

Enbridge Pipelines (North Dakota) LLC
Beaver Lodge Loop Project
Route Width Deviation Request
Docket No. PU-10-613



July 5, 2011

Enbridge Pipelines (North Dakota) LLC

**North Dakota PSC
Docket No. PU-10-613**

Beaver Lodge Loop Project

Route Deviations

Route Deviation No. 1: Mile Post 0.20 – Minuteman Deviation

Route Deviation No. 2: Mile Post 2.47 - Request for Additional Temporary Workspace

July 5, 2011

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Route Deviation No. 1
Mile Post 0.20 – Minuteman Deviation

Mile Post 0.20 – Minuteman Deviation

Enbridge Pipelines (North Dakota) LLC (“EPND”) hereby respectfully requests authorization to deviate from its general 250-foot wide surveyed route corridor¹ (“permitted route corridor”), which the North Dakota Public Service Commission’s (“ND-PSC” or “Commission”) approved and permitted by Findings of Fact, Conclusion of Law and Order dated May 18, 2011, in Case No. PU-10-613². This route deviation is needed in order for EPND to adjust its pipeline centerline slightly to the south and west to provide a buffer zone around a United States Air Force J-3 Minuteman Missile Silo site³, as shown on the route map enclosed herewith as Attachment A. The missile silo is located approximately one (1) mile west of the City of Berthold in Ward County, North Dakota. This route deviation also provides a secondary benefit. Subject to approval, EPND will locate its centerline immediately adjacent to and follow the right-of-way easement of Burlington Northern Santa Fe Railroad for the majority of its length, as requested by the affected landowners. EPND has received an easement for the proposed route deviation from the affected landowners.

A. Description of Proposed Route Deviation

The proposed route deviation (the “Minuteman Deviation”), is located within the one-mile study area which the ND-PSC evaluated during the approval process of Case No. PU-10-613. As proposed, the Minuteman Deviation begins at Mile Post 0.19 where the pipeline centerline must be adjusted to the south and further west between Mile Post 0.19 in Section 20, Township 165 North, Range 86 West and Mile Post 1.75 in Section 19, Township 156 North, Range 86 West, all being located in Ward County, North Dakota. The Minuteman Deviation will consist of approximately 8,735 feet of 12-inch diameter pipeline. Of that total, approximately 8,085 feet will be located outside of EPND’s permitted route corridor as shown on the route map attached hereto as Attachment A. The remaining 650 feet are located within EPND’s permitted route corridor, which the Commission approved by Order dated May 18, 2011. See Summary Table 1.1 below. EPND has received an easement from the affected landowners.

¹ The permitted route corridor is shown on Sheet No. 2715-M-01001 of Exhibit H, which was filed and approved by the Commission’s Order dated May 18, 2011.

² In conjunction therewith, the Commission issued Corridor Certificate No. 119 and Route Permit No. 129.

³ At the request of the United States Air Force and in order to properly operate and secure its facilities in the best interest of the nation, Enbridge seeks this route deviation to provide for a buffer between its facilities and the J-3 Minuteman Missile Silo site of at least twelve hundred (1,200’) feet.

| Summary Table 1.1 | | | |
|---|--------------|---|----------------------------------|
| Comparison of Approved Pipeline Centerline Between MP 0.19 and MP 1.75 | | | |
| To | | | |
| Proposed Pipeline Centerline Adjustment between MP 0.19 and | | | |
| New Ending MP 1.84 | | | |
| Land Use & Land Cross ^a | Units | Approved Pipeline Centerline within Permitted Route Corridor | Requested Route Deviation |
| Total Length | Feet | 8,327 | 8,735 |
| Length Outside Permitted Route Corridor | Feet | 0 | 8,085 |
| Roads Crossed | Number | 1 | 1 |
| Construction Footprint | | 110 feet | 110 feet |
| Permanent Right-of Way Requirement | | 50 feet | 50 feet |
| Temporary Workspace | | 60 feet | 60 feet |

The portion of the centerline adjustment that is outside EPND's permitted route corridor is located immediately to the south and runs parallel to it for the entire length, as shown on the route map ([see](#) Attachment A). EPND will maintain the same construction footprint and right-of way requirements as approved by this Commission in Case No. PU-10-613.

B. Purpose & Justification as Preferred Route

As stated above, the Minuteman Deviation is needed in order to provide a buffer zone around a United States Air Force J-3 Minuteman Missile Silo site in Ward County, North Dakota. The Minuteman Deviation also provides secondary benefits in that it accommodates the requests of the affected landowners by locating the adjusted centerline immediately adjacent to and along the right-of-way easement of Burlington Northern and Santa Fe Railroad for the majority of its length. EPND believes that the Minuteman Deviation is in the public interest and respectfully requests that the Commission grant EPND approval to proceed with the minor centerline adjustment of its 12-inch diameter pipeline as proposed herein.

C. Analysis of the Potential Impacts on the Human and Natural Environment

In connection with the Minuteman Deviation requested herein, EPND has analyzed the impacts of the proposed centerline adjustment in accordance with the Commission's Transmission Facility Corridor and Route Criteria⁴. As proposed, the Minuteman Deviation has the same or less impacts as the existing and approved preferred pipeline route which was evaluated and permitted by this Commission in accordance with North Dakota Century Code Section 49-22-09 and North Dakota Administrative Code ("NDAC") 69-06-08-02⁵. Thus, EPND submits the following information to demonstrate that no significant adverse impact will result from the location, construction and operation of the Minuteman Deviation.

C.1 Exclusion Areas

- No exclusion areas were identified in accordance with the criteria set out in NDAC Section 69-06-07-02.1

C.2 Avoidance Areas

- No avoidance areas were identified in accordance with the criteria set out in NDAC Section 69-06-07-02.2.

C.3 Selection Criteria

As shown on the table below, EPND has analyzed the impacts of the route deviation in relation to all of the relevant Selection Criteria. EPND concluded that the proposed route deviation will have no significant adverse impact on the location, construction and operation of the Project as approved by the Commission's Order dated May 18, 2011.

⁴ North Dakota Administrative Code Section 69-06-08-02.

⁵ See Findings of Fact, Conclusion of Law Order dated May 18, 2011 in Case No. PU-10-613, which the Commission authorized the transmission facility corridor and route for the Beaver Lodge Loop Project US in Williams, Mountrail and Ward Counties in Corridor Certificate No. 119 and Route Permit No. 129.



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| Table 1.2 Bakken Pipeline Project US Selection Criteria Considered | | |
|---|--|--|
| SELECTION CRITERIA CONSIDERED | CROSSED BY APPROVED CORRIDOR AND ROUTE | CROSSED BY REQUESTED DEVIATION |
| Agricultural Production | Yes | Substantially similar |
| Family Farms and Ranches | Minimal | Substantially similar |
| Land Suitable for Irrigation | Minimal | Substantially similar |
| Surface and Groundwater Flow Patterns | Minimal | Substantially similar |
| Noise Sensitive Areas | Minimal | Substantially similar |
| Visual Effects | Minimal | Substantially similar |
| Extractive and Storage Resources | Minimal | Substantially similar |
| Wetlands | Minimal | Substantially similar |
| Woodlands | Minimal | Substantially similar |
| Communication or Electric Control Facilities | Minimal | Substantially similar |
| Human Health and Safety | Minimal | Substantially similar |
| Animal Health and Safety | Minimal | Substantially similar |
| Plant Life | Minimal | Substantially similar |

C.4 Policy Criteria

EPND has analyzed the relevant Policy Criteria as it relates to the Minuteman Deviation. EPND has concluded that the Minuteman Deviation will not alter any of its commitments as stated in Policy Criteria⁶ Section B.4.c of its Application for a Route Permit, as approved by the Commission's Order dated May 18, 2011.

⁶ North Dakota Administrative Code Section 69-06-08-02.4

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EPND hereby submits its commitment to maximize the benefits of its proposed route deviation so as to meet the Commission's Policy Criteria. Thus, EPND remains committed to the following:

- conduct its business in compliance with all applicable environmental laws and regulations;
- use energy conservation through the location, process, and design of its transmission facility as approved and the same for the proposed route deviation;
- provide training and utilize available labor in the state;
- construct its approved Project and the proposed route deviation as to take advantage of economies of scale;
- achieve transmission capacity in the most minimally intrusive and most efficient way possible; and
- coordinate with state and local officials.

D. Environmental Assessment for Route Deviation

The Minuteman Deviation will not impact the environmental data that has been assessed, specifically with regard to cultural resources, wetlands and protected species, as described in Section B of the Application for Certificate for Corridor Compatibility and approved by the Commission's Order dated May 18, 2011. EPND has performed additional field survey work for that portion of the route deviation which falls outside of EPND's permitted surveyed corridor, and hereby submits the following results.

- Enclosed herewith as Attachment B are the State Historical Society of North Dakota's letter of concurrence dated June 3, 2011 and the Metcalf Archaeological Consultants Inc.'s Report dated May 2011, which provides the supporting documentation stating that "No Historical Properties [will be] Affected" by the proposed route deviation.
- Enclosed herewith as Attachment C is the McCain and Associates Inc.'s Wetland Delineation Report dated June 8, 2011, which did not identify any additional wetland impacts nor any critical habitat areas located

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Route Deviation No. 2

Mile Post 2.47 - Request for Additional Temporary Workspace



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Mile Post 2.47 –Request for Additional Temporary Workspace

Enbridge Pipelines (North Dakota) LLC (“EPND”) hereby respectfully requests authorization for additional temporary workspace at Mile Post 2.47, which is located outside the existing, previously approved surveyed corridor as permitted by the North Dakota Public Service Commission’s (“ND-PSC” or “Commission”) Findings of Fact, Conclusion of Law and Order dated May 18, 2011, in Case No. PU-10-613⁷. EPND submits that the additional temporary workspace is needed in order to accommodate the request change of Burlington Northern and Santa Fe Railway Company (“BNSF”). BNSF has requested EPND to change its depth of cover for its pipeline crossing of the BNSF railroad at Mile Post 2.36, as more fully described below.

E. Description of Proposed Request for Additional Temporary Workspace

The additional temporary workspace requested by EPND is located within the one-mile study area which the Commission evaluated in Case No. PU-10-613. As shown on the route map enclosed herewith as Attachment A, EPND plans to expand its existing southernmost boundary which includes previously-approved temporary workspace area to include an extra temporary workspace area that is approximately 152 feet by 125 feet in size and covers approximately 19,000 square feet (see route map enclosed herewith as Attachment A). The extra temporary workspace will be located on the south side of its railroad crossing in Section 24, Township 156 North, Range 87 West, Ward County, North Dakota. Such extra workspace is necessary to facilitate the new depth requirements to cross BNSF railroad at Mile Post 2.36. The pipeline bore will remain within the existing, previously approved surveyed corridor, which the Commission permitted in its Order dated May 18, 2011 (see route map in Attachment A, which shows the approved surveyed corridor). EPND has received a temporary easement from the affected landowner for the requested extra temporary workspace area.

| Summary Table 1.1 | | | |
|--|--------------|---|--|
| Additional Temporary Workspace Requirements at MP 2.47 | | | |
| Land Use & Land Cross ^a | Units | BNSF Railroad Crossing | |
| | | Approved Pipeline Bore with 10 feet of Cover | Requested Pipeline Bore with 25 feet of Cover |
| Total Length of Pipeline Bore is located within the Commission approved surveyed corridor ⁸ | Feet | 200 | 378 |
| Temporary Workspace Requirements Outside Permitted Route Corridor | Feet | | 152 x 125 |
| Roads Crossed | Number | 0 | 0 |

⁷ In conjunction therewith, the Commission issued Corridor Certificate No. 119 and Route Permit No. 129.

⁸ The 178-foot difference in the length of pipeline bore is caused by changing the drill radius to meet BNSF’s new depth requirement (25 feet depth of cover) at the railroad crossing at Mile Post 2.36.

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EPND will maintain the same construction footprint and right-of-way requirements as approved by this Commission for this location in Case No. PU-10-613.

F. Purpose & Justification as Preferred Route

As stated above, this request for additional temporary workspace is needed in order to accommodate BNSF's new depth requirements for the railroad crossing at Mile Post 2.36. EPND believes that the proposed request is in the public interest and respectfully requests that the Commission grant EPND approval to adjust its temporary workspace boundaries as described herein to accommodate the request of BNSF Railway Company.

