

**CONSERVATION PLAN
FOR THE AMERICAN BROOK LAMPREY**
(Application for an Incidental Take Authorization)
Per 520 ILCS 10/5.5 and 17 Ill. Adm. Code 1080

DATE: October 11, 2017 (FINAL)

PROJECT APPLICANT: Mr. Ernest Varga, Project Manager
McHenry County Division of Transportation
16111 Nelson Road
Woodstock, Illinois 60098

PROJECT NAME: Deerpass Road over Kishwaukee River and Kishwaukee
River North Channel – Bridge Replacement
LRC-2011-00596

COUNTY: McHenry

AREA OF IMPACT: Kishwaukee River at Deerpass Road

Incidental taking of endangered and threatened species shall be authorized by the Illinois Department of Natural Resources (IDNR) only if an applicant submits a conservation plan to the Department that satisfies all the following criteria:

1. Description of the impact likely to result in the proposed taking

A) Identification of an area to be affected by the proposed action

Two Deerpass Road bridges span the Kishwaukee River and an associated overflow waterway. The existing bridges are located 0.7 miles north of IL Route 176 (Telegraph Street) near the city of Marengo in Section 25, Range 5E, Township 44N, and Section 19, Range 6E, Township 44N, McHenry County, Illinois. The north bridge (Structure No. 056-3029) (latitude: 42.26562° North, longitude 88.58891° West) spans the overflow area of the Kishwaukee River and the south bridge (Structure No. 056-3030) (latitude: 42.26478° North, longitude 88.58891° West) spans the river. The public roadway bridges are owned by McHenry County Division of Transportation (MCDOT). This location is within the Kishwaukee River Illinois Natural Areas Inventory (INAI) site. See Attachment 1. Location Map and Attachment 2. Photo-log.

B) Biological data on the affected species

The Illinois Natural History Survey (INHS) conducted fish and mussel surveys near the project site on October 18, 2011 (see Attachment 6). Two (2) American brook lamprey (*Lethenteron appendix*) species were collected alive from the Kishwaukee River and three (3) species were collected alive from the overflow area.

The National Heritage Database (NHD) recorded seven separate occurrences of the American brook lamprey being observed in McHenry County with the last sighting recorded on July 21, 2016. Specialized lamprey survey techniques were not used during that survey.

The American brook lamprey is a small non-parasitic species of lamprey that is usually 5-7 inches long, but some have been recorded at 8 inches. The adult lamprey has a deeply notched dorsal fin, separating it into two distinct parts. The disc-shaped mouth of the adult contains two large supraorals teeth located above the oral opening, and three bicuspid teeth located on with side of the mouth opening. Unlike other lamprey species, whose teeth radiate around the oral opening, the American brook lamprey's remaining teeth occur in small clusters. Myomeres between the last gill opening and the anus usually number from 64 to 75. Adults are gray to black on the upper sides and yellow-brown on the belly and fins. Larval lampreys, called ammocoete, lack fully developed eyes or teeth and have a darker pigment than the light gray color of adults.

The habitat requirements for the American brook lamprey includes streams, large creeks and small rivers with clear water and cooler temperatures, sand and gravel substrate for spawning, and areas of loose sand or silt for burrowing ammocoetes. Adults typically spawn at the head of riffle areas over coarse sand and gravel substrate. Spawning typically occurs in mid April and mid May. More than 1,600 eggs per female are deposited. Spawning adults construct small nests by moving stones with their disc-shaped mouths. The adults die shortly after spawning. The eggs hatch in 20 to 22 days under the proper temperature conditions. Following emergence from the redd, larvae (ammocoetes) drift downstream to areas of slower flow where they burrow into the sediment and filter feed on organic detritus for about 5 or more years to complete development.

C) Description of the activities that will result in taking of an endangered or threatened species

The existing bridges, which are structurally deficient, will be removed and replaced with a new single 445-foot long five-span bridge (Structure No: 056-3189). The existing bridges are 28 feet wide and the proposed structure will be 40 feet wide. In order to construct the proposed five-span bridge, the land between the two existing bridges will be excavated to an elevation of 801.0 feet, which will maintain separation between the two waterways during normal flow.

Two existing instream piers will be removed to below the bottom of the river channel. One (1) pier, approximately 38.5 feet long by 3 feet wide, will be constructed in the Kishwaukee River resulting in a surface area impact to Waters of the U.S. (WOUS) of 116 square feet. However, two piers from the existing bridges will be removed from the waterway. These two existing piers to be removed currently occupy a total of 14.5 square feet. Additionally, we are allotting *up to* 320 square feet of impact for coffer dams. Therefore, the total area of impacts would be approximately 450 square feet.

Typical habitat for the American brook lamprey ammocoetes is of a sandy substrate. The portion of riverbed disturbance near the edge of the Kishwaukee River would be characterized as silty, whereas it becomes more sandy as one moves towards the center. The disturbances at the edge of the riverbank will not be included as impacts. It is estimated then that approximately 275 square feet of ammocoetes habitat will be impacted.

The contractor shall be limited to working within the proposed right-of-way (ROW). The MCDOT has secured sufficient ROW necessary to complete the project. Much of the removal of the existing bridges and installation of the new bridge will occur from the existing roadway or the grassy area between the two existing bridges. Cofferdams will be required for any instream work, such as the removal of the existing piers and installation of the new pier. The cofferdams will be constructed of non-erodible materials designed to withstand expected flows.

D) Explanation of the anticipated adverse effects on listed species

Individual fish remaining in the work area may be crushed or smothered by the construction. In addition, sediment may adversely affect populations both within the project limits and downstream from the site. Sediment could cover the gravel beds used for lamprey's spawning. Therefore it is advised to minimize the amount of disturbed area within the proposed project's limits to help reduce stirring up bottom sediments into the water.

2. Measures the applicant will take to minimize and mitigate that impact and funding that will be available to undertake those measures

A) Plans to minimize the area affected by the proposed action, the estimated number of individuals of the endangered or threatened species that will be taken, and the amount of habitat affected

The area affected by the proposed action has been minimized by proposing only one bridge pier to be constructed in the waterway. This is the minimum number of piers in the waterway needed for the proposed bridge. As described in the Section 3. Alternative Actions, when evaluating both the single structure and twin structure alternatives, the single structure was identified as the preferred alternative. The single bridge structure results in fewer wetland impacts, requires less new right-of-way and allows for a larger hydraulic opening than the twin structure alternative. As described in Section 3 of this document, and Attachment 3. Contract Plan Drawing, the project would have a net permanent impact of 101.5 square feet. We further anticipate a temporary impact within the waterway during the in-stream work portion of the project.

B) Plans for management of the area affected by the proposed action that will enable continued use of the area by endangered or threatened species

After work is complete, the temporary cofferdam shall be removed from the channel. The contractor shall remove the temporary material in reverse operations of the placement.

Following the removal of the temporary works, the streambed and habitats will be controlled by natural processes. Similar suitable habitats exist both upstream and downstream of the project site and over time fish should move back into the area beneath the newly constructed bridge.

C) Description of measures to avoid, minimize, and mitigate the effects of the proposed action on endangered or threatened species.

Fish and other aquatic species will be removed from the coffered areas, if observed during dewatering. When work is initiated in the area, the disturbance activity is anticipated to cause fish and other species to vacate the immediate work area.

Any individuals remaining in the immediate work area may be harmed by the proposed work. An estimated total of 3 to 5 adult American brook lamprey are expected to be taken; and approximately 550 ammocoetes would expect to be taken (2 ammocoetes per square foot of impact)

A Storm Water Pollution Prevention Plan (SWPPP) will be prepared in accordance with Section 41-4 of the IDOT Bureau of Design and Environment Manual. The SWPPP will include an Erosion and Sediment Control Plan (ESP) consisting of plan sheets depicting project phases, drainage attributes, sensitive environmental resources, and locations of pollution prevention Best Management Practices (BMPs). Both the SWPPP and ESP will be included in the contract plans and specifications and both will be implemented prior to disturbance of the ground surface (see Attachments 4 and 5). Temporary erosion and sediment control measures shall be maintained and inspected until project completion. The SWPPP addresses the potential erosion from both upland and in-stream sources in the work area, and includes measures to permanently stabilize disturbed upland areas. In addition, soil disturbance shall be conducted in such a manner as to minimize erosion.

Weather conditions permitting, in-stream work shall be conducted during seasonal low flow conditions and outside the lamprey spawning season of April 15 through May 15. Normal flow within the stream shall be maintained at all times. All materials used for temporary works shall be removed to upland areas at the completion of construction. No construction debris shall be deposited into the stream channel.

a. Equivalent cost of mitigation

As compensation for the incidental take of American brook lamprey, the MCDOT shall provide funding in the amount of \$10,356. Funding shall be sent to the INHS to support the study entitled "Assessing Lamprey Distributions in Illinois: Developing a Framework via Rapid Environmental DNA Assay for American brook lamprey." Copies of the report shall be sent to MCDOT and to the Location and Environment Section of the IDOT.

D) Plans for monitoring the effects of measures implemented to minimize or mitigate the effects of the proposed action

Specified BMPs in the ESP shall be implemented by the contractor during construction. Inspections to ensure proper working order and maintenance practices shall be made immediately prior to and following events of heavy rain for the project area as indicated in the SWPPP.

Any ammocoetes found prior to and during construction shall be relocated to suitable sand and gravel substrate upstream of the area of direct impact (ADI).

MCDOT shall notify the IDOT Location and Environment Section within two weeks of completion of all work on the project. After receiving the notification,

the IDOT Location and Environment Section will prepare a work order to have fish surveys conducted.

Post construction, thorough surveys for adult and juvenile American brook lamprey shall be conducted at the ADI, including 50m upstream and 100m downstream. The surveys shall occur in year two and year five following completion of the project when the water levels and the temperatures are suitable. Surveys shall be conducted for adult spawning American brook lamprey between April 15 and May 15, when water temperatures are between 51.8-59° F and shall utilize methodology designed for their detection (performed at the leading edge of any riffles above, within, and below the project area). Surveys for the detection of juvenile American brook lamprey shall then be conducted outside of spawning season (performed by multiple pass backpack electro-shocking gear within small areas of suitable substrates, such as sand, above, within, and below the project area). A report including, but not limited to, the survey methodologies utilized, water temperature, number of lampreys located, range of size differences observed, and a map of the species locations, as well as suitable ammocoete habitat, shall be provided to the Department within 90 days of completion of the survey.

E) Adaptive management practices that will be used to deal with changed or unforeseen circumstances that affect the effectiveness of the measures instituted

Adaptive management practices shall be used to deal with changed or unforeseen circumstances that may adversely affect endangered or threatened species. The installation and effectiveness of the soil conserving practices shall be monitored daily by the Resident Engineer from the MCDOT to observe if eroded soil is leaving the limits of construction. The Resident Engineer has the authority to require the Contractor to install additional soil conserving practices not included in the approved SWPPP but deemed necessary for project site conditions. The Resident Engineer has the authority to cease work in the case of natural disturbances (i.e., flooding, droughts) or unforeseen construction difficulties.

Ammocoete relocation is dependent on the flow and volume of water in the river at the time. If the flow is swift and/or the water levels are high the relocation shall not take place and the project instream work shall be delayed. Ammocoete relocation shall occur only when water levels are low and current conditions are moderate or low.

Potential ammocoete relocation beds shall be carefully screened to assure that the habitat is suitable for transplanted mussels and that risks of external threats to the relocation beds (siltation, chemical spills) are minimized.

