 0 0 0 0 0 0	0.00 0.00 0.00 24.00 120.00 0.00 0.00 0.00 0.00 0.00 0.00	0.00 0.00 0.00 0.00 1.50 7.50 0.45 3.00 0.00	33.000 32.800 24.000 24.000 28.800 0.000 7.200 96.000 96.000 24.000 24.000 13.200 13.200 7.200 13.200 7.200 13.200 7.2	
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Cicta maculata 'pytotaenia canadensis besmodium glutinosum bloscorea sillosa inpatorium purpureum apatorium rugosum benarium purpureum apatorium rugosum beranium maculatum leilanthus strumosus leilanthus strumosus leilanthus strumosus leilanthus strumosus leilanthus strumosus leilanthus strumosus leilanthus purpureum julium michiganene ililom michiganene ililom michiganene ililos permum latifolium obelia sirfilati obelia inflata obelia sirfilati cobelia inflata edecularis canadensis edecularis canadensis edecularis canadensis edecularis sanadensis edecularis sanadensis edecularis sanadensis edecularis sanadensis hyma leptostachya hyma		Buttonbush Turtlehead Water Hemlock Hone wort Pointed Tick Trefoil Wild Yam Purple Joe Pye Weed Wild Yam Purple Joe Pye Weed Wild Gernium Woodland Sunflower Coop Parsnig Virginia Waterleaf Blue Flag Iris False Rue Anemone Turk's Cap Michigan Lily American Gromwell Cardinal Flower Indian Hobace Great Blue Lobelia Common Water Horehound Pringed Loosetrife Lousewort.Wood Betony Fen Betony Fooglove Beard Tongue Ditch Stonectop Blue/Woodland Phinx Lopseed Obedient Plant Woodland Knotweed Lion's Foot/White Lettuce Early Buttercup Illinois Rose Wild Golden Glow Sweet Black-Eyed Susan Brown Eyed Susan	OBL FAC UPL UPL UPL UPL UPL UPL UPL UPL UPL OBL FAC FAC OBL FAC FAC OBL FAC	6 2 5 7 7 4 4 4 5 5 5 5 5 5 5 5 7 4 6 6 9 9 4 4 5 5 4 6 6 6 7 7 7 4 6 6 6 7 7 7 8 7 8 7 8 7 8 7 8 7 8 7 8 7	8,600 87,600 12,000 12,000 840 6,100 50,600 122,300 4,900 4,800 7,100 11,000 7,100 11,000 11,000 497,500 39,000 34,500 40,000 113,900 12,700 13,800 10,000 13,800 13,800 13,800 13,800 13,800 13,800 13,800 13,800 13,800 13,800 14,800 15,800 16,800 16,800 18,800 16,800 1	0.8 5 6 1 1 0.2 0.2 0.2 0.4 2 0.2 4 4 5 5	2	70.880 60.000 0 0 36.600 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	33.00.00 0.	2.06.20 3.30.00 20.63.30 24.75.20 24.75.20 24.75.20 24.75.20 24.75.20 24.75.20 24.75.20 24.75.20 24.75.20 24.75.20 24.75.20 25.75.20 26.75	0.3 3 4 1 1 6 6 0.3 0.5 0.4 1.25 1.5 1.4 2 2 1.6 2 2 0.4		0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	0.000 0.000	0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.0	33.00.01 32.80.01 24.00.01 28.80.01 28.80.01 48.00.01 48.00.01 13.20.	