G. Analysis of the Potential Impacts on the Human and Natural Environment

In accordance with the Commission's Transmission Facility Corridor and Route Criteria⁹, EPND has analyzed the impacts of expanding its temporary workspace to accommodate the new depth requirements to cross the BNSF railroad at Mile 2.36. As proposed, such action has the same or similar impacts as the existing sited and approved BNSF railroad crossing at this location, which was evaluated and permitted by this Commission in accordance with North Dakota Administrative Code ("NDAC") Section 49-22-09 and 69-06-08-02¹⁰. Thus, EPND submits the following information to demonstrate that no significant adverse impact will result from any work activities located within the extra temporary workspace requested herein.

C.1 Exclusion Areas

- No exclusion areas were identified in accordance with the criteria set out in NDAC Section 69-06-07-02.1

C.2 Avoidance Areas

- No avoidance areas were identified in accordance with the criteria set out in NDAC Section 69-06-07-02.2

⁹ North Dakota Administrative Code Section 69-06-08-02.

¹⁰ See Findings of Fact, Conclusion of Law Order dated May 18, 2011 in Case No. PU-10-613, which the Commission authorized the transmission facility corridor and route for the Beaver Lodge Loop Project in Williams, Mountrail, and Ward Counties in Corridor Certificate No. 119 and Route Permit No. 129.

C.3 Selection Criteria

As shown on the table below, EPND has analyzed the impacts of expanding its temporary workspace in relation to all of the relevant Selection Criteria. EPND concluded that such action will have no significant adverse impact on the location, construction and operation of the Project as approved by the Commission's Order dated May 18, 2011.

| Table 1.2 Beaver Lodge Loop Project Selection Criteria Considered | | |
|--|--|--|
| SELECTION CRITERIA CONSIDERED | CROSSED BY APPROVED CORRIDOR AND ROUTE | CROSSED BY REQUESTED ADDITIONAL TEMP WORKSPACE |
| Agricultural Production ¹¹ | Yes | See Footnote 5 |
| Family Farms and Ranches | Minimal | Substantially similar |
| Land Suitable for Irrigation | Minimal | Substantially similar |
| Surface and Groundwater Flow Patterns | Minimal | Substantially similar |
| Noise Sensitive Areas | Minimal | Substantially similar |
| Visual Effects | Minimal | Substantially similar |
| Extractive and Storage Resources | Minimal | Substantially similar |
| Wetlands | Minimal | Substantially similar |
| Woodlands | Minimal | Substantially similar |
| Communication or Electric Control Facilities | Minimal | Substantially similar |
| Human Health and Safety | Minimal | Substantially similar |
| Animal Health and Safety | Minimal | Substantially similar |
| Plant Life | Minimal | Substantially similar |

¹¹ Slightly more agricultural land will be temporarily impacted as the result of this need to use additional temporary workspace to meet BNSF's new depth requirements for the railroad crossing at Mile Post 2.36. The landowner has granted EPND permission to use the extra temporary workspace as requested herein.

C.4 Policy Criteria

EPND has analyzed the relevant Policy Criteria as it relates to the proposed request for additional temporary workspace. EPND has concluded that the proposed request will not alter any of its commitments as stated in Policy Criteria¹² Section B.4.c of its Application for a Route Permit, as approved by the Commission's Order dated May 18, 2011.

EPND hereby submits its commitment to maximize the benefits of its request for extra temporary workspace so as to meet the Commission's Policy Criteria. Thus, EPND remains committed to the following:

- conduct its business in compliance with all applicable environmental laws and regulations;
- use energy conservation through the location, process, and design of its transmission facility as approved and the same for the extra temporary workspace.
- provide training and utilize available labor in the state;
- construct its approved Project and the requested temporary workspace as to take advantage of economies of scale;
- achieve transmission capacity in the most minimally intrusive and most efficient way possible; and
- coordinate with state and local officials.

H. Environmental Assessment for Additional Temporary Workspace

The proposed request for extra temporary workspace will not impact the environmental data that has been assessed, specifically with regard to cultural resources, wetlands and protected species, as described in Section B of the Application for Certificate for Corridor Compatibility and approved by the Commission's Order dated May 18, 2011. EPND has performed additional field survey work for that portion of the additional temporary workspace which falls outside of the Commission's approved surveyed corridor, and hereby submits the following results.

- Enclosed herewith as Attachment B are the State Historical Society of North Dakota's letter of concurrence dated June 3, 2011 and the Metcalf Archaeological Consultants Inc.'s Report dated May 2011, which provides the supporting documentation stating that "No Historical Properties [will be] Affected" by the use of the additional temporary workspace as requested herein.
- Enclosed herewith as Attachment C is the McCain and Associates Inc.'s Wetland Delineation Report dated June 8, 2011, which did not identify any additional wetland impacts nor any critical habitat areas located within the extra temporary workspace area requested herein.

¹² North Dakota Rules Chapter 69-06-08-02.4

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ATTACHMENT A
Aerial Route Maps
and
Topographic Maps

See Attachment A.1: Mile Post 0.20 – Minuteman Deviation

See Attachment A.2: Mile Post 2.47 - Request for Additional Temporary Workspace

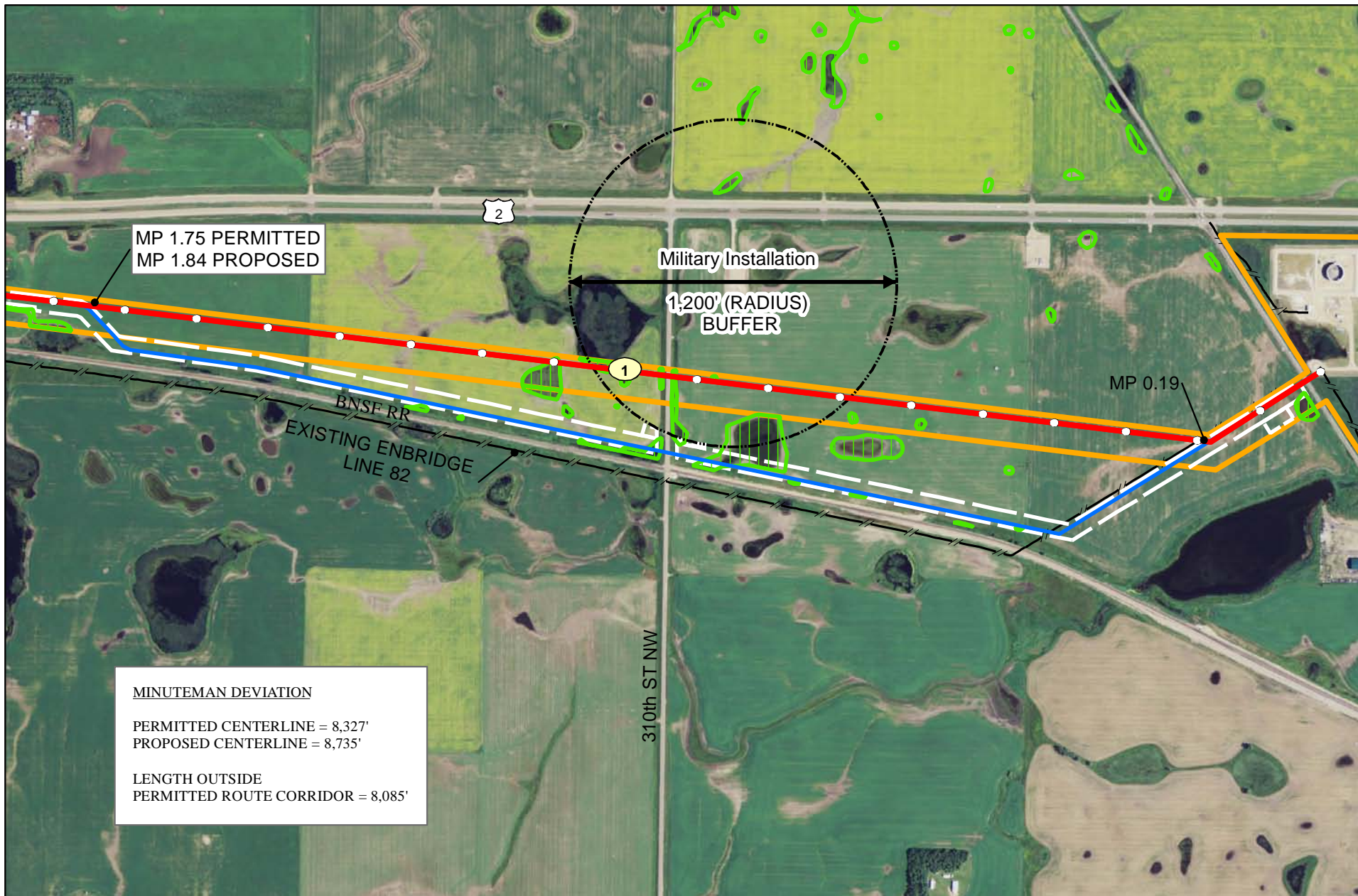
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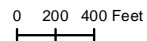
Attachment A.1

Mile Post 0.20 – Minuteman Deviation



Legend

- Permitted Centerline
- Proposed Centerline
- Environmental Corridor
- Existing Enbridge Pipeline
- Mileposts
- Workspace Boundary
- Wetland Boundary
- USAF Easement



Note:
DOCKET NO. PU-10-613
REFERENCE SHEET # 2715-M-01001



Revised: July 5, 2011



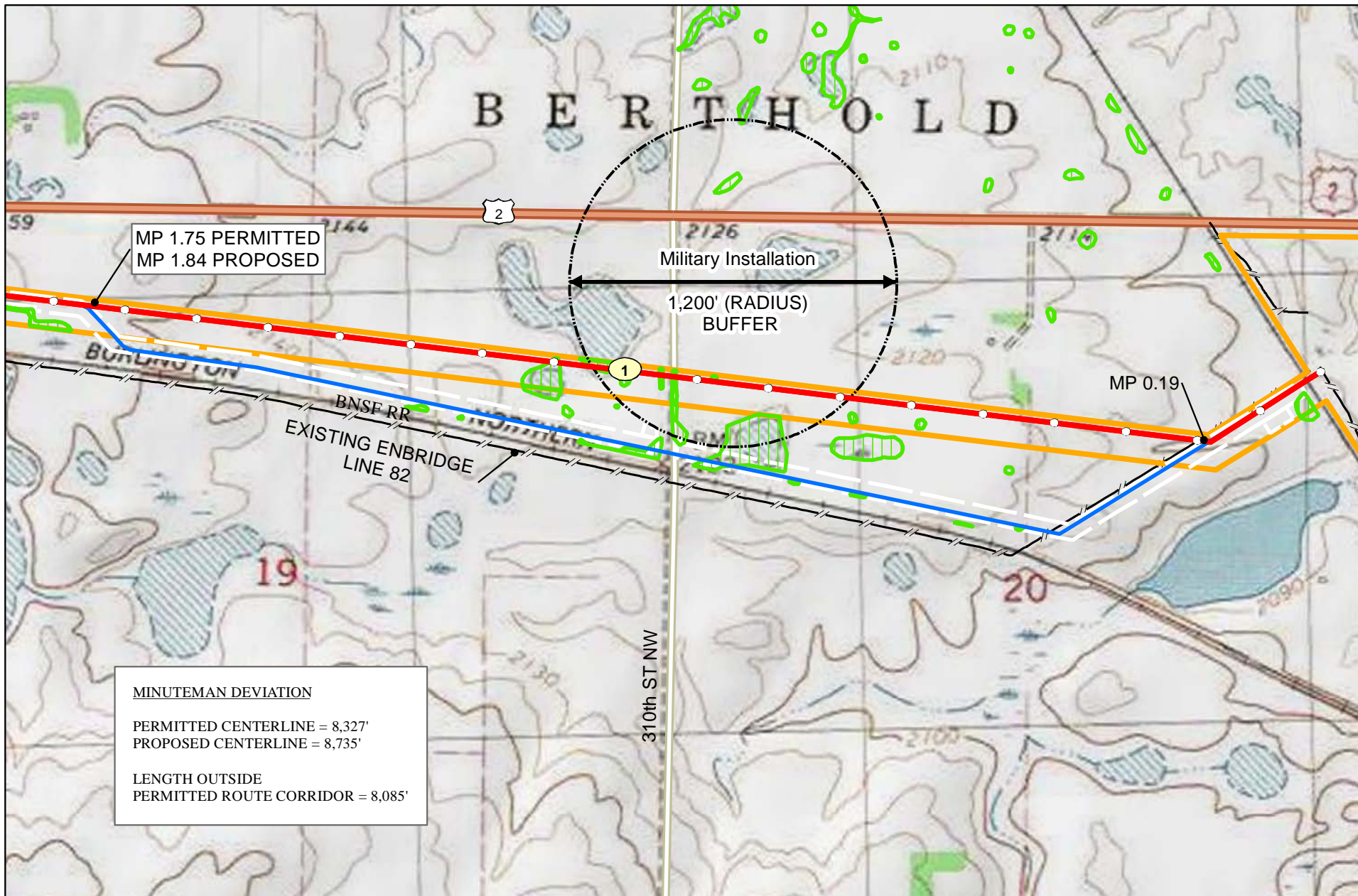
BAKKEN EXPANSION PROGRAM - US
WARD COUNTY, ND

Drawing:

MP 0.19 to MP 1.75

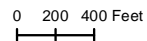
Revision

A



Legend

- Permitted Centerline
- Proposed Centerline
- Environmental Corridor
- Existing Enbridge Pipeline
- Mileposts
- Workspace Boundary
- Wetland Boundary
- USAF Easement



Note:
DOCKET NO. PU-10-613
REFERENCE SHEET # 2715-M-01001



Revised: July 5, 2011



BAKKEN EXPANSION PROGRAM - US
WARD COUNTY, ND

Drawing:

MP 0.19 to MP 1.75

Revision

A

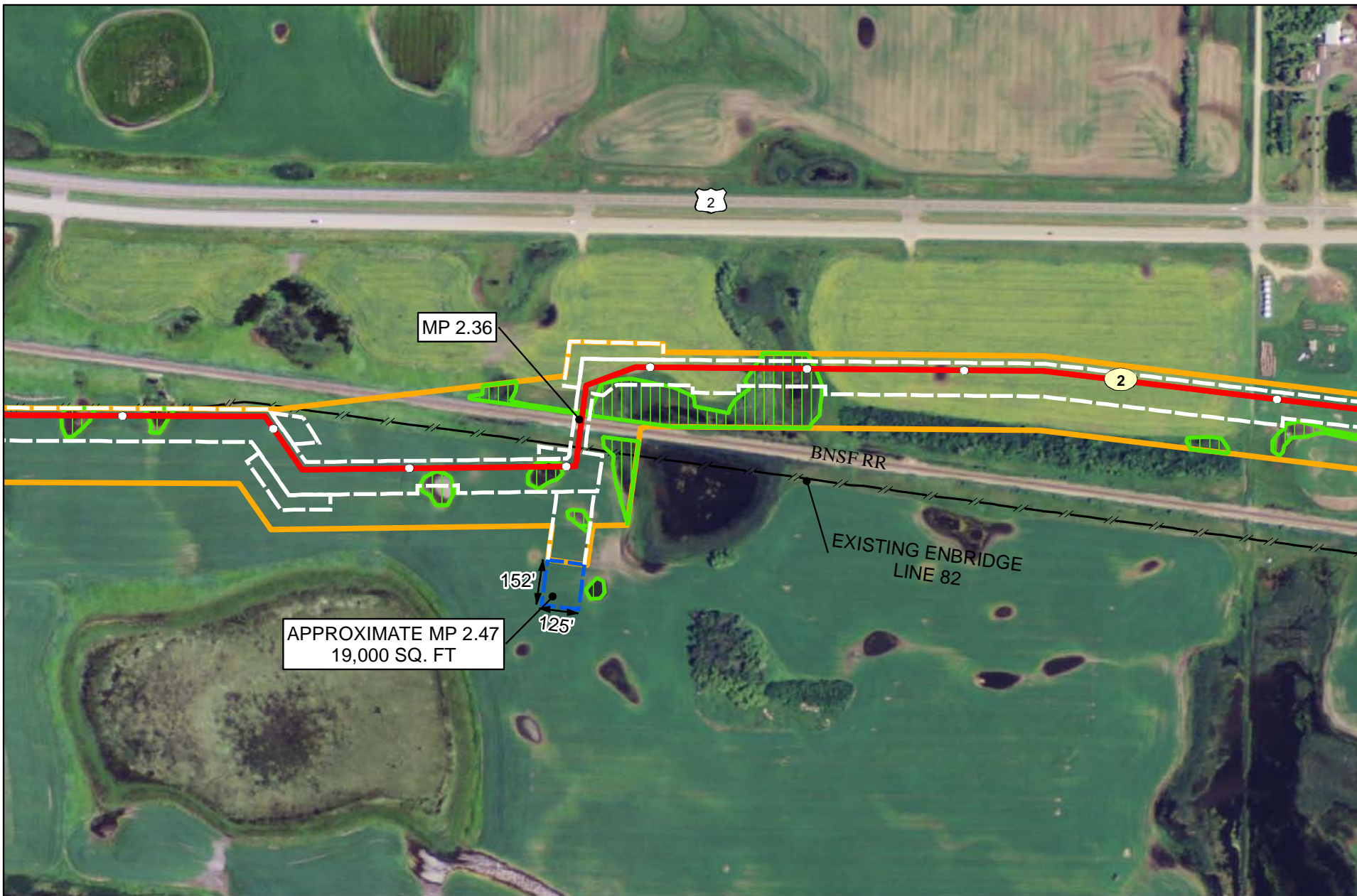
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July 5, 2011

Attachment A.2

Mile Post 2.47 - Request for Additional Temporary Workspace



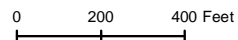
- Legend**
- Permitted Centerline
 - Proposed Centerline
 - Environmental Corridor
 - - - Existing Enbridge Pipeline
 - - - Mileposts
 - Workspace Boundary

- ▨ Wetland Boundary
- ▨ Proposed Workspace Boundary

Note:
 DOCKET NO. PU-10-613
 REFERENCE SHEET # 2715-M-01002



BAKKEN EXPANSION PROGRAM - US
 WARD COUNTY, ND



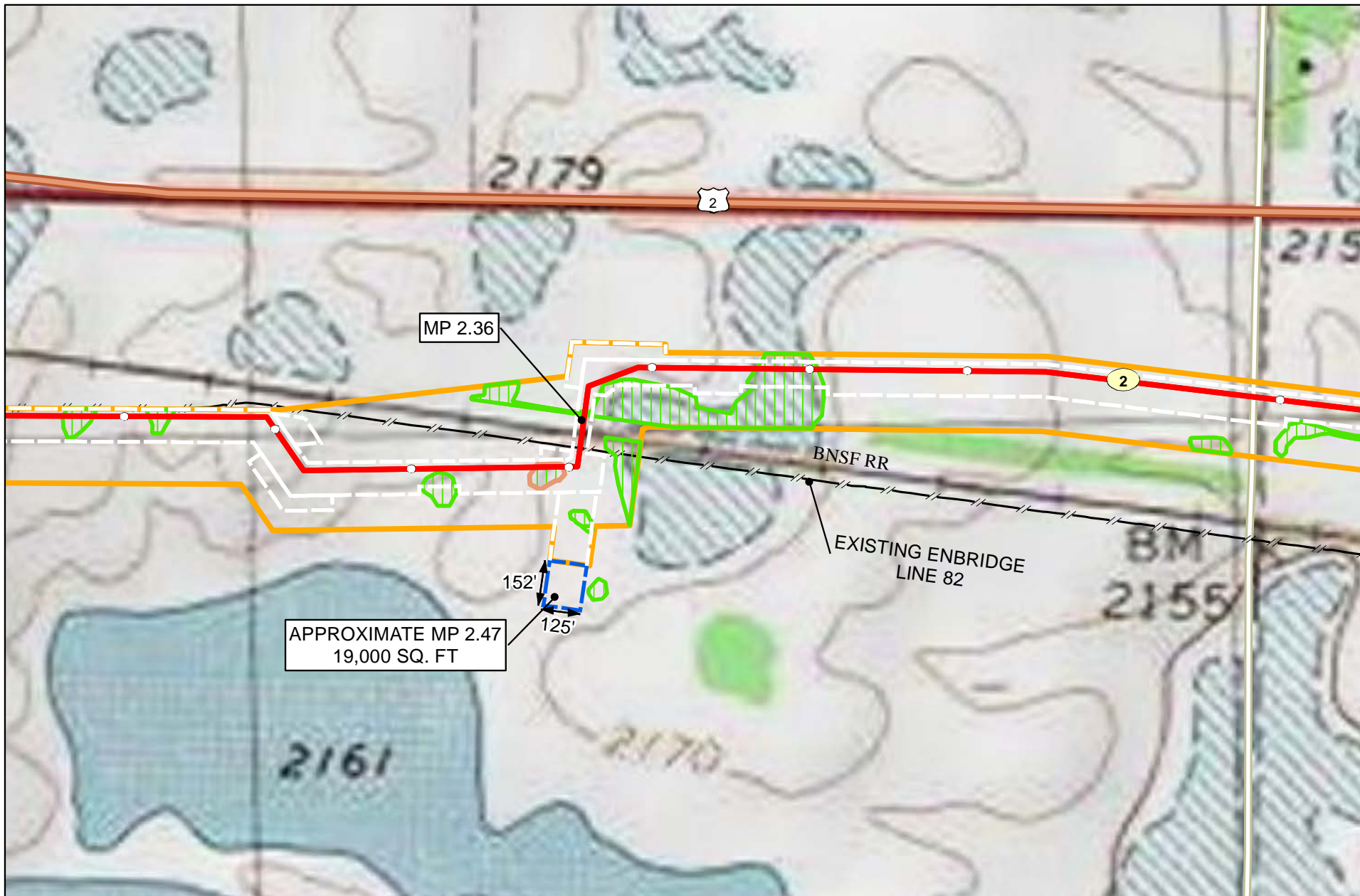
Revised: July 5, 2011

Drawing:

MP 2.36

Revision

A



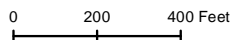
- Legend**
- Permitted Centerline
 - - - Proposed Centerline
 - Environmental Corridor
 - - - Existing Enbridge Pipeline
 - Mileposts
 - Workspace Boundary

- ▣ Wetland Boundary
- Proposed Workspace Boundary

Note:
 DOCKET NO. PU-10-613
 REFERENCE SHEET # 2715-M-01002



BAKKEN EXPANSION PROGRAM - US
 WARD COUNTY, ND



Revised: July 5, 2011

Drawing:

MP 2.36

Revision

A

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ATTACHMENT B

Attachment B.1: State Historical Society Of North Dakota Letter Dated June 3, 2011

Attachment B.2: Metcalf Archaeological Consultants, Inc.'s Report Dated May 2011

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Attachment B.1:
State Historical Society Of North Dakota Letter
Dated June 3, 2011



**STATE
HISTORICAL
SOCIETY
OF NORTH DAKOTA**

Jack Dalrymple
Governor of North Dakota

North Dakota
State Historical Board

Chester E. Nelson, Jr.
Bismarck - President

Gereld Gerntholz
Valley City - Vice President

Richard Kloubec
Fargo - Secretary

Albert I. Berger
Grand Forks

Calvin Grinnell
New Town

Diane K. Larson
Bismarck

A. Ruric Todd III
Jamestown

Sara Otte Coleman
*Director
Tourism Division*

Kelly Schmidt
State Treasurer

Alvin A. Jaeger
Secretary of State

Mark A. Zimmerman
*Director
Parks and Recreation Department*

Francis Ziegler
*Director
Department of Transportation*

Merlan E. Paaverud, Jr.
Director

*Accredited by the
American Association
of Museums since 1986*

June 3, 2011

Ms. Suzanne Canevello
Administrative Officer
Metcalf Archaeological Consultants, Inc.
PO Box 2154
Bismarck ND 58502

ND SHPO REF: 10-1957E PSC Beaver Lodge Loop Project, Re-Route and Extra Work Space: A Class III Cultural Resources Inventory in portions of [T156N R86W Sections 19 and 20 and T156N R87W Section 24] Ward County, North Dakota

Dear Ms. Canevello:

We reviewed ND SHPO REF: 10-1957E "Beaver Lodge Loop Project, Re-Route and Extra Work Space: A Class III Cultural Resources Inventory Ward County, North Dakota" by Damien Reinhart, and find the report acceptable.