F) Verification that adequate funding exists to support and implement all mitigation activities described in the conservation plan

The project is funded by MCDOT and the Illinois Department of Transportation (IDOT). The estimated cost includes funding for implementation of the erosion and sediment control measures. However, funding to implement this proposed conservation plan will be provided by the MCDOT, pending the determination of cost.

3. A description of alternative actions the applicant considered

There are no practical alternatives to avoiding the wetland and waterway impacts; the bridges need to be replaced because they are currently structurally deficient and load restricted.

For the No Action alternative, the two existing bridge structures would remain in place with no in-stream work. There would be no potential taking of the listed species. However, the 49 year old structures have been found to be structurally deficient and are currently load restricted to a maximum of 15 tons requiring heavier loads to incur indirect travel to bypass this site. The bridges are in an advanced deteriorated condition and nearing the end of their service life. Without replacement, the structures would continue to deteriorate and eventually MCDOT would need to permanently close the structures and access over the waterways. The “no-action” alternate is not considered feasible or prudent because it poses an unacceptable safety hazard and placed intolerable restrictions on travel and transportation.

Two build alternatives were evaluated for the replacement of the existing Deerpass Road bridges over the Kishwaukee River and the Kishwaukee River North Channel. The bridges could be replaced with either two separate structures (as in existing conditions) or a single longer structure spanning both channels.

Evaluating both the single structure and twin structure alternatives based on the improved hydraulic conditions, the precast pre-stressed concrete (PPC) I-Beam single structure was identified as the preferred alternative. The single bridge structure results in fewer wetland impacts, requires less new right-of-way and allows for a larger hydraulic opening than the twin structure alternative. Rip-rap shall be placed along the abutments for protection.

The single structure was preliminarily proposed as a seven-span structure. The design was further refined to a five-span bridge which requires fewer piers to be placed in the waterways or the adjacent wetlands. A bridge with fewer than five spans would have increased the amount of wetland impacts. It would have required increasing the elevation of the bridge, resulting in a wider structure and longer length of the project, thereby increasing the amount of wetland impacts. In addition to fewer wetland impacts, benefits of this selected alternative include a greater waterway opening for animal crossings and less restrictive water flow.

One pier shall be placed within the Kishwaukee River resulting in 116 square feet of permanent impact to a WOUS. However, two piers from the existing bridges will be removed from the waterway. These two existing piers to be removed currently occupy a total of 14.5 square feet. Additionally, we are allotting *up to* 320 square feet of impact for the temporary coffer dams. Therefore, the total area of impacts would be approximately 450 square feet.

4. Data and information to indicate the proposed taking will not reduce the likelihood of the survival of the species in the wild within the State of Illinois.

The American brook lamprey is present at several sites along the Kishwaukee River and throughout northeastern Illinois. Suitable habitat for the lamprey is present upstream and downstream from the project area. The Natural Heritage Database (NHD) recorded seven separate occurrences of the American brook lamprey being observed in McHenry County with the last sighting recorded on July 21, 2016. Specialized lamprey survey techniques were not used during that survey. Due to the permanent impact of constructing one pier in the waterway and the related temporary construction disturbance, the potential taking within this project area is not expected to affect the survival of this species in the Kishwaukee River.

5. An implementing agreement, which shall include, but not limited to:

Implementing Agreement

A) The names and signatures of all participants in the execution of the conservation plan;

McHenry County Division of Transportation

B) The obligations and responsibilities of each of the identified participants with schedules and deadlines for completion of activities included in the conservation plan and a schedule for preparation of progress reports to be provided to the IDNR

The Illinois Department of Natural Resources (IDNR) shall be responsible for the review of this Conservation Plan and for subsequent issuance of the Incidental Take Authorization (ITA).

The MCDOT is responsible for securing authorization for incidental take of state-listed species; securing all permits including Section 404 and Office of Water Resources. The MCDOT will conduct inspections of the project site and ensure contractor compliance with the contract documents.

Project construction is anticipated to begin in March 2018. The duration of construction is estimated to be 9 months; however in-stream work would not be necessary during this entire time-frame. No in-stream work shall be conducted during the lamprey spawning season of April 15 through May 15. The IDNR will be notified with 30 days of the start of construction and at the completion of site stabilization work.

Post construction fish surveys shall be conducted at the construction site and relocation site two years and five years following completion of the project. This work shall be conducted by the INHS at the direction of IDOT. Results will be sent to the IDNR within 90 days of completion of the surveys.

C) Certification that each participant in the execution of the conservation plan has the legal authority to carry out their respective obligations and responsibilities under the conservation plan;

The structure is under the jurisdiction and maintenance of the MCDOT. This project is authorized by the Illinois Department of Transportation (IDOT), who oversees the use of state-distributed funding among local agencies.

D) Assurance of compliance with all other federal, State, and local regulations pertinent to the proposed action and to execution of the conservation plan;

The MCDOT, as directed by the IDOT, abides by the National Environmental Policy Act (NEPA) and associated state and federal environmental laws to ensure environmentally sensitive methods of transportation planning and engineering.

An Individual Section 404 permit from the U.S. Army Corps of Engineers (USACE) has been obtained for this project. The Illinois Environmental Protection Agency (IEPA) Water Quality Certification has also been obtained.

E) Copies of any final federal authorization for a taking already issued to the applicant, if any.

Not applicable. The American brook lamprey is not federally threatened or endangered.

CERTIFICATION:

McHenry County Division of Transportation certifies that it has the authority to complete the project and to address the issues proposed in the Incidental Take Plan in the event state listed threatened or endangered species are encountered. The McHenry County of Transportation is in charge of construction and shall assure that all applicable state laws shall be adhered to throughout the completion of the project.



Mr. Ernest Varga, Project Manager
McHenry County Division of Transportation
16111 Nelson Road
Woodstock, Illinois 60098

10/10/17

Date

Attachments:

1. Location Map
2. Photo-log
3. Contract Plan Drawing depicting right-of-way limits
4. SWPPP
5. Erosion and Sediment Control Plan
6. INHS Fish and Mussel Surveys Report

Attachment 1
Location Map

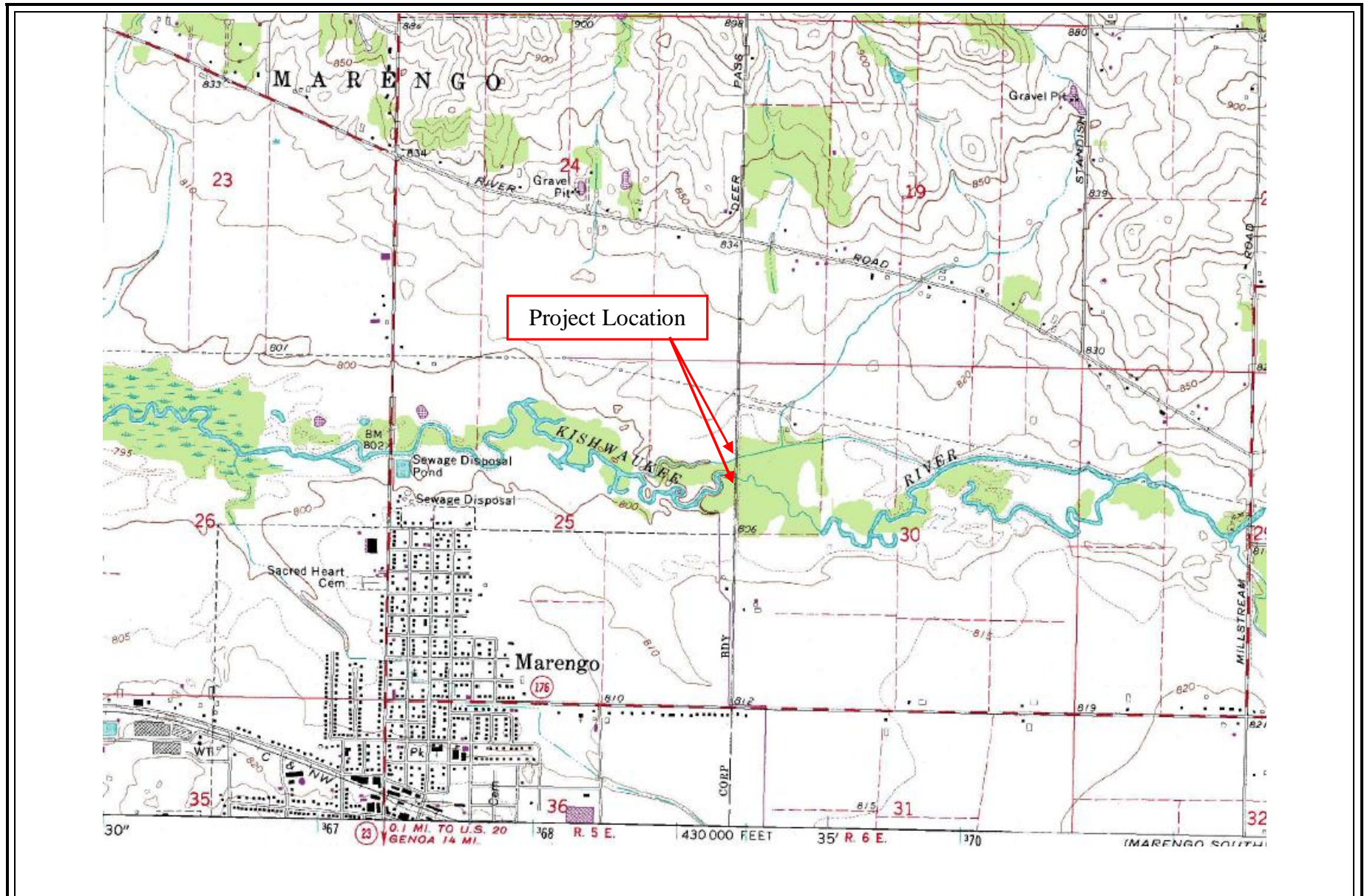


Figure 1: Project Location Map

U.S.G.S. topographic map, Marengo North quadrangle, 1970 (photo revised 1975)

Client/Project: McHenry County Division of Transportation



Attachment 2
Photo-log

Project: McHenry County Division of Transportation

Location: Deerpass Road over Kishwaukee River Bridge Structures SN 056.3029 and SN 056.3030, Marengo, IL

Photo No.
1

Date:
9/9/11

Direction Photo Taken:

southeast

Description:

Bridge (Structure No. 056.3030) spans Deerpass Road and crosses over the Kishwaukee River.

Photograph demonstrates general condition of river and river bank.



Photo No.
2

Date:
9/9/11

Direction Photo Taken:

northeast

Description:

West elevation of the north span of Bridge (Structure No. 056.3029).

Photograph demonstrates general condition of river and river bank.