Icuta maculata yyptotaenia canadensis esmodium glutinosum hotocorea villousa upatorium upurpureum upatorium rugosum eranium maculatum leilanthus dvarium leilanthus strumosus eranium maculatum leilanthus strumosus eranium maculatum leilanthus strumosus eranium maculatum leilanthus strumosus eranium mideralum jydrophyllum virginianum jydrophyllum virginianum litiam michiganene itibospermum latifolium obelia arifiata obelia arifiata obelia arifiata obelia arifiata deiculari scanadensis ediculari sianetensis antima meranthus albos disaricata autheckia suktomentosa autheckia suktomentosa autheckia suktomentosa autheckia riloha autirapa pensylvanica crophularia marilandica cutellaria laterifora mila-iria racemosa olidago platiciaroni baliciarun arcemosa olidago platiciaroni baliciarun arcemosa	DF	Buttonbush Turtlehead Water Hemlock Hone wort Pointed Tick Trefoil Wild Yam Purple Joe Pye Weed Wild Yam Purple Joe Pye Weed Wild Gernium Woodland Sunflower Coop Paravin Group Faravin Virginia Waterleaf Blue Flag Iris False Rue Amemone Turk's Cap Michigan Lily American Gromwell Cardinal Flower Indian Hobect Great Blue Lobelia Common Water Horehound Pringed Loosetrife Lousewort.Wood Betony Fen Betony Fonglone Beard Tongue Ditch Stonectory Holley Growth Weed Lion's Food Water Lion's Food Water Hillion's Rook Wild Golden Glow Wild Golden Glow Wild Golden Glow Wild Golden Glow Sweet Black-Eyed Susan Brown Eyed Susa	OBL. FAC UPL. UPL. UPL. UPL. UPL. UPL. UPL. UPL.	6 2 5 7 7 4 4 4 5 5 5 5 5 5 5 5 5 5 7 4 6 6 9 9 4 6 6 7 7 7 8 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9	8,600 87,600 12,000 12,000 840 6,100 50,600 122,300 4,900 4,800 2,700 2,800 11,000 11,000 7,100 11,000 477,800 496,700 182,500 40,000 13,100 13,300 4,300 3,500 13,300 3,500 13,300 33,400 33,500 13,300 338,400 338,400 338,400 338,400 338,400 388,800 181,700 65,5	0.8 5 6 1 1 0.2 0.2 0.2 0.4 2 0.2 4 4 5 5	2	70.880 60.000 0 0 36.600 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	33.00.00 9.20.00 9.00.00 9.	2.06.20 3.30.00 20.63.30 20.63.30 24.75.20 0.00 0.00 0.00 0.00 0.00 0.00 0.00	0.3 2 3 4 1 6 0.5 0.5 1.5 1.4 2 1.6 3.2 1.6 2 0.4 8 0.4 0.3		0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	0.000 0.000	0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.0	33.00.01 32.80.01 32.80.01 396.00.01 396	
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Icuta maculata Typtotaenia canadensis esmodium glutinosum Honocorea villous Honocorea villous Honocorea villous Honocorea villous Honocorea villous Honocorea Honocore	DF	Buttonbush Turtlehead Water Hemlock Hone wort Pointed Tick Trefoil Wild Yam Purple Joe Pye Weed Wild Yam Purple Joe Pye Weed Wild Sam Woodland Sunflower Coop Parsnig Verginin Waterleaf Blue Flag Iris False Rue Anemone Turk's Cap Michigan Lily American Gromwell Cardinal Flower Indian Hobacc Great Blue Lobelia Common Water Horehound Pringed Loosetrife Lousewort Wood Betony Fen Betony Fooglove Beard Tongue Ditch Stonectop Blue/Woodland Phiox Lopseed Doedent Plant Woodland Knotweed Lion's Foot/White Lettuce Early Buttercup Illinois Rose Wild