We concur with "No Historic Properties Affected" and "No Significant Sites Affected" determinations for the proposed and reviewed project provided that it is of the nature stated and it takes place in the locations plotted in the report.

Thank you for the opportunity to review the project. If you have any questions please contact Susan Quinnell at (701) 328-3576 or squinnell@nd.gov.

Sincerely,

Merlan E. Paaverud, Jr.
State Historic Preservation Officer (North Dakota)
and
Director, State Historical Society of North Dakota

C: Ms. Peg Boden, Mergent

Enbridge Pipelines (North Dakota) LLC
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Attachment B.2
Metcalf Archaeological Consultants, Inc.'s Report
Dated May 2011

MANUSCRIPT DATA RECORD FORM

1. Manuscript Number:
2. SHPO Reference #: 10-1957
3. Author(s): Damien S. Reinhart
4. Title: Enbridge's Beaver Lodge Loop Project, Re-Route and Extra Work Space:
A Class III Cultural Resources Inventory in Ward County, North Dakota
5. Report Date: May 2011
6. Number of Pages: 10
7. Type: I
8. Acres: 74.04 acres
9. Legal Location(s):

| <u>County</u> | <u>TWP</u> | <u>R</u> | <u>SEC</u> | <u>SU</u> |
|---------------|------------|----------|------------|-----------|
| Ward | 156 | 86 | 19 & 20 | SO |
| | 156 | 87 | 24 | SO |

**Enbridge's Beaver Lodge Loop Project,
Re-Route and Extra Work Space:
A Class III Cultural Resources Inventory
in Ward County, North Dakota**

Prepared for:
Merjent, Inc.
Minneapolis, Minnesota
on behalf of:
Enbridge, Inc.

Principal Investigator:
Kimball M. Banks

Prepared by:
Damien S. Reinhart, Project Director
Metcalf Archaeological Consultants, Inc.
Bismarck, North Dakota

May 2011

Abstract

Merjent, Inc., on behalf of Enbridge, Inc., requested that Metcalf Archaeological Consultants, Inc. conduct an intensive pedestrian (Class III) inventory for a reroute and extra work space along the proposed Beaver Lodge Loop in Ward County, North Dakota. Damien S. Reinhart and Peter A. Metzger conducted the field work for one small block and one pipeline reroute on May 11, 2011. A total of 74.04 acres were surveyed for this project, which consisted of one 0.34 acre block (112'-x-131' N-S and E-W), and a second 73.7 acre block (385'-x-8,341' N-S and E-W). The north to south measurement of the block is an average as the distance is not uniform. The cultural resource inventory was conducted to provide Merjent, Enbridge, and the North Dakota State Historic Preservation Office, the state regulatory agency, with the information necessary to comply with the National Historic Preservation Act, as amended.

No cultural resources were identified during the inventory for either the block or reroute. Metcalf Archaeological Consultants, Inc. recommends a finding of *No Historic Properties Affected* for the proposed undertaking as surveyed, mapped and described herein.

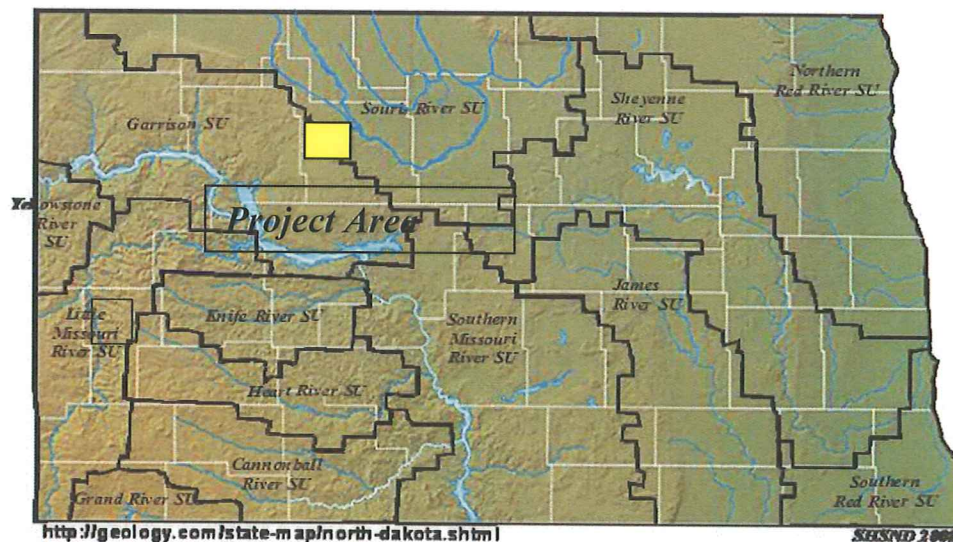
Introduction

Merjent, Inc., on behalf of Enbridge, Inc., requested that Metcalf Archaeological Consultants, Inc. (MAC) conduct an intensive pedestrian (Class III) inventory for a small block of additional work space and a pipeline reroute as part of the proposed Beaver Lodge Loop in Ward County, North Dakota. Damien S. Reinhart and Peter A. Metzger of MAC conducted the field work for the block and reroute locations on May 11, 2011. A total of 73.56 acres were surveyed for this project, which consisted of one 0.34 acre block (112' N-S-x-131' E-W), and a second 73.7 acre block (385' average N-S-x-8,341' E-W).

The cultural resource inventory was conducted to provide Merjent, Inc., Enbridge Inc., and the North Dakota State Historic Preservation Office (NDSHPO), the lead regulatory agency, with the information necessary to comply with the National Historic Preservation Act, as amended.

Description of the Undertaking

Enbridge, Inc., intends to utilize a small block and a pipeline reroute for the Beaver Lodge Loop project near Berthold, North Dakota. The undertaking area of potential effects (APE) for the small block is located in Section 24, T. 156N, R. 87W, Ward County, North Dakota (Maps 1 and 2), while the APE for the pipeline reroute is located in sections 19 and 20, T. 156N, R. 86W, Ward County, North Dakota (Maps 1 and 2). The APE is depicted on the USGS 7.5' Tagus SE (1981) quadrangle map (Map 2). The APE is the surface and subsurface that may be disturbed by activities related to the construction and installation of a 12-inch diameter pipeline. Above ground surfaces will not be affected. Access to the small block is overland south from Highway 2. Access to the reroute block came via the existing county road that runs north to south through the center of the block. In all, the inventory for the small block included 0.34 acres while the reroute totaled 73.7 acres. A total of 74.04 acres was inventoried for this project. The field work was conducted on May 11, 2011, by Damien S. Reinhart and Peter A. Metzger of MAC.

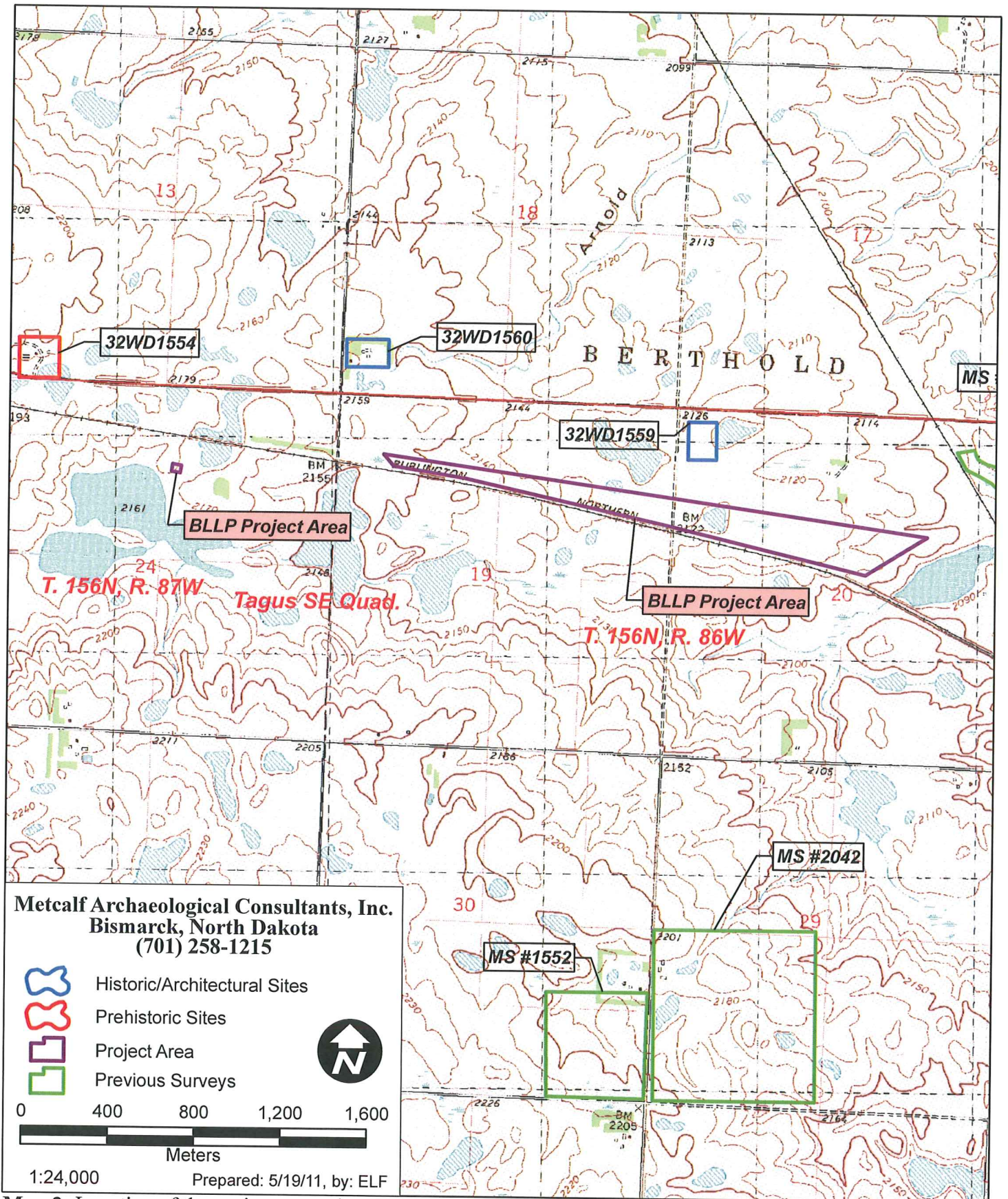


Map 1: General location of the undertaking.