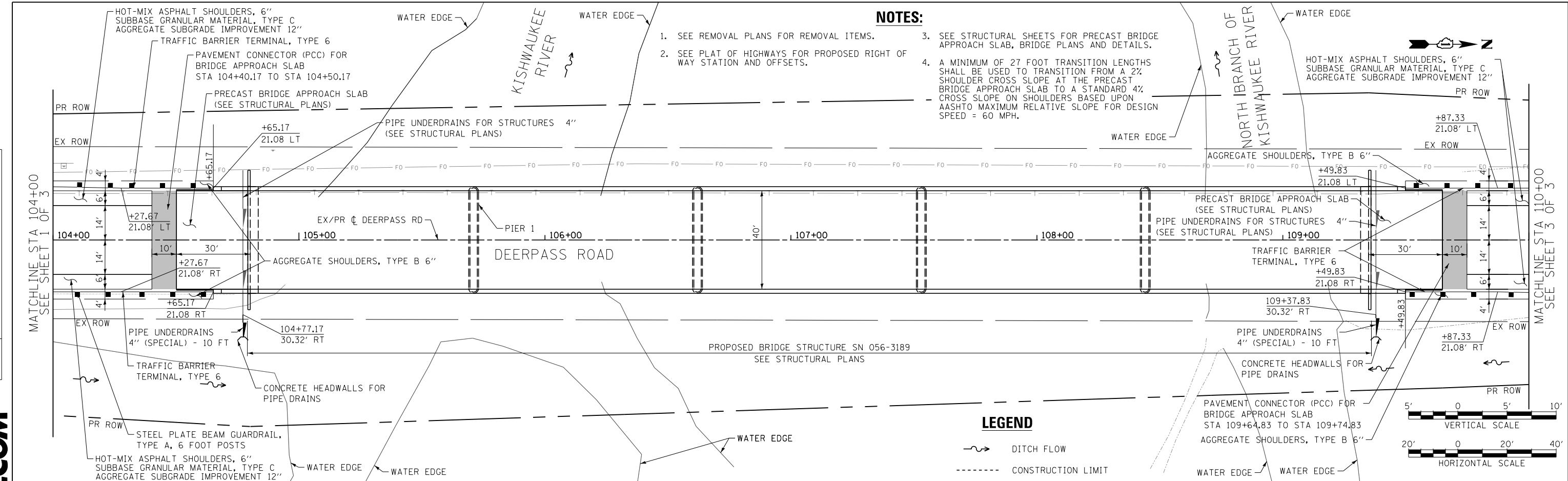


Attachment 3
Contract Plan Drawing

PLAN	SURVEYED	BY	DATE
	PLOTTED		
	GRADES CHECKED		
	STRUCTURE NOT AT THIS OFFICE		
	NO. _____		
	FILE NAME		

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PROFILE	SURVEYED	BY	DATE
	PLOTTED		
	GRADES CHECKED		
	STRUCTURE NOT AT THIS OFFICE		
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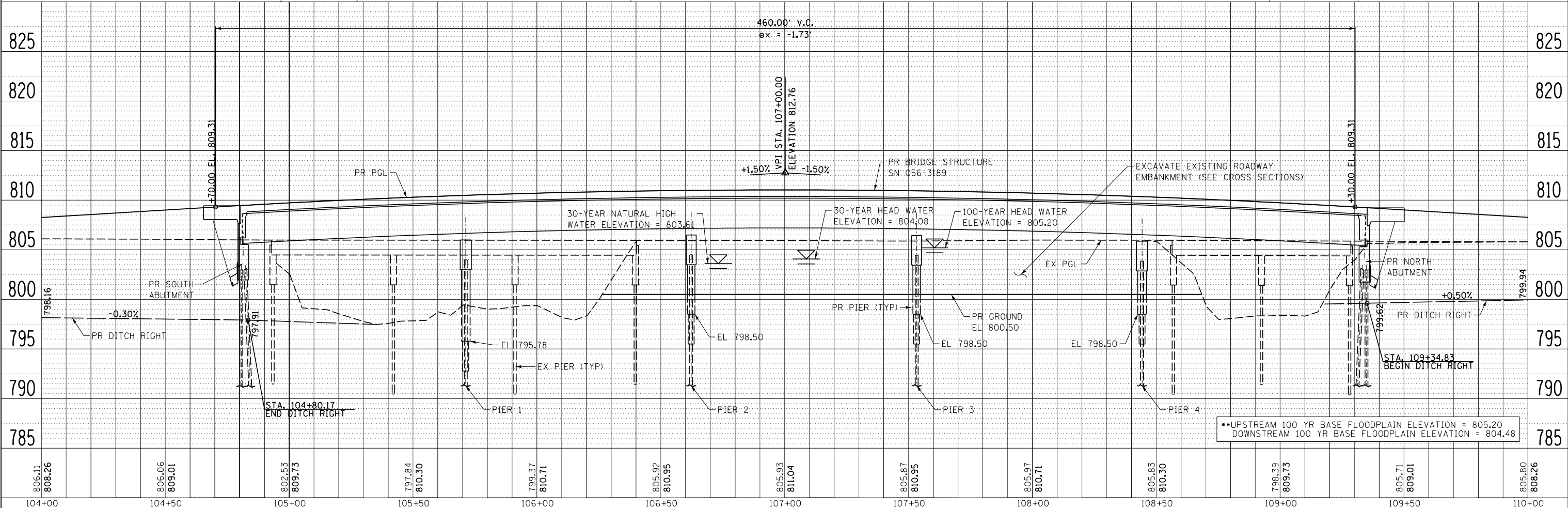
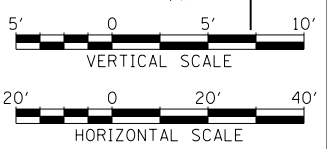


NOTES:

1. SEE REMOVAL PLANS FOR REMOVAL ITEMS.
2. SEE PLAT OF HIGHWAYS FOR PROPOSED RIGHT OF WAY STATION AND OFFSETS.
3. SEE STRUCTURAL SHEETS FOR PRECAST BRIDGE APPROACH SLAB, BRIDGE PLANS AND DETAILS.
4. A MINIMUM OF 27 FOOT TRANSITION LENGTHS SHALL BE USED TO TRANSITION FROM A 2% SHOULDER CROSS SLOPE AT THE PRECAST BRIDGE APPROACH SLAB TO A STANDARD 4% CROSS SLOPE ON SHOULDERS BASED UPON AASHTO MAXIMUM RELATIVE SLOPE FOR DESIGN SPEED = 60 MPH.

LEGEND

- - - - - DITCH FLOW
- CONSTRUCTION LIMIT



FILE NAME = P:\68443622\988_Mork\110_CAD\20-SHEETS\EMBR\15\68443622-SHT-PP-02_1A.dgn

USER NAME = mawhineyk	DESIGNED - AFC	REVISED -
	DRAWN - AFC	REVISED -
PLOT SCALE = 48.0000' / in.	CHECKED - KM	REVISED -
PLOT DATE = 5/26/2015	DATE - 5/26/2015	REVISED -

**STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION**

PLAN AND PROFILE SHEETS

SCALE: 1" = 20' SHEET 2 OF 3 SHEETS STA. 104+00 TO STA. 110+00

CH	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
47	10-00377-00-BR	MCHENRY	888	\$PPO2
				CONTRACT NO. 61D29
ILLINOIS FED. AID PROJECT BR5-01110601				

Attachment 4

SWPPP



Route Deerpass Road (T59)	Marked Route County Highway 47	Section 10-00377-00-BR
Project Number BRS-0111(060)	County McHenry	Contract Number 61D29

This plan has been prepared to comply with the provisions of the National Pollutant Discharge Elimination System (NPDES) Permit No. ILR10 (Permit ILR10), issues by the Illinois Environmental Protection Agency (IEPA) for storm water discharges from construction site activities.

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gathered and evaluated the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

Print Name Benjamin Redding, PE	Title Design Manager	Agency MCDOT
Signature 	Date 2016.08.25	

I. Site Description

A. Provide a description of the project location (include latitude and longitude):

The proposed project is located along County Highway 47 (Deerpass Road) approximately 0.7 miles north of IL Route 176 (Telegraph Street). The project limits are bordered on the south by IL Route 176 and River Road on the north, just outside of the northeast limits of Marengo, IL. The approximate latitude and longitude of the project are 42.26469 N, 88.58892 W.

B. Provide a description of the construction activity which is subject of this plan:

The work consists of earthwork, landscaping, erosion control, hot-mix asphalt pavement, pavement removal, mobilization, bridge removal, concrete bridge structure, guardrail, construction layout, approach slab, prestressed concrete beams, and pavement marking

C. Provide the estimated duration of this project:

10 months

D. The total area of the construction site is estimated to be 3.4 acres.

The total area of the site estimated to be disturbed by excavation, grading or other activities is 3.1 acres.

E. The following is a weighted average of the runoff coefficient for this project after construction activities are completed:

C=0.62 (Proposed); C=0.5 (Existing)

F. List all soils found within project boundaries. Include map unit name, slope information and erosivity:

1776A - Comfrey Loam, 0 to 2 percent slopes
8776A - Comfrey Loam, 0 to 2 percent slopes
1210A - Lena Muck, 0 to 2 percent slopes

G. Provide an aerial extent of wetland acreage at the site:

1.07 AC Permanent, 0.70 AC Temporary and 116.33 SQ FT WOUS; See Plans.

H. Provide a description of potentially erosive areas associated with this project:

The former roadway, embankment and ditches, as well as the excavated island locations.

I. The following is a description of soil disturbing activities by stages, their locations, and their erosive factors (e.g. steepness of slopes, length of scopes, etc.):

The roadway will be widened from 24 feet to 40 feet wide and ditches will be regraded/relocated within the project limits. The island between the two existing bridges will be graded as well.

J. See the erosion control plans and/or drainage plans for this contract for information regarding drainage patterns, approximate slopes anticipated before and after major grading activities, locations where vehicles enter or exit the site and controls to prevent off site sediment tracking (to be added after contractor identifies locations), areas of soil disturbance, the location of major structural and non-structural controls identified in the plan, the location of areas where stabilization practices are expected to occur, surface waters (including wetlands) and locations where storm water is discharged to surface water including wetlands.

K. Identify who owns the drainage system (municipality or agency) this project will drain into:

McHenry County Department of Transportation maintains the ditches within the project limits.

L. The following is a list of General NPDES ILR40 permittees within whose reporting jurisdiction this project is located.

McHenry County Department of Transportation / IDOT

M. The following is a list of receiving water(s) and the ultimate receiving water(s) for this site. The location of the receiving waters can be found on the erosion and sediment control plans:

Kishwaukee River and North Branch of Kishwaukee River

N. Describe areas of the site that are to be protected or remain undisturbed. These areas may include steep slopes, highly erodible soils, streams, stream buffers, specimen trees, natural vegetation, nature preserves, etc.

The channel of the Kishwaukee River and North Branch of Kishwaukee River.