Golden Glow Sweet Black-Eyed Susan Brown Eyed Susan Brown	OBL FAC UPL UPL UPL UPL UPL FAC UPL UPL FAC OBL FAC UPL FAC OBL FAC OBL FAC OBL FAC UPL FAC UPL OBL FAC UPL FAC UPL FAC FAC UPL FAC FAC FAC UPL FAC FAC FAC FAC FAC FAC FAC UPL FAC FAC FAC FAC FAC UPL FAC FAC FAC FAC FAC UPL FAC FAC FAC UPL FAC FAC FAC UPL FAC FAC UPL FAC FAC FAC UPL FAC FAC UPL FAC FAC FAC UPL FAC FAC FAC FAC UPL FAC FAC FAC FAC FAC UPL FAC FAC FAC FAC FAC UPL FAC FAC FAC FAC FAC FAC UPL FAC	6 2 5 7 7 4 4 4 5 5 5 5 5 5 5 5 5 5 7 4 6 6 9 9 4 6 6 7 7 7 8 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9	8,600 87,600 12,000 12,000 840 6,100 50,600 122,300 4,900 4,800 1,000 11,000 11,000 11,000 477,800 497,500 39,000 31,100 113,900 121,700 13,500 10,000 13,100 13,800 35,500 13,800 38,900 33,400 38,900 33,400 38,900 181,700 65,000 181,700 65,000 181,700 65,000 13,100 65,000 13,100 65,000 13,100 65,000 13,100 65,000 13,100 65,000 13,100 65,000 13,100 65,000 13,100 65,000 13,100 7,300 13,100 7,300	0.8 5 6 6 0.2 0.2 0.2 0.4 2 0.2 0.4 4 1.3	2	70,880 60,000 0 0 36,600 0 0 0 0 0 0 0 0 0 0 0 0 0 35,200 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	\$3,000 (0.00) \$30,000 (0.00) \$40,000	2.0.6.2.0.0.0.0.0.0.0.0.0.0.0.0.0.0.0.0.	0.3 2 3 4 1 6 0.5 0.5 1.5 1.4 2 1.6 3.2 1.6 2 0.4 8 0.4 0.3		0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	0.000 0.000	0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.0	33.00.01 32.80.01 28.80.02 28.80.02 48.00.	
Icuta maculata Typtotaenia canadensis esmodium glutinosum Honocorea villous Honocorea villous Honocorea villous Honocorea villous Honocorea villous Honocorea Honocore	DF	Buttonbush Turtichead Water Hemlock Honewort Florited Tick Trefoil Wild Yam Purple Joe Pye Weed White Snakeroot Wild Gernaium Woodland Sunflower Pale-Leawed Santlower Florited Tick Trefoil World Gernaium Woodland Sunflower Pale-Leawed Santlower Cow Parsinp Virginia Waterleaf Blue Flag Iris False Rue Anemone Turk's Cap'Michigan Lily American Gromwell Cardinal Flower Indian Flower Indian Flower Indian Flower Florited Lousewort/Wood Betony Fen Betony Foxglove Beard Tongue Ditch Stonecrop Blue/Woodland Phlox Lopseed Obed-dent Plant Woodland Knotweed Lion's Foot/White Lettuce Early Buttercup Illinois Rose Wild Golden Glow Sweet Black-Eyed Susan Swamp Saxifrage Late Figwort Mad-Dog Skuklicap Feather False Sokomori Seal Taja-Zug Goldenrod Elm-Leawed Goldenrod Furple Meadow Rue Early Meadow Rue	OBL. FAC UPL. UPL. UPL. UPL. UPL. UPL. UPL. UPL.	6 2 5 7 7 4 4 4 5 5 5 5 5 5 5 5 5 5 7 4 6 6 9 9 4 6 6 7 7 7 8 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9	8,600 87,600 12,000 12,000 12,000 840 6,100 50,600 122,300 4,900 1,900 1,900 1,100 1,100 1,100 1,300 477,500 496,700 182,500 13,900 1,217,000 1,21	0.8 5 5 6 6 11 1 0.2 0.2 0.2 0.2 0.4 2 2 0.2 0.4 4 1.3 1.3 0.4 1.3 1.3 1.3 1.3 1.3 1.3 1.3 1.3 1.3 1.3	2	70.880 60.000 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	330,000 396	2.06.00	0.3 2 3 4 1 6 0.5 0.5 1.5 1.4 2 1.6 3.2 1.6 2 0.4 8 0.4 0.3		0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	0.000 0.000	0.00 0.00 1.80 0.00 0.00 0.00 0.00 0.00	330,000 a 30,000 a 30	