Files Search

On May 5, 2011, Danielle Bailly of MAC conducted a search of the State Historic Preservation Office of North Dakota's site and manuscript files for the proposed project areas and the surrounding one mile radius of the undertaking APE. The search revealed two architectural site leads consisting of a house and a commercial building. Five architectural sites consisting of two farms, one missile silo, and a commercial building are located in the files search area. Finally, two historic sites consisting of a nearby railroad and a cultural material scatter and one historic site lead consisting of the Roach Railway Station are within the one mile radius of the APE. Site 32WD1559, the missile silo, is located approximately 1000' north of the proposed reroute while the railroad is within 100' of the south edge of the reroute. None of the previously recorded sites will be impacted by the current proposed undertaking. Nine inventories have been conducted with the majority pertaining to oil and gas development and highway projects. The files search is available in table format (below).

| T/R-Section | SITS # | Site Type & Description | Recorder, Date | MS # |
|--------------------|---------------|--|-----------------------|-------------------------|
| 156/86-16 | 32WD1553 | Architectural-farmstead | Mitchell, 2000 | 261, 258, 8670 |
| 156/86-17 | No Sites | | | 258, 261, 8670 |
| 156/86-18 | 32WD1560 | Architectural-Craig Rieller farmstead | Mitchell, 2001 | 258, 261, 8670 |
| 156/86-19 | No Sites | | | 261, 8670, 11686 |
| 156/86-20 | 32WD1559 | Architectural-Missile Silo J-H | Mitchell, 2001 | 261, 8670, 11577, 11686 |
| 156/86-21 | 32WD1552 | Architectural-Gratech Company LTD | Mitchell, 2000 | 261, 8670, 11577 |
| | 32WD1627 | Historic-Burlington Northern Railroad | Bleir, 2006 | |
| | 32WDx570 | Architectural-house | Unknown, 1978 | |
| | 32WDx571 | Architectural-The Corner Kiln | Crosby, 1978 | |
| 156/86-28 | No Sites | | | No Survey |
| 156/86-29 | No Sites | | | 2042 |
| 156/86-30 | No Sites | | | 1283, 1552, 2306 |
| 156/87-13 | 32WD1554 | Architectural-house | Mitchell, 2000 | 261, 8670 |
| 156/87-14 | 32WDx330 | Historic-Roach Railway Station | Benson, 1980 | 261, 8670 |
| 156/87-23 | 32WD1556 | Historic-depression, cultural material scatter, depression, ceramic, faunal remains, glass, masonry, metal, wood | Weddle, 2000 | 8670 |
| 156/87-24 | No Sites | | | 8670 |
| 156/87-25 | No Sites | | | 8670 |
| 156/87-26 | No Sites | | | 8670 |



Map 2: Location of the project area, sites and surveys as depicted on the USGS 7.5' Tagus SE (1980) quadrangle map.

| Table 2: Manuscript List | |
|---------------------------------|---|
| MS # | Reference |
| 258 | Franke, N. 1976 Basin Electric Power Cooperative Transmission Line Right of Way Negative Declaration Survey Report, McLean County, Ward County, and Mountrail County, North Dakota |
| 261 | Franke, N. 1976 North Dakota Highway Department Projects No. F-7-002 () 054 and F-4-002 () 089 Negative Declaration Survey Report |
| 1283 | Greer, J. 1980 An Intensive Cultural Resource Survey of the Federal Beaver 2-30 and the Federal Gary 2-30 Well Location and Accesses, Ward County, North Dakota |
| 1552 | Lau, S. 1980 An Intensive Cultural Resource Survey of the Inexco Federal Gary #3-30 Well Location and Access, Ward County, North Dakota |
| 2042 | Senulis, J. 1980 Federal Mrs. Bradshaw 1-29 Well Pad and Access Route Survey, Ward County, North Dakota |
| 2346 | Metcalf, M. 1980 Inexco Company Federal Deaver #1-30 Well Pad Survey, Ward County, North Dakota |
| 8670 | Perkl, B., B. Mitchell, J. Lindbeck, S. Bushey, R. Weddle, M. Bech and G. Bolling 2001 Cultural Resources Investigations Along U.S. Highway 2 in Ward, Mountrail, and Williams Counties, North Dakota. Volume I and II |
| 11577 | Bluemle, W. and D. Engel 2010 Berthold Station: A Class III Cultural Resources Inventory in Ward County, North Dakota |
| 11686 | Klinner, D., J. Harty and M. Shropshire 2010 Beaver Lodge to Berthold Pipeline: A Class III Cultural Resource Inventory, Mountrail, Ward and Williams Counties, North Dakota |

Environment

The APE is in the Souris River Study Unit (Unit #10 or SRSU) as defined in *The North Dakota Comprehensive Plan for Historic Preservation: Archeological Component* (SHSND 2008). The project area is located in Ward County, in a region known as the “Glaciated Plains” (Bluemle 2000, 2007). This region is characterized by rolling glaciated landscapes where more than 80 percent of the area is gently sloping with local relief generally less than 100 feet in most places, but ranging up to 300 feet in some places. (Bluemle 2000, 2007). Overall, the topography within the APE is gently rolling with an abundance of kettle lakes and seasonal water. Today, the area surrounding the APE consists of agricultural lands and the occasional pasture (Figure 1).

The SHSND Plan organizes the cultural history of this unit into five temporal periods or traditions: Paleo-Indian, Archaic, Woodland, Plains Village, and Historic. A total of 50 occurrences (sites or components of sites) can be ascribed to these different periods or traditions in the study unit with 1,912 archaeological resources with unknown affiliation (SHSND 2008: Table 11.16). Of these, the most prevalent is evidence for the Woodland period/tradition. The region seems low in overall site density but in comparison to the amount of survey work that has been done the density is actually quite high for the state.

Floral diversity in the SRSU would have been great during prehistoric times. Moose and caribou may have passed through the region during certain times in the past along with deer, pronghorn,

elk, grizzly bear, and bison. A great variety of waterfowl would have been present in the marshes and kettle lakes that are abundant in the SRSU. Floral species such as goosefoot, buffalo berry, junberry, and chokecherry, acorns, cottonwood, and willow trees are a testament to the diversity in the region (SHSND 2008). Knappable stones are present in glacial fill and alluvially transported Souris gravels and include quartzite, jaspers and cherts, agatized woods, as well as deposits that include Swan River chert.

The small block is located approximately 3.6 miles west of the village of Berthold, North Dakota. The project block is located entirely within a agricultural field (Figure 2). The field is currently stubble and appears to have yielded wheat. Ground surface visibility (GSV) was excellent at 75%. A functioning railroad exists approximately 500' north of the block. The majority of the APE was clear of standing water. The soils were moist, black silt clay loams containing a moderate amount of glacial till with large erratics being cleared from the area at some point in the past. The view is open with a 360 degree view shed and view distance of 2-3 miles. The APE is located 300' northeast of a large kettle lake with several other similarly sized bodies of water within close proximity.

The pipeline reroute is located approximately 1.5 miles west of Berthold, North Dakota and 0.25 miles south of Highway 2. The reroute is located entirely in agricultural fields where 75% of the APE is wheat stubble while the eastern 25% of the reroute is composed of barley stubble (Figure 3). GSV in the wheat stubble is moderate at 50-70%. GSV in the barley stubble is poor, averaging 20%, due to a high volume of residue. Arnold Coulee is located approximately one mile north of the APE. Several sloughs and lakes exist within several hundred feet of the reroute. There were patches of standing water within the APE that restricted inventory; however, these areas are located in low lying depressions that have lower site potential. Soils in this area are composed of dark brown silt clay loams with small to medium gravel inclusions.



Figure 1: General landscape near the project areas (Image #370).



Figure 2: View to the north from the south end of the small block (Image #369).



Figure 3: View to the east from the west edge of the reroute (Image #364).

Field Methods

The cultural resource inventories were accomplished using pedestrian transects spaced at 15-meter intervals. Special attention was paid to areas of enhanced GSV such as hill tops with open view sheds and in between field crop rows. The APE and all identified cultural resources were mapped with the aid of a hand held GPS CX unit, photographed with a digital camera, and documented in the field notes. The field notes, maps, and electronic photo images are on file at the MAC Bismarck office.

Results and Management Recommendations

No cultural resources were identified during the inventory of the small block or pipeline reroute location. No further work is recommended.

Conclusions

No cultural resources (buildings, structures, sites, objects, or districts, that are 50 years or older or properties of traditional religious and cultural importance to Native Americans) were encountered during the inventory. MAC recommends a determination of *No Historic Properties Affected* (36 CFR 800.4[d] [1]) for the undertaking as described and mapped

References Cited

Bluemle, J. P.

2000 The Face of North Dakota (3RD Edition). North Dakota Geological Survey, Educational Series #26. Bismarck.

SHSND (State Historical Society of North Dakota)

2008 *The North Dakota Comprehensive Plan for Historical Preservation: Archeological Component*. <http://history.nd.gov/hp/hpforms.html>.

Enbridge Pipelines (North Dakota) LLC
Beaver Lodge Loop Project
Route Width Deviation Request
Docket No. PU-10-613



July 5, 2011

ATTACHMENT C

McCain and Associates, Inc.

Wetland Delineation Report

Dated June 8, 2011

June 8, 2011

Ms. Angela Ronayne, PE
Merjent
615 First Avenue NE, Suite 425
Minneapolis, MN 55413

Re: Wetland Delineation Report Beaver Lodge Loop Project and Bakken Pipeline Expansion Project 2011 Spring Surveys

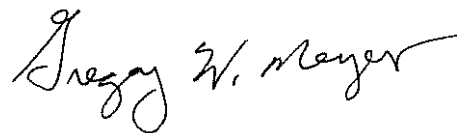
Dear Ms. Ronayne,

McCain and Associates, Inc. (McCain) is pleased to submit the "Wetland Delineation Report Beaver Lodge Loop Project and Bakken Pipeline Expansion Project 2011 Spring Surveys" for your review.

No additional wetlands were identified and delineated in the Bakken Pipeline Expansion Project 2011 Spring Survey areas. Fifteen isolated depression wetlands were identified and delineated in the Beaver Lodge Loop Project 2011 Spring Survey area. These wetlands consisted of thirteen newly identified and delineated wetlands and two previously delineated wetlands.

Please call me at 701-255-1475 if you have any questions or need additional informational.

Sincerely,



Greg Meyer, MS
Ecologist

WETLAND DELINEATION REPORT

BEAVER LODGE LOOP PROJECT
AND
BAKKEN PIPELINE EXPANSION
PROJECT
2011 SPRING SURVEYS

Prepared for:



ENBRIDGE PIPELINES (BAKKEN) LP

June 8, 2011

Wetland Delineation Report Beaver Lodge Loop Project & Bakken Pipeline Expansion Project 2011 Spring Surveys

June 8, 2011

Enbridge Pipeline (Bakken) LP
Burke and Ward Counties, North Dakota

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| 3.0 | Results | 3 |
| 4.0 | References..... | 4 |

- Appendix A** Figures
- Appendix B** USACE Wetland Determination Data Forms
- Appendix C** Representative Photographs

1.0 Introduction

This project identified and delineated the extent of wetland areas along two proposed pipeline corridors for Enbridge Pipelines (Bakken) LP (Enbridge). Two additional survey areas along the Beaver Lodge Loop Project (BLLP) and two areas along the Bakken Pipeline Expansion Project (BPEP) were surveyed. The BLLP additional survey areas are located in Sections 19 and 20, T156N, R86W, and Section 24, T156N, R87W, in Ward County, North Dakota (Appendix A, Figure 1). The BPEP additional survey areas are located in Sections 1 and 3, T162N, R92W, and Section 34, T163N, R62W, in Burke County, North Dakota (Appendix A, Figure 2).

The projects are located within the Missouri Coteau region. This area is characterized by a hummocky landscape with rolling topography (Appendix A, Figures 3 and 4). Numerous wetland depressions called “potholes” are found in the region. The common agricultural crops of the area include wheat, barley, canola, and sunflowers.

Scattered depression wetlands are common in these survey areas. Many of the wetlands were cultivated in 2010 but heavy precipitation has caused some to be flooded beyond their hydric boundaries. The majority of these wetlands are shallow depression wetlands with temporary or seasonal water regimes. Common vegetation in the wetlands was curled dock (*Rumex crispus*), biennial wormwood (*Artemisia biennis*), and prairie cordgrass (*Spartina pectinata*).

Wetland field delineations of the additional survey areas were conducted by biologists of McCain and Associates, Inc. on May 19, 2011.

2.0 Procedures

The wetland field delineation was conducted in accordance with the *U.S. Army Corps of Engineers (USACE) 1987 Wetland Delineation Manual* and the *Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Great Plains Region (Version 2.0)* (Manual). The determination of permanent or temporary impacts to, and the mitigation of impacted wetlands, is outside the scope of work for this project.

Methodologies and criteria outlined by the Manual were used to identify and delineate wetlands for this project. The Manual provides the technical criteria for determining wetlands for purposes of Section 404 of the Clean Water Act. It specifies that positive evidence of hydrophytic vegetation, hydric soils, and wetland hydrology are criteria for wetland identification and delineation. Areas meeting all three criteria were classified as wetlands.

Wetland areas were systematically evaluated by using numerous observation points to define the boundaries. The frequency of observation points was increased in transitional areas between uplands and lower areas to accurately identify wetland boundaries based on vegetation, hydrology, soils, and landscape. Boundaries were digitally recorded with a Trimble Geo XH Global Positioning System (GPS) allowing sub-meter post-processed data accuracy.