O. The following sensitive environmental resources are associated with this project, and may have the potential to be impacted by the proposed development:

- Floodplain
- Wetland Riparian
- Threatened and Endangered Species
- Historic Preservation
- 303(d) Listed receiving waters for suspended solids, turbidity, or siltation
- Receiving waters with Total Maximum Daily Load (TMDL) for sediment, total suspended solids, turbidity, or siltation
- Applicable Federal, Tribal, State or Local Programs
- Other

1. 303(d) Listed receiving waters (fill out this section if checked above):

N/A

a. The name(s) of the listed water body, and identification of all pollutants causing impairment:

N/A

b. Provide a description of how erosion and sediment control practices will prevent a discharge of sediment resulting from a storm event equal to or greater than a twenty-five (25) year, twenty-four (24) hour rainfall event:

N/A

c. Provide a description of the location(s) of direct discharge from the project site to the 303(d) water body:

N/A

d. Provide a description of the location(s) of any dewatering discharges to the MS4 and/or water body:

N/A

2. TMDL (fill out this section if checked above)

a. The name(s) of the listed water body:

N/A

b. Provide a description of the erosion and sediment control strategy that will be incorporated into the site design that is consistent with the assumptions and requirements of the TMDL:

N/A

c. If a specific numeric waste load allocation has been established that would apply to the project's discharges, provide a description of the necessary steps to meet the allocation:

N/A

P. The following pollutants of concern will be associated with this construction project:

- | | |
|---|--|
| <input checked="" type="checkbox"/> Soil Sediment | <input checked="" type="checkbox"/> Petroleum (gas, diesel, oil, kerosene, hydraulic oil / fluids) |
| <input checked="" type="checkbox"/> Concrete | <input checked="" type="checkbox"/> Antifreeze / Coolants |
| <input checked="" type="checkbox"/> Concrete Truck waste | <input checked="" type="checkbox"/> Waste water from cleaning construction equipment |
| <input checked="" type="checkbox"/> Concrete Curing Compounds | <input type="checkbox"/> Other (specify) _____ |
| <input checked="" type="checkbox"/> Solid waste Debris | <input type="checkbox"/> Other (specify) _____ |
| <input checked="" type="checkbox"/> Paints | <input type="checkbox"/> Other (specify) _____ |
| <input checked="" type="checkbox"/> Solvents | <input type="checkbox"/> Other (specify) _____ |
| <input type="checkbox"/> Fertilizers / Pesticides | <input type="checkbox"/> Other (specify) _____ |

II. Controls

This section of the plan addresses the controls that will be implemented for each of the major construction activities described in I.C. above and for all use areas, borrow sites, and waste sites. For each measure discussed, the Contractor will be responsible for its implementation as indicated. The Contractor shall provide to the Resident Engineer a plan for the implementation of the measures indicated. The Contractor and subcontractors, will notify the Resident Engineer of any proposed changes, maintenance, or modifications to keep construction activities compliant with the Permit ILR10. Each such Contractor has signed the required certification on forms which are attached to, and are a part of, this plan:

A. **Erosion and Sediment Controls:** At a minimum, controls must be coordinated, installed, and maintained to:

1. Minimize the amount of soil exposed during construction activity;
2. Minimize the disturbance of steep slopes;
3. Maintain natural buffers around surface waters, direct storm water to vegetated areas to increase sediment removal and maximize storm water infiltration, unless infeasible;
4. Minimize soil compaction and, unless infeasible, preserve topsoil.

B. **Stabilization Practices:** Provided below is a description of interim and permanent stabilization practices, including site- specific scheduling of the implementation of the practices. Site plans will ensure that existing vegetation is preserved where attainable and disturbed portions of the site will be stabilized. Stabilization practices may include but are not limited to: temporary seeding, permanent seeding, mulching, geotextiles, sodding, vegetative buffer strips, protection of trees, preservation of mature vegetation, and other appropriate measures. Except as provided below in II(B)(1) and II(B)(2), stabilization measures shall be initiated **immediately** where construction activities have temporarily or permanently ceased, but in no case more than **one (1) day** after the construction activity in that portion of the site has temporarily or permanently ceases on all disturbed portions of the site where construction will not occur for a period of fourteen (14) or more calendar days.

1. Where the initiation of stabilization measures is precluded by snow cover, stabilization measures shall be initiated as soon as practicable.
2. On areas where construction activity has temporarily ceased and will resume after fourteen (14) days, a temporary stabilization method can be used.

The following stabilization practices will be used for this project:

- Preservation of Mature Vegetation Erosion Control Blanket / Mulching

- | | |
|---|---|
| <input type="checkbox"/> Vegetated Buffer Strips | <input type="checkbox"/> Sodding |
| <input type="checkbox"/> Protection of Trees | <input checked="" type="checkbox"/> Geotextiles |
| <input checked="" type="checkbox"/> Temporary Erosion Control Seeding | <input type="checkbox"/> Other (specify) _____ |
| <input type="checkbox"/> Temporary Turf (Seeding, Class 7) | <input type="checkbox"/> Other (specify) _____ |
| <input type="checkbox"/> Temporary Mulching | <input type="checkbox"/> Other (specify) _____ |
| <input checked="" type="checkbox"/> Permanent Seeding | <input type="checkbox"/> Other (specify) _____ |

Describe how the stabilization practices listed above will be utilized during construction:

Temporary erosion control seeding and erosion control blanket will be placed throughout the project within the proposed right-of-way.

Describe how the stabilization practices listed above will be utilized after construction activities have been completed:

Permanent seeding and topsoil will be placed in the areas where temporary erosion control seeding and erosion control blankets were placed.

C. **Structural Practices:** Provided below is a description of structural practices that will be implemented, to the degree attainable, to divert flows from exposed soils, store flows or otherwise limit runoff and the discharge of pollutants from exposed areas of the site. Such practices may include but are not limited to: perimeter erosion barrier, earth dikes, drainage swales, sediment traps, ditch checks, subsurface drains, pipe slope drains, level spreaders, storm drain inlet protection, rock outlet protection, reinforced soil retaining systems, gabions, and temporary or permanent sediment basins. The installation of these devices may be subject to Section 404 of the Clean Water Act.

The following stabilization practices will be used for this project:

- | | |
|---|--|
| <input checked="" type="checkbox"/> Perimeter Erosion Barrier | <input type="checkbox"/> Rock Outlet Protection |
| <input checked="" type="checkbox"/> Temporary Ditch Check | <input checked="" type="checkbox"/> Riprap |
| <input type="checkbox"/> Storm Drain Inlet Protection | <input type="checkbox"/> Gabions |
| <input checked="" type="checkbox"/> Sediment Trap | <input type="checkbox"/> Slope Mattress |
| <input type="checkbox"/> Temporary Pipe Slope Drain | <input type="checkbox"/> Retaining Walls |
| <input type="checkbox"/> Temporary Sediment Basin | <input type="checkbox"/> Slope Walls |
| <input checked="" type="checkbox"/> Temporary Stream Crossing | <input type="checkbox"/> Concrete Revetment Mats |
| <input checked="" type="checkbox"/> Stabilized Construction Exits | <input type="checkbox"/> Level Spreaders |
| <input type="checkbox"/> Turf Reinforcement Mats | <input checked="" type="checkbox"/> Other (specify) Turbidity Curtain |
| <input type="checkbox"/> Permanent Check Dams | <input checked="" type="checkbox"/> Other (specify) Temporary Ditch Checks (Special) |
| <input type="checkbox"/> Permanent Sediment Basin | <input checked="" type="checkbox"/> Other (specify) Temporary Fence (Special) |
| <input type="checkbox"/> Aggregate Ditch | <input type="checkbox"/> Other (specify) _____ |
| <input type="checkbox"/> Paved Ditch | <input type="checkbox"/> Other (specify) _____ |

Describe how the structural practices listed above will be utilized during construction:

Perimeter erosion barrier will be placed along all areas of temporary erosion control seeding and erosion control blanket. Turbidity curtains will be placed along the banks of each channel to prevent materials from entering the waterway. Temporary Fence (Special) will be placed along the proposed right of way to prevent vehicles and heavy equipment away from the wetlands that are to remain. Temporary ditch checks will be installed along proposed ditches at every one foot drop in ditch profile. Temporary sediment trap will be placed at the end of the ditches prior to draining into the river during construction as shown on the Plans. Riprap will be placed along 1:2 slopes between bridge abutments and waterway. Stabilized construction exit/entrance will be used to prevent mud from leaving the project site. A temporary stream crossing, if needed by the Contractor, shall be installed to minimize or limit the impact of construction traffic crossing streams or watercourse. Stabilized construction exits or entrances will be provided by the Contractor to prevent tracking or flowing of sediment onto public right of way and all work associated for installation and maintenance will not be paid for separately but included in the unit cost of the various erosion control pay items.

Describe how the structural practices listed above will be utilized after construction activities have been completed:

Riprap will remain in place after construction is completed for slope stabilization.

D. Treatment Chemicals

Will polymer flocculents or treatment chemicals be utilized on this project: Yes No

If yes above, identify where and how polymer flocculents or treatment chemicals will be utilized on this project.

Polymer flocculents will be utilized in all locations where erosion control blanket is placed.

E. Permanent Storm Water Management Controls: Provided below is a description of measures that will be installed during the construction process to control volume and pollutants in storm water discharges that will occur after construction operations have been completed. The installation of these devices may be subject to Section 404 of the Clean Water act.

1. Such practices may include but are not limited to: storm water detention structures (including wet ponds), storm water retention structures, flow attenuation by use of open vegetated swales and natural depressions, infiltration of runoff on site, and sequential systems (which combine several practices).

The practices selected for implementation were determined on the basis of the technical guidance in Chapter 41 (Construction Site Storm Water Pollution Control) of the IDOT Bureau of Design & Environment Manual. If practices other than those discussed in Chapter 41 are selected for implementation or if practices are applied to situations different from those covered in Chapter 41, the technical basis for such decisions will be explained below.

2. Velocity dissipation devices will be placed at discharge locations and along the length of any outfall channel as necessary to provide a non-erosive velocity flow from the structure to a water course so that the natural physical and biological characteristics and functions are maintained and protected (e.g. maintenance of hydrologic conditions such as the hydroperiod and hydrodynamics present prior to the initiation of construction activities).

Description of permanent storm water management controls:

Riprap is placed to avoid erosion between the bridge abutments and waterway.

F. Approved State or Local Laws: The management practices, controls, and provisions contained in this plan will be in accordance with IDOT specifications, which are at least as protective as the requirements contained in the Illinois Environmental Protection Agency's Illinois Urban Manual. Procedures and requirements specified in applicable sediment and erosion site plans or storm water management plans approved by local officials shall be described or incorporated by reference in the space provided below. Requirements specified in sediment and erosion site plans, site permits, storm water management site plans or site permits approved by local officials that are applicable to protecting surface water resources are, upon submittal of an NOI, to be authorized to discharge under the Permit ILR10 incorporated by reference and are enforceable under this permit even if they are not specifically included in the plan.

Description of procedures and requirements specified in applicable sediment and erosion site plans or storm water management plans approved by local officials:

N/A

G. Contractor Required Submittals: Prior to conducting any professional services at the site covered by this plan, the

Contractor and each subcontractor responsible for compliance with the permit shall submit to the Resident Engineer a Contractor Certification Statement, BDE 2342a.

1. The Contractor shall provide a construction schedule containing an adequate level of detail to show major activities with implementation of pollution prevention BMPs, including the following items:
 - Approximate duration of the project, including each stage of the project
 - Rainy season, dry season, and winter shutdown dates
 - Temporary stabilization measures to be employed by contract phases
 - Mobilization time frame
 - Mass clearing and grubbing/roadside clearing dates
 - Deployment of Erosion Control Practices
 - Deployment of Sediment Control Practices (including stabilized construction entrances/exits)
 - Deployment of Construction Site Management Practices (including concrete washout facilities, chemical storage, refueling locations, etc.)
 - Paving, saw-cutting, and any other pavement related operations
 - Major planned stockpiling operations
 - Time frame for other significant long-term operations or activities that may plan non-storm water discharges such as dewatering, grinding, etc.
 - Permanent stabilization activities for each area of the project
2. The Contractor and each subcontractor shall provide, as an attachment to their signed Contractor Certification Statement, a discussion of how they will comply with the requirements of the permit in regard to the following items and provide a graphical representation showing location and type of BMPs to be used when applicable:
 - Vehicle Entrances and Exits - Identify type and location of stabilized construction entrances and exits to be used and how they will be maintained.
 - Material delivery, Storage, and Use - Discuss where and how materials including chemicals, concrete curing compounds, petroleum products, etc. will be stored for this project.
 - Stockpile Management - Identify the location of both on-site and off-site stockpiles. Discuss what BMPs will be used to prevent pollution of storm water from stockpiles.
 - Waste Disposal - Discuss methods of waste disposal that will be used for this project.
 - Spill Prevention and Control - Discuss steps that will be taken in the event of a material spill (chemicals, concrete curing compounds, petroleum, etc.).
 - Concrete Residuals and Washout Wastes - Discuss the location and type of concrete washout facilities to be used on this project and how they will be signed and maintained.
 - Litter Management - Discuss how litter will be maintained for this project (education of employees, number of dumpsters, frequency of dumpster pick-up, etc.).
 - Vehicle and Equipment Cleaning and Maintenance - Identify where equipment cleaning and maintenance locations for this project and what BMPs will be used to ensure containment and spill prevention.
 - Dewatering Activities - Identify the controls which will be used during dewatering operations to ensure sediments will not leave the construction site.
 - Polymer Flocculants and Treatment Chemicals - Identify the use and dosage of treatment chemicals and provide the Resident Engineer with Material Safety Data Sheets. Describe procedures on how the chemicals will be used and identify who will be responsible for the use and application of these chemicals. The selected individual must be trained on the established procedures.
 - Additional measures indicated in the plan.