Icuta maculata Typtotaenia canadensis esmodium glutinosum Honocorea villous Honocorea villous Honocorea villous Honocorea villous Honocorea villous Honocorea Honocore	DF	Buttonbush Turtlehead Water Hemlock Hone wort Pointed Tick Trefoil Wild Yam Purple Joe Pye Weed Wild Yam Purple Joe Pye Weed Wild Sam Woodland Sunflower Coop Parsnig Verginin Waterleaf Blue Flag Iris False Rue Anemone Turk's Cap Michigan Lily American Gromwell Cardinal Flower Indian Hobacc Great Blue Lobelia Common Water Horehound Pringed Loosetrife Lousewort Wood Betony Fen Betony Fooglove Beard Tongue Ditch Stonectop Blue/Woodland Phiox Lopseed Doedent Plant Woodland Knotweed Lion's Foot/White Lettuce Early Buttercup Illinois Rose Wild Golden Glow Sweet Black-Eyed Susan Brown Eyed Susan Brown	OBL FAC UPL UPL UPL UPL UPL FAC UPL UPL FAC OBL FAC UPL FAC OBL FAC OBL FAC OBL FAC UPL FAC UPL OBL FAC UPL FAC UPL FAC FAC UPL FAC FAC FAC UPL FAC FAC FAC FAC FAC FAC FAC UPL FAC FAC FAC FAC FAC UPL FAC FAC FAC FAC FAC UPL FAC FAC FAC UPL FAC FAC FAC UPL FAC FAC UPL FAC FAC FAC UPL FAC FAC UPL FAC FAC FAC UPL FAC FAC FAC FAC UPL FAC FAC FAC FAC FAC UPL FAC FAC FAC FAC FAC UPL FAC FAC FAC FAC FAC FAC UPL FAC	6 2 5 7 7 4 4 4 5 5 5 5 5 5 5 5 5 5 7 4 6 6 9 9 4 6 6 7 7 7 8 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9	8,600 87,600 12,000 12,000 12,000 840 6,100 50,600 122,300 4,900 6,100 1,100 1,100 1,100 1,100 477,500 496,700 11,000 13,	0.8	sq. ft.:	70.880 60.000 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	330,000 300,000 000	2.0.6.2.0.0.0.0.0.0.0.0.0.0.0.0.0.0.0.0.	0.3 2 3 4 1 6 0.5 0.5 1.5 1.4 2 1.6 3.2 1.6 2 0.4 8 0.4 0.3		0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	0.000 0.000	0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.0	33.00.01 32.80.01 28.80.02 28.80.02 48.00.	
Icuta maculata Typtotaenia canadensis esmodium glutinosum Honocorea villous Honocorea villous Honocorea villous Honocorea villous Honocorea villous Honocorea Honocore	DF	Buttonbush Turtlehead Water Hemlock Hone wort Pointed Tick Trefoil Wild Yam Purple Joe Pye Weed Wild Yam Purple Joe Pye Weed Wild Sam Woodland Sunflower Coop Parsnig Verginin Waterleaf Blue Flag Iris False Rue Anemone Turk's Cap Michigan Lily American Gromwell Cardinal Flower Indian Hobacc Great Blue Lobelia Common Water Horehound Pringed Loosetrife Lousewort Wood Betony Fen Betony Fooglove Beard Tongue Ditch Stonectop Blue/Woodland Phiox Lopseed Doedent Plant Woodland Knotweed Lion's Foot/White Lettuce Early Buttercup Illinois Rose Wild Golden Glow Sweet Black-Eyed Susan Brown Eyed Susan Brown	OBL FAC UPL UPL UPL UPL UPL FAC UPL UPL FAC OBL FAC UPL FAC OBL FAC OBL FAC OBL FAC UPL FAC UPL OBL FAC UPL FAC UPL FAC FAC UPL FAC FAC FAC UPL FAC FAC FAC FAC FAC FAC FAC UPL FAC FAC FAC FAC FAC UPL FAC FAC FAC FAC FAC UPL FAC FAC FAC UPL FAC FAC FAC UPL FAC FAC UPL FAC FAC FAC UPL FAC FAC UPL FAC FAC FAC UPL FAC FAC FAC FAC UPL FAC FAC FAC FAC FAC UPL FAC FAC FAC FAC FAC UPL FAC FAC FAC FAC FAC FAC UPL FAC	6 2 5 7 7 4 4 4 5 5 5 5 5 5 5 5 5 5 7 4 6 6 9 9 4 