Wetlands were documented with a soil observation point. The Wetland Determination Data Form of the Great Plains Manual was completed for each observation point. Climatic conditions were considered typical prior to and during the evaluation.

Existing vegetation was classified using hydrophytic vegetation criteria outlined in the Manual and the *National List of Plant Species that Occur In Wetlands: 1996 National Summary* (Kartesz, 1996), and *National List of Plant Species that Occur in Wetlands: North Plains (Region 4)* (Reed, 1988). Hydric soil indicators were determined using the *Field Indicators of Hydric Soils in the United States; Guide for Identifying and Delineating Hydric Soils, Version 7.0* (USDA-NRCS, 2010).

Hydrology was determined on-site by observation of hydrologic indicators. Aerial photography was used to assist hydrologic determinations.

A review of existing resource information and the wetland field delineation were used to identify and delineate wetlands within the BLLP and BPEP additional survey areas. No minimal size or area of wetland delineation was specified. Burke and Ward Counties NAIP 2009 and 2005 aerial photographs, USDI-Fish and Wildlife Service National Wetland Inventory (USFWS, 2011), and the digital soil survey of Burke and Ward Counties (USDA-NRCS, 2011), were consulted prior to field investigations.

3.0 Results

No additional wetlands were identified in the BPEP additional survey areas.

The BLLP additional survey area contains 13 additional wetlands and 2 previously delineated wetlands (Appendix A, Figures 3_1 and 3_2). All the wetlands are considered isolated depression wetlands. The previously delineated wetlands are documented in the *Wetland Delineation Report Beaver Lodge Loop Project* (McCain 2010), and their hydric boundaries were delineated as they extend into the BLLP additional survey areas. A total of 7.31 wetland acres were identified and delineated during the wetland field delineation.

A description of the delineated wetlands and documentation of the vegetation, hydrology, and hydric soils were recorded on the associated USACE Wetland Determination Data Forms (Appendix B) and are identified by site identification and observation point number (i.e. bllpw1, bllpu1). Delineated wetlands are summarized in Table 1.

Table 1. Wetland Identification and Characteristics (Field) Summary of Wetlands

| <u>Wetland ID</u> | <u>Acres</u> | <u>Figure</u> | <u>NWI</u> | <u>Wetland Type</u> |
|-------------------|--------------|---------------|------------|---------------------|
| BLLP Wetland 1 | 0.03 | 3 | PEMC | ISOLATED |
| BLLP Wetland 2 | 0.05 | 3 | none | ISOLATED |
| BLLP Wetland 3 | 0.02 | 3 | none | ISOLATED |
| BLLP Wetland 4 | 1.77 | 3 | none | ISOLATED |
| BLLP Wetland 5 | 0.06 | 3 | none | ISOLATED |
| BLLP Wetland 6 | 0.04 | 3 | none | ISOLATED |
| BLLP Wetland 7 | 3.94 | 3 | PEMC | ISOLATED |
| 20156086-w5* | 0.38 | 3 | none | ISOLATED |
| BLLP Wetland 8 | 0.44 | 3 | PEMC | ISOLATED |
| BLLP Wetland 9 | 0.01 | 3 | none | ISOLATED |
| 19156086-w8* | 0.33 | 3 | PEMC | ISOLATED |
| BLLP Wetland 10 | 0.09 | 3 | PEMA | ISOLATED |
| BLLP Wetland 11 | 0.01 | 3 | PEMC | ISOLATED |
| BLLP Wetland 12 | 0.07 | 3 | PEMC | ISOLATED |
| BLLP Wetland 13 | 0.07 | 4 | none | ISOLATED |

TOTAL 7.31

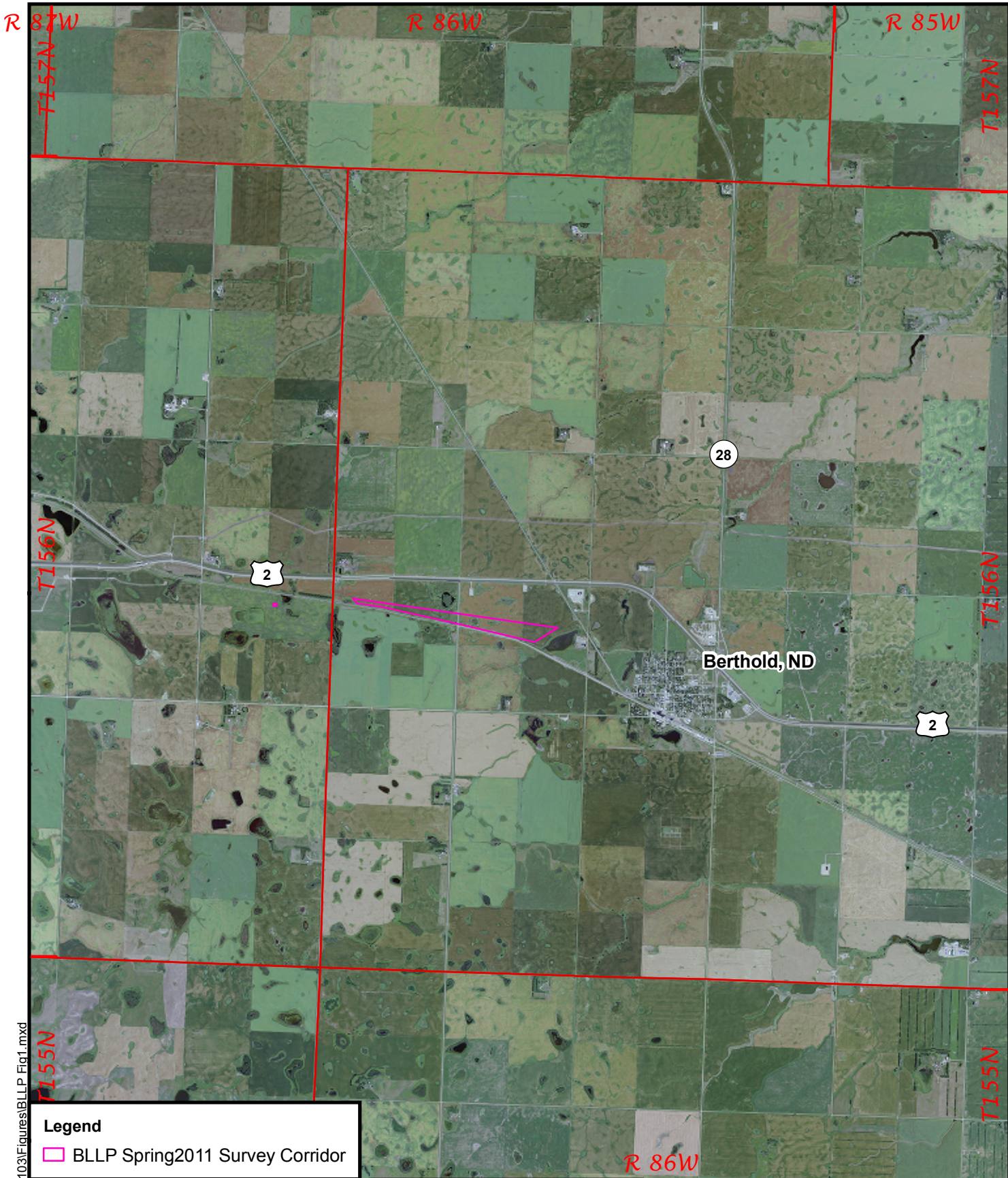
*Documented in *Beaver Lodge Loop Project Wetland Delineation Report* (McCain, 2010),

4.0 References

- Environmental Laboratory. 1987. *Corp of Engineers Wetlands Delineation Manual*. Wetlands Research Program. Technical Report Y-87-1. Department of the Army, Waterways Experiment Station, US Army *Corp of Engineers*. Vicksburg, Mississippi, USA.
- Environmental Laboratory. 2010. *Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Great Plains Region (Version 2.0)*. U.S. Army Corps of Engineers, U.S. Army Engineer Research and Development Center Vicksburg, Mississippi, USA.
- Kartesz, J.T. 1996. *National List of Plant Species that Occur In Wetlands: 1996 National Summary*. Biota of North America Program. US Fish and Wildlife Service.
<http://www.fws.gov/new/bha/list96.html> Accessed July 2010.
- McCain and Associates, Inc. 2010. Wetland Delineation Report Beaver Lodge Loop Project. 10pp.
- Reed, P.B., Jr. 1988. *National list of plant species that occur in wetlands: North Plains (Region 4)*. U.S. Fish and Wildlife Service Biological Report 88(26.4). 64pp.
- USDA-NRCS. 2010. *Field Indicators of Hydric Soils in the United States—Guide for Identifying and Delineating Hydric Soils, Version. 7.0* in G.W. Hurt, L.M. Vasilas, and C.V. Noble, editors. USDA-NRCS in cooperation with the National Technical Committee for Hydric Soils.
- USDA-NRCS. 2011. Soil Survey of Burke County, North Dakota.
<http://websoilsurvey.nrcs.usda.gov/app> Accessed May, 2011.
- USDA-NRCS. 2011. Soil Survey of Ward County, North Dakota.
<http://websoilsurvey.nrcs.usda.gov/app> Accessed May, 2011.
- USFWS. 2011. United States Fish and Wildlife Service. National Wetlands Inventory.
<http://wetlandsfws.er.usgs.gov/NWI/> Accessed May, 2011.

Appendix A

Figures



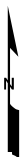
E:\Projects\MERMER\1103\Figures\BLLP_Fig1.mxd

Legend

BLLP Spring 2011 Survey Corridor

1:63,360
 1 inch = 1 miles
 0 0.25 0.5 1 Miles

Basemap: NAIP 2009 Ward County, North Dakota Orthophoto



McCain
 and Associates, Inc.

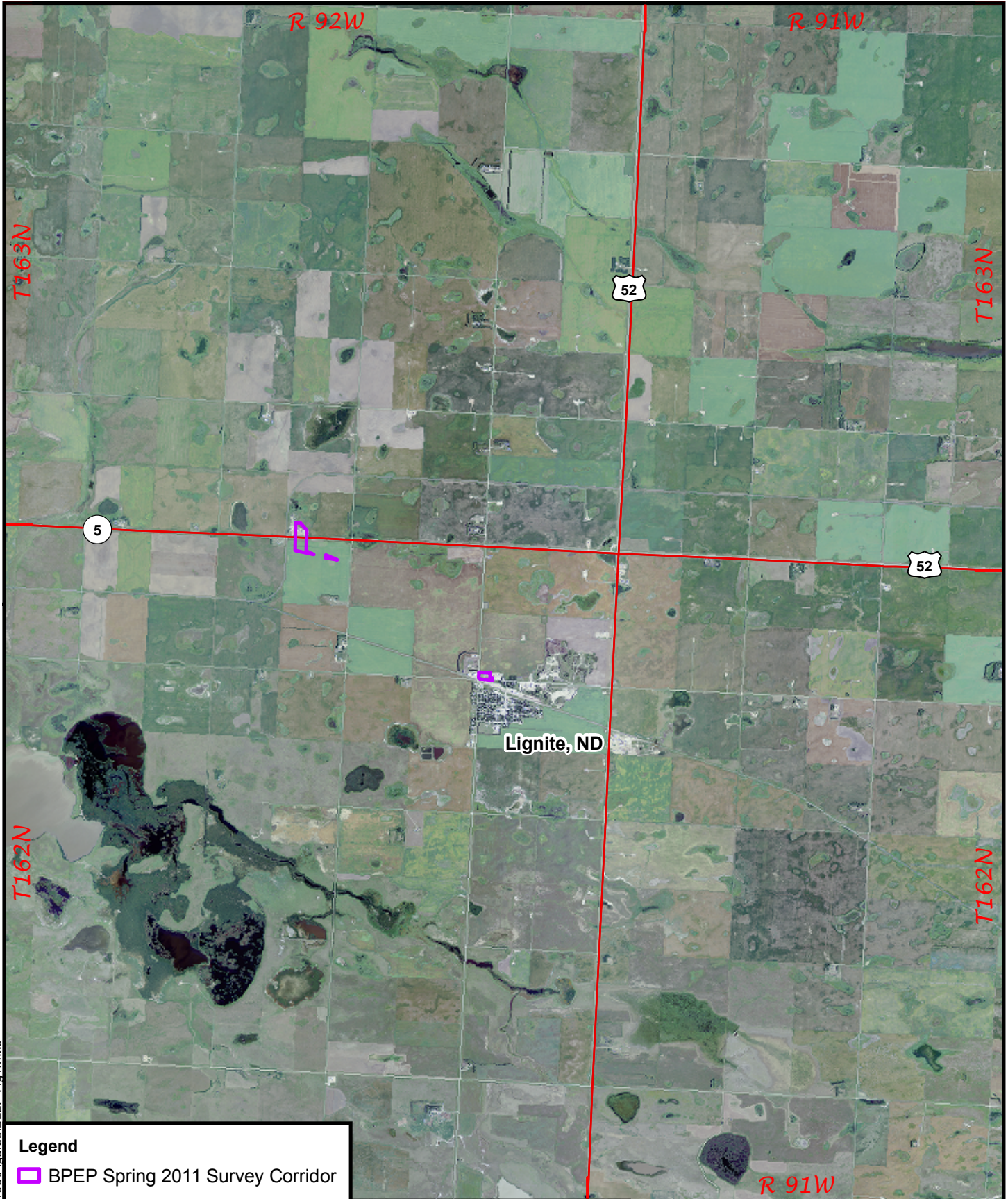
2718 Gateway Avenue
 Suite 101
 Bismarck, ND 58503
 P 701-255-1475
 F 701-255-1477