III. Maintenance

When requested by the Contractor, the Resident Engineer will provide general maintenance guides to the Contractor for the practices associated with this project. The following additional procedures will be used to maintain, in good and effective operating conditions, the vegetation, erosion and sediment control measures and other protective measures identified in this plan. It will be Contractor's responsibility to attain maintenance guidelines for any manufactured BMPs which are to be installed and maintained per manufacture's specifications.

The Contractor will be responsible for the inspection, maintenance and repair of all sedimentation and erosion control measures. If the Engineer notices or is notified of an erosion or sedimentation deficiency, the Engineer will notify the Contractor to correct it. All Offsite

All erosion and sediment control measures shall be maintained in accordance with the IDOT Erosion and Sediment Control Field Guide for Construction Inspection:

<http://www.idot.illinois.gov/transportation-system/environment/erosion-and-sediment-control>

In addition, the following links may also be useful for maintenance:

Illinois Urban Manual (IUM):

http://www.aiswcd.org/wp-content/uploads/2013/11/IUM_FM_2013_WEBSITE_hyperlinks.pdf

Best Management Practices (BMP):

<http://www.idot.illinois.gov/transportation-system/environment/erosion-and-sediment-control>

Seeding - All erodible bare earth will be temporarily seeded on a weekly basis to minimize the amount of erodible surface within the contract limits. Construction equipment shall be stored and fueled only at designated locations. All necessary measures shall be taken to contain any fuel or pollution runoff in compliance with environmental law and EPA Water Quality Regulations. Leaking equipment or supplies shall be immediately repaired or removed from the site. On a weekly basis, the Engineer shall inspect the project to determine whether erosion control efforts are in place and effective and if additional control measures are necessary. Sediment collected during construction by the various temporary erosion control systems shall be disposed on the site on a regular basis as directed by the Engineer and stabilized accordingly.

Temporary Erosion Control Seeding - Reapply seed if stabilization has not been achieved. Apply temporary mulch to hold seed in place if seed has been washed away or found to be concentrated in ditch bottoms. Restore rills, greater than 4 inches deep, as quickly as possible on slopes steeper than 1V:4H to prevent sheet-flow from becoming concentrated flow patterns.

Perimeter Erosion Barrier - This shall be inspected every 7 calendar days and after a storm event of 0.5 inch or greater (including snowfall). Repair when tears, gaps, leaning or undermining occur and restore erosion barrier taut. Repair or replace any missing or broken stakes immediately. Sediment will be removed if the integrity of the fencing is in jeopardy. Remove once permanent stabilization is established since it will no longer be necessary.

Erosion Control Blanket - Repair damage due to water running beneath the blanket and restore when displacement occurs. Reseeding may be necessary. Replace and re-staple all displaced erosion control blankets immediately.

Stabilized Construction Exits - Replenish stone or replace exit if vehicles continue to track sediment onto the roadway from the construction site. Sweep sediment on roadway from construction activities immediately. Use street sweeping in conjunction with this BMP to remove sediment not removed by the stabilized construction exit.

IV. Inspections

Qualified personnel shall inspect disturbed areas of the construction site which have not yet been finally stabilized, structural control measures, and locations where vehicles and equipment enter and exit the site using IDOT Storm Water Pollution Prevention Plan Erosion Control Inspection Report (BC 2259). Such inspections shall be conducted at least once every seven (7) calendar days and within twenty-four (24) hours of the end of a storm or by the end of the following business or work day that is 0.5 inch or greater or equivalent snowfall.

Inspections may be reduced to once per month when construction activities have ceased due to frozen conditions. Weekly inspections will recommence when construction activities are conducted, or if there is 0.5" or greater rain event, or a discharge due to snowmelt occurs.

If any violation of the provisions of this plan is identified during the conduct of the construction work covered by this plan, the Resident Engineer shall notify the appropriate IEPA Field Operations Section office by e-mail at: epa.swnoncomp@illinois.gov, telephone or fax within twenty-four (24) hours of the incident. The Resident Engineer shall then complete and submit an "Incidence of Non-Compliance" (ION) report for the identified violation within five (5) days of the incident. The Resident Engineer shall use forms provided by IEPA and shall include specific information on the cause of noncompliance, actions which were taken to prevent any further causes of noncompliance, and a statement detailing any environmental impact which may have resulted from the noncompliance. All reports of non-compliance shall be signed by a responsible authority in accordance with Part VI. G of the Permit ILR10.

The Incidence of Non-Compliance shall be mailed to the following address:

Illinois Environmental Protection Agency
Division of Water Pollution Control
Attn: Compliance Assurance Section
1021 North Grand East
Post Office Box 19276
Springfield, Illinois 62794-9276

Additional Inspections Required:

N/A

V. Failure to Comply

Failure to comply with any provisions of this Storm Water Pollution Prevention Plan will result in the implementation of a National Pollutant Discharge Elimination System/Erosion and Sediment Control Deficiency Deduction against the Contractor and/or penalties under the Permit ILR10 which could be passed on to the Contractor.



Prior to conducting any professional services at the site covered by this contract, the Contractor and every subcontractor must complete and return to the Resident Engineer the following certification. A separate certification must be submitted by each firm. Attach to this certification all items required by Section II.G of the Storm Water Pollution Prevention Plan (SWPPP) which will be handled by the Contractors/subcontractor completing this form.

Route Deerpass Road (T59)	Marked Route County Highway 47	Section 10-00377-00-BR
Project Number BRS-0111(060)	County McHenry	Contract Number 61D29

This certification statement is a part of SWPPP for the project described above, in accordance with the General NPDES Permit No. ILR10 issued by the Illinois Environmental Protection Agency.

I certify under penalty of law that I understand the terms of the Permit No. ILR10 that authorizes the storm water discharges associated with industrial activity from the construction site identified as part of this certification.

In addition, I have read and understand all of the information and requirements stated in SWPPP for the above mentioned project; I have received copies of all appropriate maintenance procedures; and, I have provided all documentation required to be in compliance with the Permit ILR10 and SWPPP and will provide timely updates to these documents as necessary.

- Contractor
- Sub-Contractor

Print Name 	Signature
Title 	Date
Name of Firm 	Telephone
Street Address 	City/State/Zip

Items which the Contractor/subcontractor will be responsible for as required in Section II.G. of SWPPP:

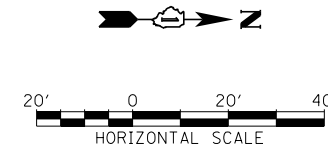
Attachment 5
Sediment and Erosion
Control Plan

NOTES:

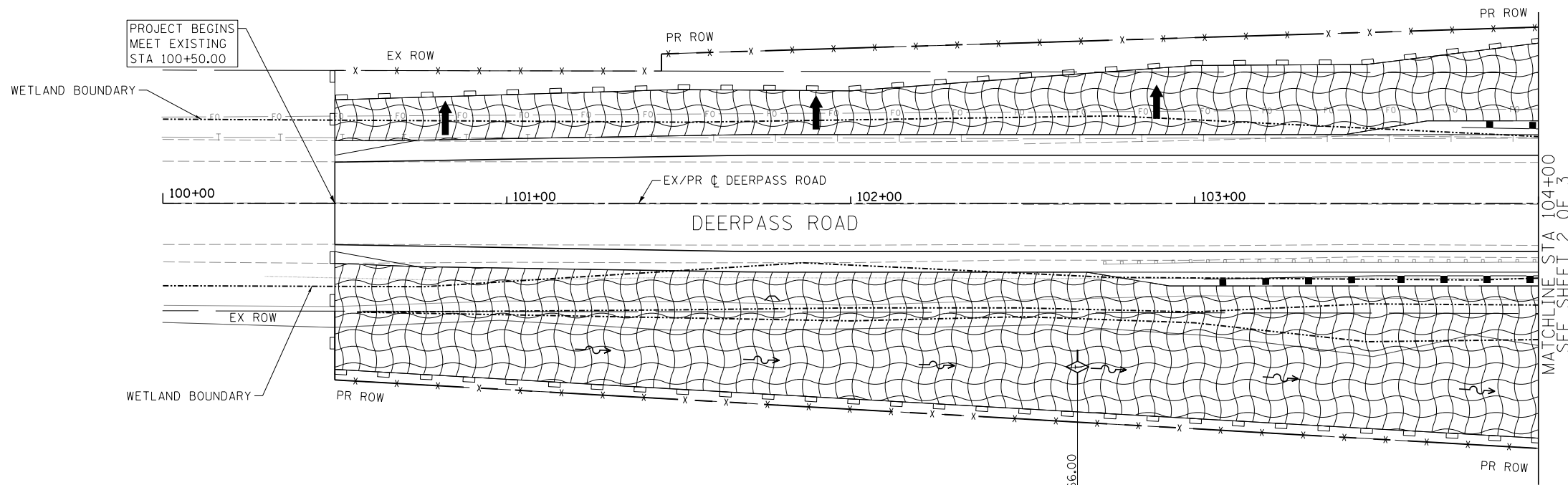
- ALL EROSION CONTROL MEASURES SHALL BE INSTALLED PRIOR TO BEGINNING ANY CONSTRUCTION ACTIVITIES, WHICH MAY POTENTIALLY CREATE CONDITIONS THAT ARE LIKELY TO ERODE.
- THE EROSION CONTROL MEASURES SHOWN ARE BUT A GRAPHICAL REPRESENTATION OF SUGGESTED MEASURES. DEVIATIONS FROM THIS PLAN ARE TO BE EXPECTED PENDING A JOB SITE INSPECTION BETWEEN THE CONTRACTOR AND THE COUNTY.
- THE CONTRACTOR WILL BE REQUIRED TO IMPLEMENT AND MAINTAIN SEDIMENT CONTROL MEASURES PRIOR TO DISTURBING EXISTING GROUND.
- THE ENFORCEMENT OFFICER MAY REQUIRE ADDITIONAL OR ALTERNATE SOIL EROSION AND SEDIMENT CONTROL MEASURES, BASED ON DEVELOPMENT SITE SPECIFIC CONSIDERATIONS AND THE EFFECTIVENESS OF THE INSTALLED CONTROL MEASURES.
- THE CONTRACTOR SHALL USE CARE IN GRADING OR EXCAVATING NEAR ANY AND ALL EXISTING ITEMS WHICH WILL NOT BE REMOVED. ANY DAMAGE DONE TO EXISTING ITEMS BY THE CONTRACTOR SHALL BE REPAIRED BY THE CONTRACTOR AT THE CONTRACTOR'S OWN EXPENSE.
- WETLANDS ARE LOCATED WITHIN THE PROJECT LIMITS. FOR WETLAND AREAS NEAR THE PROPOSED ROW, THE CONTRACTOR SHALL TAKE CARE TO ENSURE THAT NO DAMAGE IS DONE TO THE WETLANDS. ANY DAMAGE DONE TO THE WETLANDS BY THE CONTRACTOR SHALL BE REPAIRED TO THE ORIGINAL OR BEYOND THE ORIGINAL WETLAND CONDITION AT THE CONTRACTOR'S OWN EXPENSE.
- CONTRACTOR SHALL REFER TO THE STORM WATER POLLUTION PREVENTION PLAN (SWPPP) FOR EROSION CONTROL PROCEDURES. PERIMETER EROSION BARRIER WITH WIRE SUPPORT SHALL BE PLACED AT THE TOE OF THE PROPOSED SLOPES.
- SEE BRIDGE PLANS FOR RIPRAP DETAILS.
- TEMPORARY EROSION CONTROL BLANKET SHALL ONLY BE USED FOR TEMPORARY SEEDING CONDITIONS.
- SOIL DISTURBANCE SHALL BE CONDUCTED IN SUCH A MANNER AS TO MINIMIZE EROSION. AREAS OF THE DEVELOPMENT SITE THAT ARE NOT TO BE DISTURBED SHALL BE PROTECTED FROM CONSTRUCTION TRAFFIC OR OTHER DISTURBANCE UNTIL FINAL STABILIZATION IS ACHIEVED.
- SOIL EROSION AND SEDIMENT CONTROL MEASURES SHALL BE INSTALLED PRIOR TO THE DISTURBANCE OF TRIBUTARY AREAS AND UPLAND AREAS.
- DISTURBED AREAS SHALL BE STABILIZED WITH TEMPORARY OR PERMANENT MEASURES WITHIN SEVEN (7) CALENDAR DAYS FOLLOWING THE END OF ACTIVE HYDROLOGIC DISTURBANCE. SOIL STABILIZATION MEASURES SHALL CONSIDER THE TIME OF YEAR, DEVELOPMENT SITE CONDITIONS AND THE USE OF TEMPORARY OR PERMANENT MEASURES.
- IF DEWATERING SERVICES ARE USED, ADJOINING PROPERTIES (WITH ADVANCE WRITTEN PERMISSION FROM NEIGHBORING PROPERTY OWNER(S) AND INVOLVED PERMITTING AGENCIES) AND DISCHARGE LOCATIONS SHALL BE PROTECTED FROM EROSION. DISCHARGES SHALL BE ROUTED THROUGH AN EFFECTIVE SEDIMENT CONTROL MEASURE (E.G., SEDIMENT TRAP, SEDIMENT BASIN, OR OTHER APPROPRIATE MEASURE. THE ENFORCEMENT OFFICER SHALL BE NOTIFIED PRIOR TO THE COMMENCEMENT OF DEWATERING ACTIVITIES.