6 6 7 7 7 8 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9	8,600 87,600 12,000 12,000 12,000 840 6,100 50,600 122,300 4,900 6,100 1,100 1,100 1,100 1,100 477,500 496,700 11,000 13,	0.8 5 5 6 6 6 11 1 0.2 0.2 0.2 0.2 0.4 2 0.2 0.4 1.3 0.4 1.3 0.5 0.4 1.3 0.5 0.5 0.5 0.5 0.5 0.5 0.5 0.5 0.5 0.5	sq. ft.:	70,880 60,000 0 0 36,600 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	330,000 300,000 000	2.06.00	0.3 2 3 4 1 6 0.5 0.5 1.5 1.4 2 1.6 3.2 1.6 2 0.4 8 0.4 0.3		0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	0.000 0.000	0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.0	33.00.01 32.80.01 28.80.02 28.80.02 48.00.	
icuta maculata yytotaenia canadensis esamodium glutinosum lokoccrea sillona upatorium purpurcum upatorium nyegosum eranium maculatum elianthas druvicatus elianthas druvicatus elianthas druvicatus elianthas strumosus eracleum maximum dyotophylum viginianum is virginia shrevei opyrum bitematum ilium michiganense ilium michiganense bitospermum laifolium obelia cardinalis obelia siphilitica yoopus americanus ysimachia ciliata edicularis canadensis edicularis anadensis edicularis lanceolata enstemon digitalis enthorum sedoides lubos divuricata hyoma leptostachya hyosotegia virginianum eranithes alba amarculus fasacicularis osa setigera udubec kia lainiata udubec kia iniata udubec kia siniata udubec kia iniata udubec kia siniata udubec kia ricinitan udubec in zerophularia mari ladica curellaria lateriflora miliacia raceromosa	DF	Buttonbush Turtlehead Water Hemlock Hone wort Pointed Tick Trefoil Wild Yam Purple Joe Pye Weed Wild Yam Purple Joe Pye Weed Wild Sam Woodland Sunflower Coop Parsnig Verginin Waterleaf Blue Flag Iris False Rue Anemone Turk's Cap Michigan Lily American Gromwell Cardinal Flower Indian Hobacc Great Blue Lobelia Common Water Horehound Pringed Loosetrife Lousewort Wood Betony Fen Betony Fooglove Beard Tongue Ditch Stonectop Blue/Woodland Phiox Lopseed Doedent Plant Woodland Knotweed Lion's Foot/White Lettuce Early Buttercup Illinois Rose Wild Golden Glow Sweet Black-Eyed Susan Brown Eyed Susan Brown	OBL FAC UPL UPL UPL UPL UPL FAC UPL UPL FAC OBL FAC UPL FAC OBL FAC OBL FAC OBL FAC UPL FAC UPL OBL FAC UPL FAC UPL FAC FAC UPL FAC FAC FAC UPL FAC FAC FAC FAC FAC FAC FAC UPL FAC FAC FAC FAC FAC UPL FAC FAC FAC FAC FAC UPL FAC FAC FAC UPL FAC FAC FAC UPL FAC FAC UPL FAC FAC FAC UPL FAC FAC UPL FAC FAC FAC UPL FAC FAC FAC FAC UPL FAC FAC FAC FAC FAC UPL FAC FAC FAC FAC FAC UPL FAC FAC FAC FAC FAC FAC UPL FAC	6 2 5 7 7 4 4 4 5 5 5 5 5 5 5 5 5 5 7 4 6 6 9 9 4 6 6 7 7 7 8 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9	8,600 87,600 12,000 12,000 12,000 840 6,100 50,600 122,300 4,900 6,100 1,100 1,100 1,100 1,100 477,500 496,700 11,000 13,	0.8	sq. ft.:	70.880 60.000 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	330,000 300,000 000	2.06.00	0.3 2 3 4 1 6 0.5 0.5 1.5 1.4 2 1.6 3.2 1.6 2 0.4 8 0.4 0.3		0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	0.000 0.000	0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.0	33.00.01 32.80.01 28.80.02 28.80.02 48.00.	