Date: June 2011

Rev: 01

Figure 1

**GENERAL LOCATION
 BLLP Project 2011 Spring Surveys
 Enbridge Pipelines (Bakken) LP**



E:\Projects\MERMER\1103\Figures\BLLP_Fig1.mxd

Legend

□ BPEP Spring 2011 Survey Corridor

1:63,360
 1 inch = 1 miles
 0 0.25 0.5 1 Miles

Basemap: NAIP 2009 Burke County, North Dakota Orthophoto



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 and Associates, Inc.

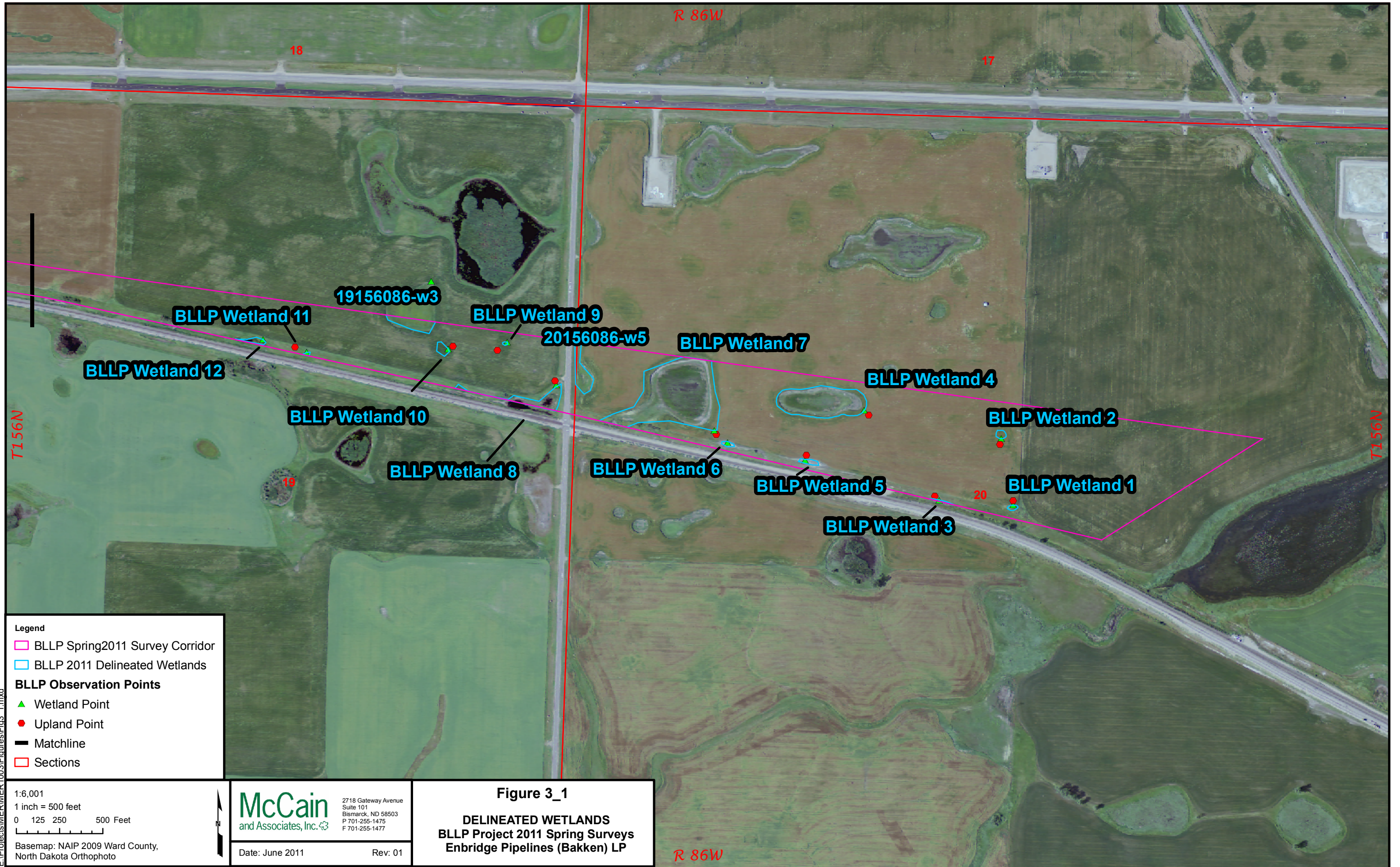
2718 Gateway Avenue
 Suite 101
 Bismarck, ND 58503
 P 701-255-1475
 F 701-255-1477

Date: June 2011

Rev: 01

Figure 2

**GENERAL LOCATION
 BPEP Project 2011 Spring Surveys
 Enbridge Pipelines (Bakken) LP**



Legend

- BLLP Spring2011 Survey Corridor
- BLLP 2011 Delineated Wetlands

BLLP Observation Points

- ▲ Wetland Point
- Upland Point
- Matchline
- Sections

1:6,001
 1 inch = 500 feet

0 125 250 500 Feet

Basemap: NAIP 2009 Ward County, North Dakota Orthophoto

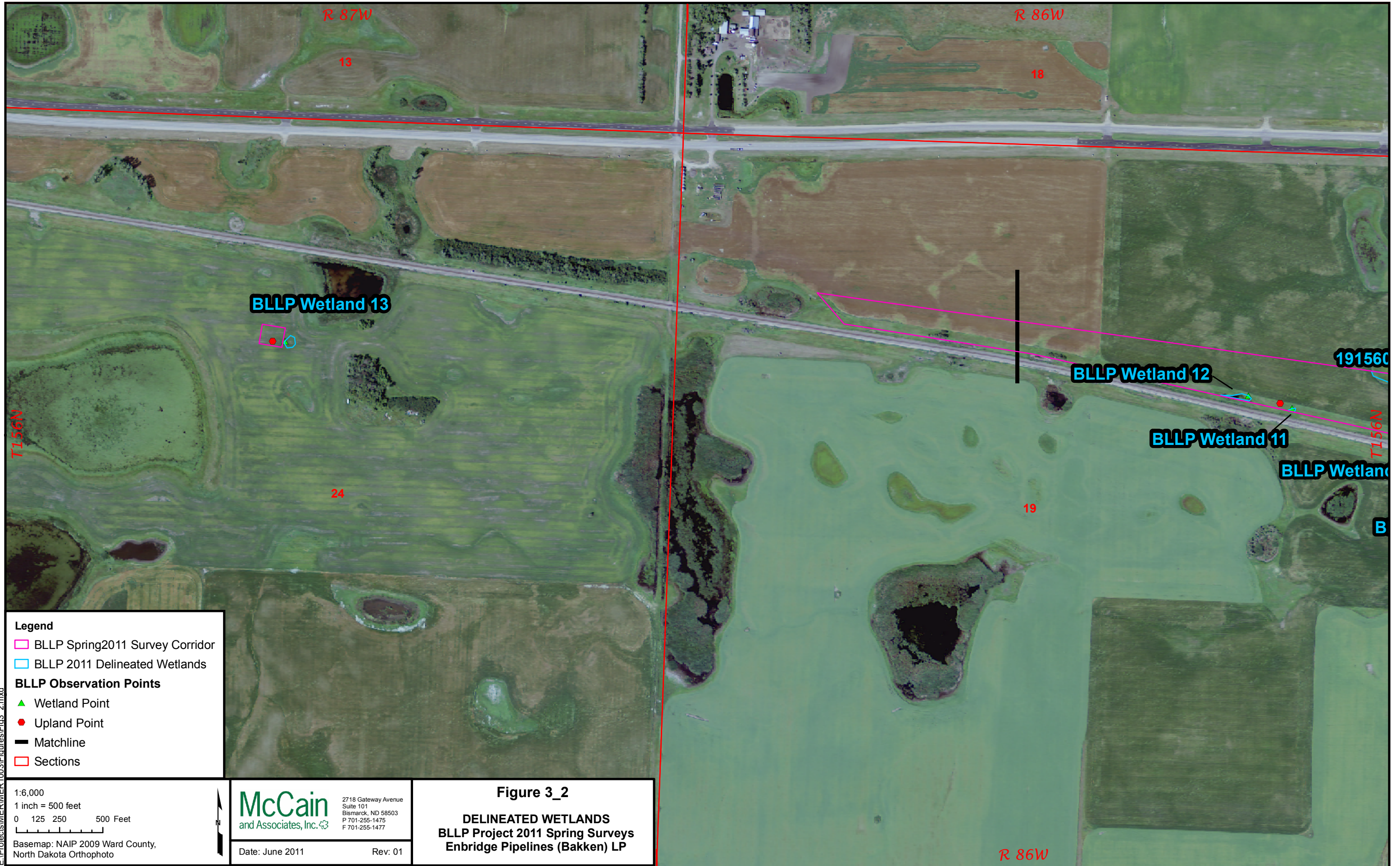
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 and Associates, Inc.

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 P 701-255-1475
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Date: June 2011 Rev: 01

Figure 3_1
DELINEATED WETLANDS
 BLLP Project 2011 Spring Surveys
 Enbridge Pipelines (Bakken) LP

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Legend

- BLLP Spring2011 Survey Corridor
- BLLP 2011 Delineated Wetlands

BLLP Observation Points

- ▲ Wetland Point
- Upland Point
- Matchline
- Sections

1:6,000
 1 inch = 500 feet

0 125 250 500 Feet

Basemap: NAIP 2009 Ward County, North Dakota Orthophoto

McCain
 and Associates, Inc.