NOTES (CONT):

- ALL TEMPORARY SOIL EROSION AND SEDIMENT CONTROL MEASURES SHALL BE REMOVED WITHIN 30 DAYS AFTER FINAL STABILIZATION OF THE DEVELOPMENT SITE IS ACHIEVED OR AFTER THE TEMPORARY MEASURES ARE NO LONGER NECESSARY. TRAPPED SEDIMENT SHALL BE REMOVED AND DISTURBED AREAS SHALL BE PERMANENTLY STABILIZED.
- A STABILIZED MAT OF AGGREGATE UNDERLAIN WITH FILTER CLOTH (OR APPROPRIATE MEASURES) SHALL BE LOCATED AT ANY POINT WHERE TRAFFIC WILL BE ENTERING OR LEAVING A CONSTRUCTION SITE OF A MAJOR DEVELOPMENT TO OR FROM A PUBLIC RIGHT-OF-WAY OR ROADWAY. ANY SEDIMENT OR SOIL REACHING AN IMPROVED PUBLIC RIGHT-OF-WAY OR ROADWAY AREA SHALL BE REMOVED BY SCRAPING OR STREET CLEANING AS ACCUMULATIONS WARRANT AND TRANSPORTED TO A CONTROLLED SEDIMENT DISPOSAL AREA.
- SOIL STOCKPILES SHALL NOT BE LOCATED IN A FLOOD-PRONE AREA OR A DESIGNATED BUFFER PROTECTING WATERS OF THE UNITED STATES OR ISOLATED WATERS OF MCHENRY COUNTY.
- THE CONTRACTOR SHALL PROVIDE ADEQUATE RECEPTACLES FOR THE DEPOSITION OF ALL CONSTRUCTION MATERIAL DEBRIS GENERATED DURING THE DEVELOPMENT PROCESS. THE CONTRACTOR SHALL NOT CAUSE OR PERMIT THE DUMPING, DEPOSITING, DROPPING, THROWING, DISCARDING OR LEAVING OF CONSTRUCTION MATERIAL DEBRIS UPON OR INTO ANY DEVELOPMENT SITE, CHANNEL, WATERS OF THE UNITED STATES OR ISOLATED WATERS OF MCHENRY COUNTY. THE CONTRACTOR SHALL MAINTAIN THE DEVELOPMENT SITE FREE OF CONSTRUCTION MATERIAL DEBRIS.
- ALL TEMPORARY AND PERMANENT SEDIMENT CONTROL MEASURES SHALL BE MAINTAINED IN AN EFFECTIVE WORKING CONDITION.
- WHERE STREAM DISTURBANCE IS NECESSARY, THE STREAM, INCLUDING BED AND BANKS, SHALL BE RE-STABILIZED WITHIN FORTY-EIGHT (48) HOURS AFTER DISTURBANCE IS COMPLETED OR INTERRUPTED.
- PERIMETER CONTROL MEASURES SHALL BE PROVIDED DOWNSLOPE AND PERPENDICULAR TO THE FLOW OF RUNOFF FROM DISTURBED AREAS, WHERE THE TRIBUTARY AREA IS GREATER THAN 5,000 SQUARE FEET, AND WHERE RUNOFF WILL FLOW IN A SHEET FLOW MANNER. PERIMETER EROSION CONTROL SHALL ALSO BE PROVIDED AT THE BASE OF SOIL STOCKPILES.
- OFFSITE PROPERTY SHALL BE PROTECTED FROM EROSION AND SEDIMENTATION. VELOCITY DISSIPATION DEVICES SHALL BE PLACED AT CONCENTRATED DISCHARGE LOCATIONS AND ALONG THE LENGTH OF ANY OUTFALL CHANNEL, AS NECESSARY TO PREVENT EROSION.
- LOCATIONS OF THE STABILIZED CONSTRUCTION ENTRANCE/EXITS SHALL BE DETERMINED BY THE CONTRACTOR AND APPROVED BY THE ENGINEER. THE INSTALLATION OF THE CONSTRUCTION ENTRANCE/EXITS SHALL BE IN ACCORDANCE WITH THE ILLINOIS URBAN MANUAL OR AS DIRECTED BY THE ENGINEER.



AECOM



LEGEND

- x - TEMPORARY FENCE (SPECIAL)
- [Symbol] PERIMETER EROSION BARRIER
- xxx - TURBIDITY CURTAIN
- [Symbol] TEMPORARY DITCH CHECK
- [Symbol] TEMPORARY SEDIMENT TRAP (PAID FOR AS TEMPORARY SEDIMENT BASIN)
- [Symbol] TEMPORARY EROSION CONTROL SEEDING
- [Symbol] TEMPORARY EROSION CONTROL BLANKET
- [Symbol] TEMPORARY EROSION CONTROL SEEDING
- [Symbol] TEMPORARY HEAVY DUTY EROSION CONTROL BLANKET
- [Symbol] STONE RIPRAP, CLASS A4
- - - - - WETLAND BOUNDARY
- [Symbol] SHEET FLOW

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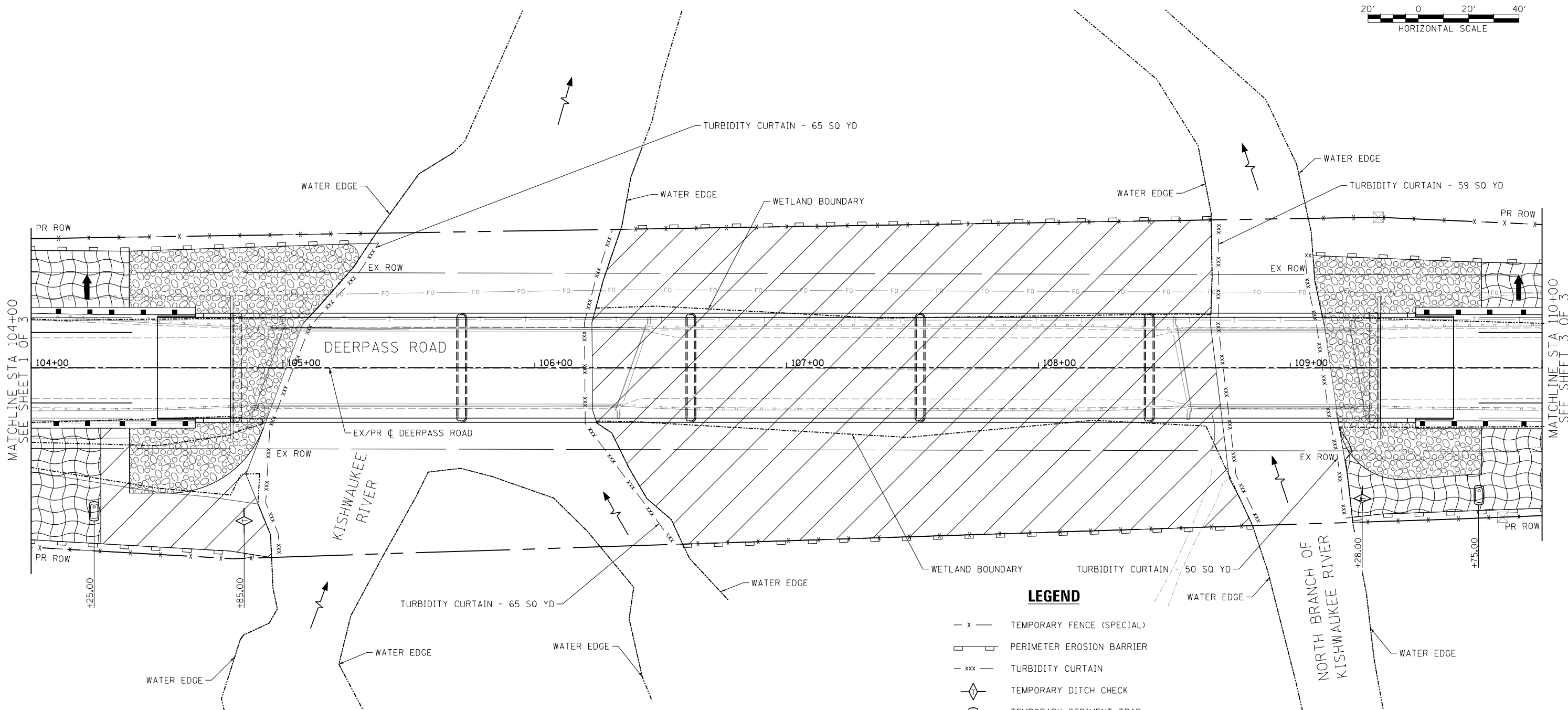
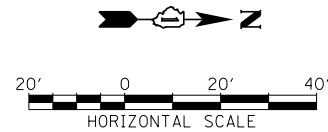
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	DRAWN - MSB	REVISED -
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PLOT DATE = 12/13/2016	DATE - 12/13/2016	REVISED -

**STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION**

EROSION AND SEDIMENT CONTROL PLAN

SCALE: 1" = 20' SHEET NO. 1 OF 3 SHEETS STA. 100+50 TO STA. 104+00

CH	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
47	10-00377-00-BR	MCHENRY	95	22
CONTRACT NO. 61D29				
ILLINOIS FED. AID PROJECT BR5-0111060				



LEGEND

- x - TEMPORARY FENCE (SPECIAL)
- [Symbol] PERIMETER EROSION BARRIER
- xxx - TURBIDITY CURTAIN
- [Symbol] TEMPORARY DITCH CHECK
- [Symbol] TEMPORARY SEDIMENT TRAP (PAID FOR AS TEMPORARY SEDIMENT BASIN)
- [Symbol] TEMPORARY EROSION CONTROL SEEDING
TEMPORARY EROSION CONTROL BLANKET
- [Symbol] TEMPORARY EROSION CONTROL SEEDING
TEMPORARY HEAVY DUTY EROSION CONTROL BLANKET
- [Symbol] STONE RIPRAP, CLASS A4
- - - - - WETLAND BOUNDARY
- [Symbol] SHEET FLOW
- [Symbol] WATERWAY FLOW

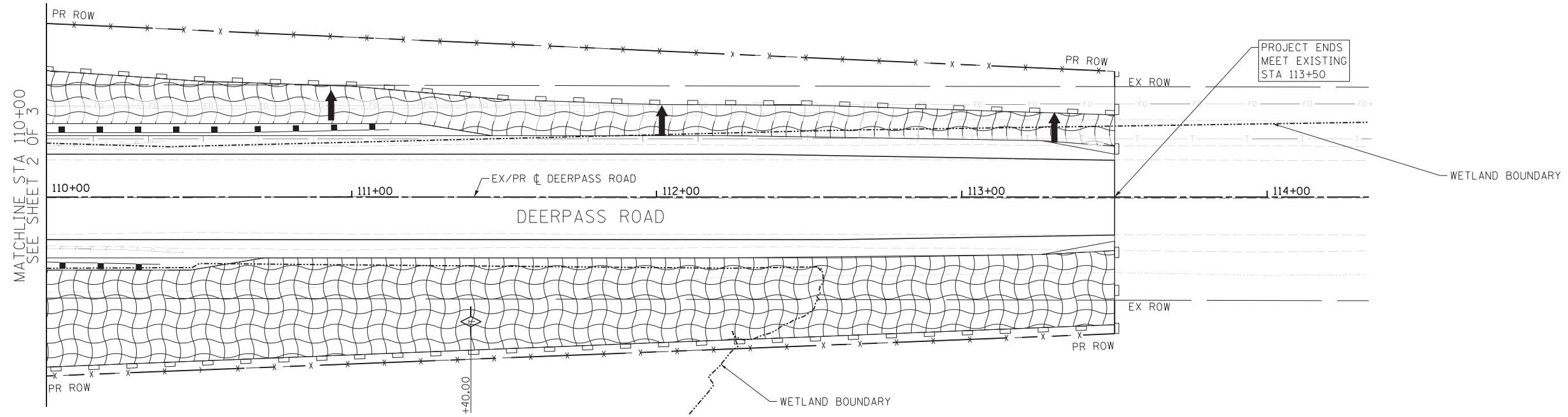
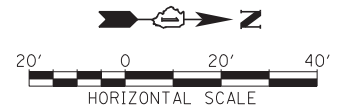
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	DRAWN - MSB	REVISED -
PLOT SCALE = 40.0000' / in.	CHECKED - AFC	REVISED -
PLOT DATE = 12/13/2016	DATE - 12/13/2016	REVISED -

**STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION**

EROSION AND SEDIMENT CONTROL PLAN

SCALE: 1" = 20' SHEET NO. 2 OF 3 SHEETS STA. 104+00 TO STA. 110+00

CH	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
47	10-00377-00-BR	MCHENRY	95	23
CONTRACT NO. 61D29				
ILLINOIS FED. AID PROJECT BR5-0111060				



LEGEND

- x — TEMPORARY FENCE (SPECIAL)
- [] — PERIMETER EROSION BARRIER
- xxx — TURBIDITY CURTAIN
- [◇] — TEMPORARY DITCH CHECK
- [] — TEMPORARY SEDIMENT TRAP (PAID FOR AS TEMPORARY SEDIMENT BASIN)
- [] — TEMPORARY EROSION CONTROL SEEDING
TEMPORARY EROSION CONTROL BLANKET
- [] — TEMPORARY EROSION CONTROL SEEDING
TEMPORARY HEAVY DUTY EROSION CONTROL BLANKET
- [] — STONE RIPRAP, CLASS A4
- [- - -] — WETLAND BOUNDARY
- [→] — SHEET FLOW

USER NAME = kim.jarosz	DESIGNED - MSB	REVISED -
	DRAWN - MSB	REVISED -
PLOT SCALE = 40.0000' / in.	CHECKED - AFC	REVISED -
PLOT DATE = 10/14/2016	DATE - 10/14/2016	REVISED -

**STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION**

EROSION AND SEDIMENT CONTROL PLAN

SCALE: 1" = 20' SHEET NO. 3 OF 3 SHEETS STA. 110+00 TO STA. 113+50

CH	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
47	10-00377-00-BR	MCHENRY	95	24
CONTRACT NO. 61D29				
ILLINOIS FED. AID PROJECT BR5-0111060				

Attachment 6

2011 INHS

Fish and Mussel Surveys Report



MEMORANDUM

TO: Janel Veile
Illinois Department of Transportation (IDOT)
Bureau of Design and Environment, Room 330
2300 S. Dirksen Parkway, Springfield IL 62764

FROM: Jeremy S. Tiemann, Field Biologist
Christopher A. Taylor, Ichthyologist
Illinois Natural History Survey (INHS)
Prairie Research Institute
Forbes Natural History Building, MC-652
1816 S. Oak Street, Champaign IL 61820

DATE: 18 October 2011

SUBJECT: Fish and Mussel Surveys
Deerpass Road (IDOT T59) bridges
Kishwaukee River and overflow area
1.4 mi NE Marengo / 0.70 miles N Illinois Route 176
Section No. 10-00377-00-BR
Bridge structure Nos. 056-3029 and 056-3030
Job No. P-91-747-10 (Seq. No.: 16356)
McHenry County
IDOT District 1

INTRODUCTION

This memorandum is submitted in response to a request made by Sue Dees Hargrove of IDOT to Joe Merritt of INHS, dated 29 April 2011 for fish and mussel surveys in the vicinity of two closely-aligned Deerpass Road (IDOT T59) bridges, 1.4 mi NNE Marengo, McHenry County, Illinois; one of these bridges crosses over the Kishwaukee River and the other (100 yards to the north) crosses over an overflow area of the river. Particular attention was to be given to assessing the presence of the Iowa darter (*Etheostoma exile*), blacknose shiner (*Notropis heterolepis*), and slippershell mussel (*Alasmidonta viridis*). This memorandum summarizes the results of fish and mussel surveys conducted on 9 August 2011.

Nomenclature used for fishes discussed in this memorandum follows Robins et al. (1991) and Mayden et al. (1992), whereas nomenclature used for freshwater mussels follows Cummings and Mayer (1992), and also includes changes discovered since 1992 in date of publication, original spelling, or priority of names. The current status of threatened and endangered species of fishes and mussels discussed in this memorandum are taken from Illinois Endangered Species Protection Board (IESPB) (2010), or U.S. Department of Interior, Fish and Wildlife Service (USDI, FWS) (1996, 1997).

PROJECT LOCATION

Sampling for fishes and mussels was conducted in the Kishwaukee River and in an overflow area at two Deerpass Road (IDOT T59) bridges, 1.4 mi NE Marengo (0.7 mi N intersection with Illinois Route 176) in McHenry County, Illinois (Second Principal Meridian: Township 44N, Range 5E, Section 25 NE and Township 44N, Range 6E, Section 30 NW). These two bridges are located approximately 100 yards apart. The specific locality information for these two bridge sites is taken from ACME Mapper 2.0 (<http://mapper.acme.com/>) using points centered on the two Deerpass Road (IDOT T59) bridges over the Kishwaukee River [(**Figure 1 – A**, bridge structure no. 056-3030): latitude: 42.26478° North, longitude: 88.58891° West (WGS84/NAD83)], and over an overflow area [(**Figure 1 – B**, bridge structure no. 056-3029): latitude: 42.26562° North, longitude: 88.58891° West (WGS84/NAD83)].



Figure 1. The Deerpass Road (IDOT T59) bridges over the Kishwaukee River (bullet A) and the overflow area (bullet B), 1.4 mi NE Marengo, McHenry County, Illinois (Figure taken from ACME Mapper 2.0 <<http://mapper.acme.com/>>).

HABITAT CHARACTERIZATION

INHS personnel examined reaches the Kishwaukee River and the overflow area, from approximately 50 yards upstream to approximately 50 yards downstream of each of the two Deerpass Road (IDOT T59) bridges. Stream and riparian habitat present at both the Kishwaukee River (**Figure 2**) and the overflow area (no pictures taken) were very similar: stream widths ranged from 10 to 15 yards, depths ranged from 0.1 to 3 feet, and each had a mean depth of 2 feet. Downstream of the bridges water was a uniform depth of 2 feet and substrates were predominantly and fine gravel with some silt accumulations along both stream banks. Water depths at and upstream of the bridges were variable, ranging from 0.1 foot along the stream edges to 3 feet in mid-channel. Sand was the only observed substrate at and upstream of the bridges. Some piles of woody debris occurred upstream. Current was slow to moderate. Stream banks upstream and downstream of each of these two bridges were low, shallowly sloped, and tree-lined.



Figure 2. The Kishwaukee River, 1.4 mi NE of Marengo, looking downstream (W) of the Deerpass Road (IDOT T59) bridge (structure no. 056-3030; bullet A in Figure 1) 9 August 2011. Photo by S.A. Bales (INHS).

BACKGROUND (Fishes)

Fishes known historically from the Kishwaukee River drainage (Rock River drainage) in Illinois total 71 species in 12 families. Of these, three listed as endangered and one listed as threatened in the state (IESPB 2010) are known from the drainage. The following information presented in this section is based on collection records housed in the INHS Fish Collection in Champaign.

The state endangered blacknose shiner (*Notropis heterolepis*) has been collected on three occasions from the Kishwaukee River drainage in Illinois. Two individual specimens were collected from Coon Creek 3 mi SE Belvidere (McHenry Co.) on 13 July 1965, one specimen was collected from the South Branch of the Kishwaukee River 0.5 mi N Union (McHenry Co.) on 8 October 1968, and one specimen was collected from the Kishwaukee River, 1 mi NW Marengo (McHenry Co.) on 12 July 1965. This last location is approximately 2 miles downstream of the IDOT TR59 bridge (structure no. 056-3030; bullet A, in **Figure 1**).

The state threatened, the gravel chub (*Erimystax x-punctatus*) has been collected twice from the

Kishwaukee River drainage in Illinois. The species still occurs commonly in the Rock River drainage and was not known to occur in the Kishwaukee drainage until 1997. Both collections were made in July of 1997 at two separate sites: 1) South Branch Kishwaukee River, 2.5 mi N Fairdale (DeKalb Co.), and 2) Kishwaukee River, 2.5 mi SE Rockford (Winnebago Co.).