icuta maculata yyptotaenia candensis esmodium glutinosum iosocorea villoua upatorium uprupureum upatorium rugosum eranium maculatum elianthus divarium elianthus strumosus eranium maculatum elianthus strumosus eranium maculatum elianthus strumosus eranium michitum ydrophyllum virginianum sis virginianum is virginianum is virginianum elitum michigamene ithospermum latifolium obelia cardinalis obelia inflata obelia siphilitica yeoppa americanus yeoismachia ciliata edicularia lanceolata essentenoni digitata edicularia canadenis edicularia lanceolata essentenoni digitata enthorum seeboleks aloyooman wirginianum renanthes alba aumeulus fasecicularis oas a setigera udbeckia istoomentosa udbeckia riioba aufirapa nensylvanica rophularia mari landica cutellaria laterifora milacina racemosa oliolago flexiculisi olidago umirfolia hallictrum dasycarpum hallictrum doicum riosteum auraniacum	DF	Buttonbush Turtlehead Water Hemlock Hone wort Pointed Tick Trefoil Wild Yam Purple Joe Pye Weed Wild Yam Purple Joe Pye Weed Wild Sam Woodland Sunflower Coop Parsnig Verginin Waterleaf Blue Flag Iris False Rue Anemone Turk's Cap Michigan Lily American Gromwell Cardinal Flower Indian Hobacc Great Blue Lobelia Common Water Horehound Pringed Loosetrife Lousewort Wood Betony Fen Betony Fooglove Beard Tongue Ditch Stonectop Blue/Woodland Phiox Lopseed Doedent Plant Woodland Knotweed Lion's Foot/White Lettuce Early Buttercup Illinois Rose Wild Golden Glow Sweet Black-Eyed Susan Brown Eyed Susan Brown	OBL FAC UPL UPL UPL UPL UPL FAC UPL UPL FAC OBL FAC UPL FAC OBL FAC OBL FAC OBL FAC UPL FAC UPL OBL FAC UPL FAC UPL FAC FAC UPL FAC FAC FAC UPL FAC FAC FAC FAC FAC FAC FAC UPL FAC FAC FAC FAC FAC UPL FAC FAC FAC FAC FAC UPL FAC FAC FAC UPL FAC FAC FAC UPL FAC FAC UPL FAC FAC FAC UPL FAC FAC UPL FAC FAC FAC UPL FAC FAC FAC FAC UPL FAC FAC FAC FAC FAC UPL FAC FAC FAC FAC FAC UPL FAC FAC FAC FAC FAC FAC UPL FAC	6 2 5 7 7 4 4 4 5 5 5 5 5 5 5 5 5 5 7 4 6 6 9 9 4 6 6 7 7 7 8 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9	8,600 87,600 12,000 12,000 840 6,100 50,600 122,300 4,900 4,800 4,800 1,100 1,	0.8	sq. ft.: /acre:	70.880 60.000 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	33000 32000 0000	2.06.00	0.3 2 3 4 1 6 0.5 0.5 1.5 1.4 2 1.6 3.2 1.6 2 0.4 8 0.4 0.3		0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	0.000 0.000	0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.0	33.00.01 32.80.01 28.80.02 28.80.02 48.00.	