Within the Kishwaukee River drainage, the state threatened Iowa darter (*Etheostoma exile*) has been collected on five occasions from four different sites. The species was first reported from the drainage in July of 1965 from the North Branch of the Kishwaukee River, 5 mi W Woodstock (McHenry Co.). In October 1967 the species was collected from Larsons Gravel Pits, 4.5 mi E DeKalb (DeKalb Co.). More recently the Iowa darter has been collected from Laughing Creek, 6 mi S Woodstock (McHenry Co.) in May of 1994; from the Kishwaukee River, 4.4 mi NNE Huntley (McHenry Co.) in September of 1997; from the South Branch Kishwaukee River, 1 mi SW Huntley (McHenry Co.) in October of 2007; from a tributary of the South Branch Kishwaukee, River 7 mi S Woodstock; and from the Kishwaukee River, 1 mi S Woodstock (McHenry Co.) in July 2009.

Finally, the state endangered weed shiner (*Notropis texanus*) was collected on a single occasion from the Kishwaukee River drainage – a single specimen was taken from the South Branch of the Kishwaukee River, 1.5 mi SW Sycamore, on 2 August 1901.

METHODS (Fishes)

The Kishwaukee River and overflow area at the two Deerpass Road (IDOT T59) bridges were sampled for fishes on 9 August 2011 by INHS personnel C.A. Taylor, J.S. Tiemann, and S.L. Kilburn. Fishes were collected at both sites with a barge-mounted electroshocker for approximately 45 minutes. Specimens were counted in the field and returned to their habitat with the exception of voucher specimens of each species collected. Those vouchers were preserved in the field in 10% formalin and returned to INHS for deposition in the INHS Fish Collection.

RESULTS (Fishes)

A total of 18 species of fishes in eight families were collected at the two Deerpass Road bridge sites over the Kishwaukee River and the overflow area (**Table 1**). Eighteen species of fishes in eight families were collected from the Kishwaukee River, while ten species in seven families were collected from the overflow area. No species listed as threatened or endangered at the state or federal level were encountered in either of these two areas. With the exception of the American brook lamprey, all species collected are common inhabitants of northern Illinois streams.

DISCUSSION (Fishes)

Recent records for the Iowa darter point to its continued existence in the upper Kishwaukee River drainage. The species was collected in July 2009 from the South Branch of the Kishwaukee River at a site located approximately 8 mi. upstream of the Deerpass Road bridge. However, the preferred habitat of Iowa darters in streams is quiet pools over mud and clay substrates (Smith 1979, Page and Burr 1991) or in small creeks (>5 m wide) with abundant

vegetation. Neither type of habitat was present in the immediate vicinity of the two Deerpass Road bridge sites over the Kishwaukee River and the overflow area. In addition, habitat similar to that observed during this present study at the two Deerpass Road sites was previously observed just 1 mi downstream, at the Illinois Route 23 (IDOT FAP 324) bridges over the Kishwaukee River and the overflow area. Surveys for fishes in the immediate vicinity of these two FAP 324 bridges were conducted by INHS personnel on 19 October 2004 and again on 21 April 2005 in response to a tasking (dated 23 September 2004) from IDOT (Taylor et al. 2005); however, no Iowa darters were collected from either site in 2004 or in 2005.

It is possible for an occasional Iowa darter to move downstream, and for this species to thus occur temporarily at the Deerpass Road sites. However, given the lack of suitable habitat and absence of the Iowa darter from past and present collecting efforts at the current bridge sites and nearby locations in the Kishwaukee River drainage, it is highly unlikely that a reproducing population of the species occurs there.

The blacknose shiner has not been collected from the Kishwaukee River drainage in over 40 years despite intensive sampling efforts by INHS and IDNR aquatic biologists. The species has been decimated across most of its range in northern Illinois and now only occurs in the upper Fox River drainage.

As its name implies, the gravel chub occurs in areas of streams and rivers with gravel or firm gravel-sand substrates and moderate to swift flow rates (Smith 1979, Page and Burr 1991). This type of habitat is not present at either of the two Deerpass Road bridge sites.

The weed shiner has not been collected from the Kishwaukee River drainage in over 100 years; like the blacknose shiner, its range has been greatly reduced in northern Illinois. The lack of recent collection records for the weed shiner in the Kishwaukee drainage argues for its extirpation from the drainage.

Table 1. Fishes collected by INHS personnel from two Deerpass Road (IDOT T59) bridges crossing the Kishwaukee River and an overflow area of the river, both located 1.4 mi NE Marengo, McHenry County, Illinois, on 9 August 2011.

Species	<u>Abundance</u>	
	Kishwaukee River	overflow area
Petromyzontidae		
<i>Lampetra appendix</i> American brook lamprey	2	3
Umbridae		
<i>Umbra limi</i> central mudminnow	4	3
Esocidae		
<i>Esox americanus</i> grass pickerel	12	14
Cyprinidae		
<i>Luxilus cornutus</i> common shiner	3	0
<i>Cyprinella spiloptera</i> spotfin shiner	11	0
<i>Nocomis biguttatus</i> hornyhead chub	3	0
<i>Pimephales notatus</i> bluntnose minnow	14	0
<i>Semotilus atromaculatus</i> creek chub	0	3
Catostomidae		
<i>Catostomus commersoni</i> white sucker	12	5
<i>Hypentelium nigricans</i> northern hogsucker	5	1
Fundulidae		
<i>Fundulus notatus</i> blackstrip topminnow	3	0
Centrarchidae		
<i>Ambloplites rupestris</i> rock bass	1	0
<i>Lepomis cyanellus</i> green sunfish	31	17
<i>Lepomis macrochirus</i> bluegill	9	0
<i>Micropterus salmoides</i> largemouth bass	4	3
<i>Pomoxis nigromaculatus</i> black crappie	3	0
Percidae		
<i>Etheostoma nigrum</i> johnny darter	7	14
<i>Percina maculata</i> blackside darter	5	1
Total number of species =	17	10

METHODS (Mussels)

The Kishwaukee River and overflow area, 1.4 mi NE Marengo in McHenry County, were sampled for mussels on 9 August 2011 by INHS personnel S.A. Bales, J.L. Sherwood, and two hourlies. Freshwater mussels were located by hand-picking for a total of 4 person-hours in an area from 50 yards downstream to 50 yards upstream of the bridges. Voucher specimens of each species collected were placed in the INHS Mollusk Collection, Champaign. Historical records for mussels were obtained from the INHS Mollusk Collection.

BACKGROUND (Mussels)

Twenty-six species of freshwater mussels are known from the Kishwaukee River mainstem in Illinois (**Table 2**). Included in this total are three state threatened species and one state endangered species. A summary of their historical occurrences in the basin is discussed below.

The state threatened spike (*Elliptio dilatata*) has been found at seven sites in the Kishwaukee River mainstem, including 3 mi W Marengo near Thorne Road bridge, McHenry County. This species has not been collected alive in the mainstem (all records are relict shells).

The state threatened black sandshell (*Ligumia recta*) has been found at eight sites in the Kishwaukee River mainstem. This species was found alive at four sites (all Winnebago County): Blackhawk Springs Forest Preserve at confluence with South Branch Kishwaukee River (1990); Espenscheid Memorial Forest Preserve near Perryville (2005); Kishwaukee Forest Preserve near New Millford (2005), and Rockford Rotary Forest Preserve near New Milford (2009). In the Kishwaukee River mainstem in McHenry County, *L. recta* was found as a relict shell 2 mi WNW Marengo at the Thorn Road bridge in 1996 by McHenry County Forest Preserve District staff.

The state threatened slippershell (*Alasmidonta viridis*) has been found at three sites in the Kishwaukee River mainstem. Even though this species has not been collected alive in the mainstem, it was collected as fresh-dead 3 mi W Marengo near Thorne Road bridge, McHenry County.

The state endangered rainbow (*Villosa iris*) was historically found at one site in the Kishwaukee River mainstem (2 mi WNW Marengo, Thorne Rd. to Ritz Rd.). The specimens were relict shells and no other records of the rainbow are known from the basin. This species has not been collected alive in the drainage in decades and is most likely extirpated from the Rock – Kishwaukee basin.

Historical data from the Marengo area was available from a survey conducted by Dr. P.W. Parmalee of the Illinois State Museum in 1955, and from a survey for IDOT by INHS personnel K.S. Cummings and J.S. Tiemann in on 19 October 2004 (Taylor et al. 2005). A summary of these findings is given in **Table 2**.

RESULTS AND DISCUSSION (Mussels)

INHS personnel collected six species of freshwater mussels, three of which were found alive (**Figure 3**), two as fresh-dead shell, and one as relict shell (**Table 2**). No species listed at either the state or federal level as threatened or endangered were collected or observed. *Alasmidonta viridis* (**Figure 3**) is commonly found in smaller streams in sand or fine gravel (Cummings and

Mayer 1997). The habitat upstream and downstream of the bridge appeared favorable for *Alasmidonta viridis*. Care should be taken to avoid construction impacts (particularly siltation resulting from bank and in-stream construction) that would negatively affect this stream both at and downstream of this bridge.



Figure 3. The four live mussels collected in the Kishwaukee River, 1.4 mi NE of Marengo on 9 August 2011. From top to bottom, the mussels are *Fusconaia flava*, *Fusconaia flava*, *Lasmigona complanata*, and *Lampsilis siliquoidea*. Photo by S.A. Bales, INHS.

Table 2. Freshwater mussels (Unionidae) recorded from the Kishwaukee River mainstem, and those a) collected near Marengo, McHenry County, by P.W. Parmalee in 1955, b) by K.S. Cummings and J.S. Tiemann on 19 October 2004 (Taylor et al. 2005), and c) by INHS personnel on 9 August 2011 during this present survey (data from the INHS Mollusk Collection). SE = Illinois State Endangered; ST = Illinois State Threatened. D = fresh-dead shell condition; R = relict shell; X = Present (shell condition unknown).

SPECIES	1955	2004	2011

Subfamily Anodontinae (9)			
<i>Alasmidonta marginata</i>	X	-	R
<i>Alasmidonta viridis</i> (ST)	-	-	-
<i>Anodontoides ferussacianus</i>	-	D	-
<i>Lasmigona complanata</i>	X	1	1
<i>Lasmigona compressa</i>	-	-	D
<i>Lasmigona costata</i>	-	-	-
<i>Pyganodon grandis</i>	X	-	-
<i>Strophitus undulatus</i>	-	-	-
<i>Utterbackia imbecillis</i>	-	-	D
Subfamily Ambleminae (5)			
<i>Amblyma plicata</i>	X	R	-
<i>Elliptio dilatata</i> (ST)	-	-	-
<i>Fusconaia flava</i>	X	-	2
<i>Pleurobema sintoxia</i>	X	-	-
<i>Quadrula pustulosa</i>	-	-	-
Subfamily Lampsilinae (12)			
<i>Actinonaias ligamentina</i>	-	-	-
<i>Lampsilis cardium</i>	X	-	-
<i>Lampsilis siliquoidea</i>	-	-	1
<i>Lampsilis teres</i>	-	-	-
<i>Leptodea fragilis</i>	-	-	-
<i>Ligumia recta</i> (ST)	-	-	-
<i>Potamilus alatus</i>	-	-	-
<i>Potamilus ohioensis</i>	-	-	-
<i>Toxolasma parvum</i>	-	-	-
<i>Truncilia donaciformis</i>	-	-	-
<i>Venustaconcha ellipsiformis</i>	-	-	-
<i>Villosa iris</i> (SE)	-	-	-

Species collected live	?	1	3
Species collected dead and relict	?	2	3
Grand Total (26)	7	3	6

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