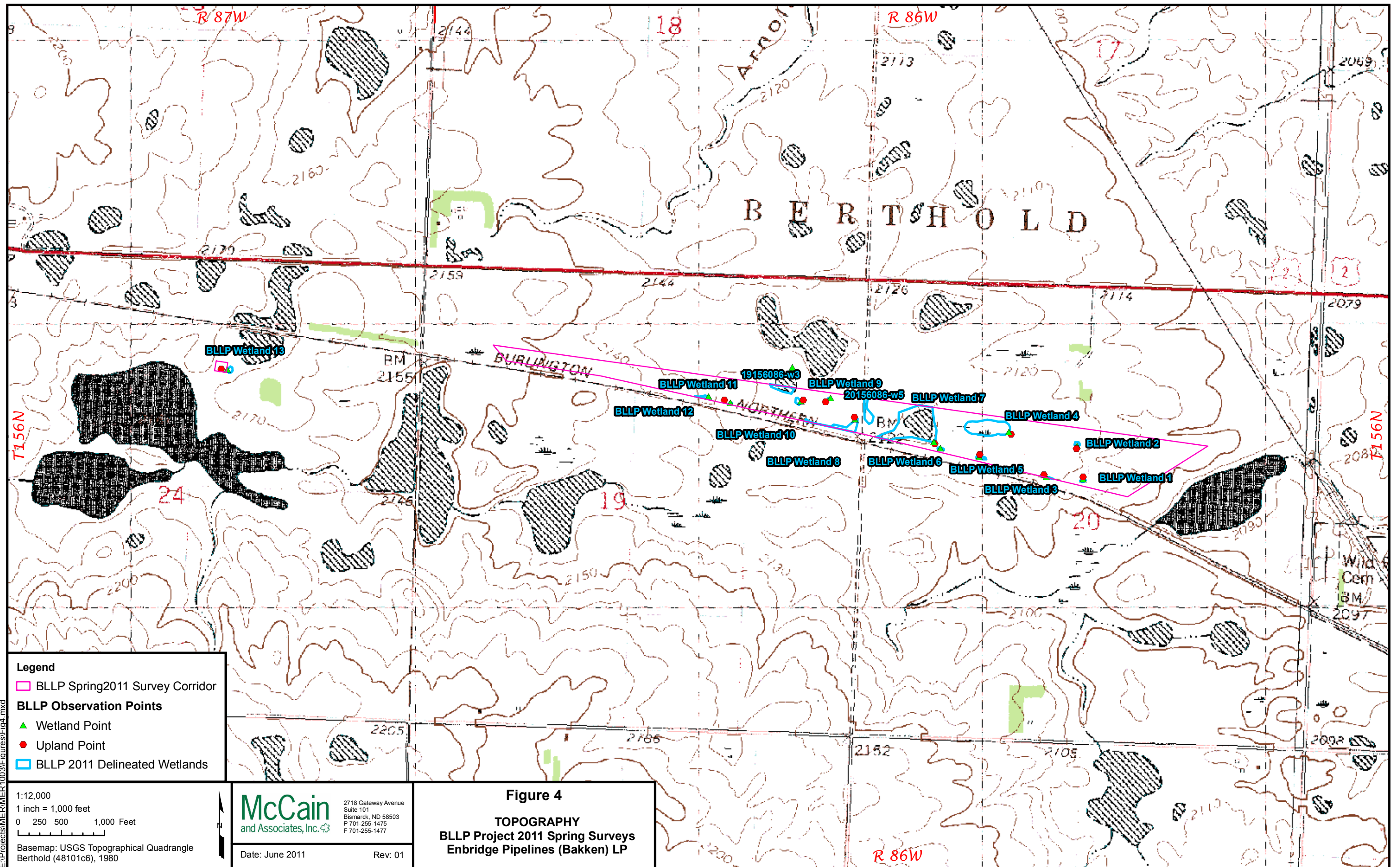
2718 Gateway Avenue
 Suite 101
 Bismarck, ND 58503
 P 701-255-1475
 F 701-255-1477

Date: June 2011 Rev: 01

Figure 3_2

DELINEATED WETLANDS
 BLLP Project 2011 Spring Surveys
 Enbridge Pipelines (Bakken) LP

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E:\Projects\MERMER\003\Figures\Fig4.mxd

Legend

- BLLP Spring2011 Survey Corridor
- BLLP Observation Points**
- ▲ Wetland Point
- Upland Point
- BLLP 2011 Delineated Wetlands

1:12,000
 1 inch = 1,000 feet
 0 250 500 1,000 Feet

Basemap: USGS Topographical Quadrangle
 Berthold (48101c6), 1980

McCain
 and Associates, Inc.

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 F 701-255-1477

Date: June 2011 Rev: 01

Figure 4
TOPOGRAPHY
BLLP Project 2011 Spring Surveys
Enbridge Pipelines (Bakken) LP

Appendix B

USACE Wetland Determination Data Forms

WETLAND DETERMINATION DATA FORM – Great Plains Region

Project Site: BLLP 2011 City/County: Ward Sampling Date: 5/19/2011
 Applicant/Owner: McCain State: ND Sampling Point: bllpw1
 Investigator(s): GWM / CET Section, Township, Range: 20. 156. 86
 Landform (hillslope, terrace, etc.): depression Local relief (concave, convex, none): concave Slope (%): 1
 Subregion (LRR): E Lat: 48.321019 N Long: -101.760947 W Datum: NAD 83
 Soil Map Unit Name: WIB Williams loam gently undulating NWI classification: PEMC

Are climatic / hydrologic conditions on the site typical for this time of year? Yes No (If no, explain in Remarks.)
 Are Vegetation , Soil , or Hydrology , significantly disturbed? Are "Normal Circumstances" present? Yes No
 Are Vegetation , Soil , or Hydrology , naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

| | | | |
|--|---|-----------------------------|--|
| Hydrophytic Vegetation Present? | Yes <input checked="" type="checkbox"/> | No <input type="checkbox"/> | Is the Sampling Area within a Wetland? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> |
| Hydric Soil Present? | Yes <input checked="" type="checkbox"/> | No <input type="checkbox"/> | |
| Wetland Hydrology Present? | Yes <input checked="" type="checkbox"/> | No <input type="checkbox"/> | |
| Remarks: Depression wetland in cultivated field. | | | |

VEGETATION – Use scientific names of plants

| Tree Stratum (Plot Size: _____) | Absolute % Cover | Dominant Species? | Indicator Status | Dominance Test Worksheet: |
|--|------------------|-------------------|------------------|--|
| 1. _____ | _____ | _____ | _____ | Number of Dominant Species That Are OBL, FACW, or FAC: 1 (A) Total Number of Dominant Species Across All Strata: 1 (B) Percent of Dominant Species That Are OBL, FACW, or FAC: 100 (A/B) |
| 2. _____ | _____ | _____ | _____ | |
| 3. _____ | _____ | _____ | _____ | |
| 4. _____ | _____ | _____ | _____ | |
| = Total Cover | | | | Prevalence Index worksheet: Total % Cover of: Multiply by: OBL species _____ x1 = _____ FACW species _____ x2 = _____ FAC species _____ x3 = _____ FACU species _____ x4 = _____ UPL species _____ x5 = _____ Column Totals: _____ (A) _____ (B) Prevalence Index = B/A = _____ |
| Sapling/Shrub Stratum (Plot Size: _____) | | | | |
| 1. _____ | _____ | _____ | _____ | |
| 2. _____ | _____ | _____ | _____ | |
| 3. _____ | _____ | _____ | _____ | |
| 4. _____ | _____ | _____ | _____ | |
| 5. _____ | _____ | _____ | _____ | |
| = Total Cover | | | | |
| Herb Stratum (Plot Size: 5') | | | | |
| 1. <u>Artemisia biennis</u> | <u>30</u> | <u>yes</u> | <u>FAC</u> | |
| 2. _____ | _____ | _____ | _____ | |
| 3. _____ | _____ | _____ | _____ | |
| 4. _____ | _____ | _____ | _____ | |
| 5. _____ | _____ | _____ | _____ | |
| 6. _____ | _____ | _____ | _____ | |
| 7. _____ | _____ | _____ | _____ | |
| 8. _____ | _____ | _____ | _____ | |
| 9. _____ | _____ | _____ | _____ | |
| 10. _____ | _____ | _____ | _____ | |
| = Total Cover | | | | |
| Woody Vine Stratum (Plot Size: _____) | | | | |
| 1. _____ | _____ | _____ | _____ | |
| 2. _____ | _____ | _____ | _____ | |
| = Total Cover | | | | |
| % Bare Ground in Herb Stratum 70 | | | | |
| Hydrophytic Vegetation Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> | | | | |
| Remarks: | | | | |

SOIL

Sampling Point: blpw1

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

| Depth (inches) | Matrix | | Redox Features | | | | Texture | Remarks |
|-------------------|---------------|-------|----------------|-------|-------------------|------------------|---------|---------|
| | Color (moist) | % | Color (Moist) | % | Type ¹ | Loc ² | | |
| 0-7 | 10YR 2/1 | 100 | _____ | _____ | _____ | _____ | sicl | _____ |
| 7-14 | 10YR 3/1 | 100 | _____ | _____ | _____ | _____ | sicl | _____ |
| 14-24+ | 2.5Y 4/1 | 90 | 7.5YR 5/6 | 5 | c | m | sicl | _____ |
| _____ | _____ | _____ | 10YR 5/4 | 5 | c | m | sicl | _____ |
| _____ | _____ | _____ | _____ | _____ | _____ | _____ | _____ | _____ |
| _____ | _____ | _____ | _____ | _____ | _____ | _____ | _____ | _____ |
| _____ | _____ | _____ | _____ | _____ | _____ | _____ | _____ | _____ |

¹Type: C= Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. ²Location: PL=Pore Lining, M=Matrix

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- Histosol (A1)
- Histic Epipedon (A2)
- Black Histic (A3)
- Hydrogen Sulfide (A4)
- Stratified Layers (A5) (LRR F)
- 1 cm Muck (A9) (LRR F, G, H)
- Depleted Below Dark Surface (A11)
- Thick Dark Surface (A12)
- Sandy Mucky Mineral (S1)
- 2.5 CM Mucky Peat or Peat (S2)(LRR G, H)
- 5 cm Mucky Peat or Peat (S3) (LRR F)
- Sandy Gleyed Matrix (S4)
- Sandy Redox (S5)
- Stripped Matrix (S6)
- Loamy Mucky Mineral (F1)
- Loamy Gleyed Matrix (F2)
- Depleted Matrix (F3)
- Redox Dark Surface (F6)
- Depleted Dark Surface (F7)
- Redox Depressions (F8)
- High Plains Depressions (F16)

Indicators for Problematic Hydric Soils³:

- 1 cm Muck (A9) (LRR I, J)
- Coast Prairie Redox (A16) (LRR F, G, H)
- Dark Surface (S7) (LRR G)
- High Plains Depressions (F16)
- (LRR H outside of MLRA 72 & 73)**
- Reduced Vertic (F18)
- Red Parent Material (TF2)
- Very Shallow Dark Surface (TF 12)
- Other (Explain in Remarks)

³Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type: _____
Depth (Inches): _____

Hydric Soils Present? Yes No

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

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

Secondary Indicators (2 or more required)

- | | | |
|--|---|---|
| <ul style="list-style-type: none"> <input checked="" type="checkbox"/> Surface Water (A1) <input checked="" type="checkbox"/> High Water Table (A2) <input checked="" type="checkbox"/> Saturation (A3) <input type="checkbox"/> Water Marks (B1) <input type="checkbox"/> Sediment Deposits (B2) <input type="checkbox"/> Drift Deposits (B3) <input type="checkbox"/> Algal Mat or Crust (B4) <input type="checkbox"/> Iron Deposits (B5) <input checked="" type="checkbox"/> Inundation Visible on Aerial Imagery (B7) <input type="checkbox"/> Water-Stained Leaves (B9) | <ul style="list-style-type: none"> <input type="checkbox"/> Salt Crust (B11) <input type="checkbox"/> Aquatic Invertebrates (B13) <input type="checkbox"/> Hydrogen Sulfide Odor (C1) <input type="checkbox"/> Dry Season Water Table (C2) <input type="checkbox"/> Oxidized Rhizospheres along Living Roots (C3) (where not tilled) <input type="checkbox"/> Presence of Reduced Iron (C4) <input type="checkbox"/> Thin Muck Surface (C7) <input type="checkbox"/> Other (Explain in Remarks) | <ul style="list-style-type: none"> <input type="checkbox"/> Surface Soil Cracks (B6) <input type="checkbox"/> Sparsely Vegetated Concave Surface (B8) <input type="checkbox"/> Drainage Patterns (B10) <input type="checkbox"/> Oxidized Rhizospheres along Living Roots (C3) (where tilled) <input type="checkbox"/> Crayfish Burrows (C8) <input checked="" type="checkbox"/> Saturation Visible on Aerial Imagery (C9) <input checked="" type="checkbox"/> Geomorphic Position (D2) <input type="checkbox"/> FAC-Neutral Test (D5) <input type="checkbox"/> Frost-Heave Hummocks (D7) (LRR F) |
|--|---|---|

Field Observations:

Surface Water Present? Yes No Depth (inches): 4
 Water Table Present? Yes No Depth (inches): 0
 Saturation Present? (includes capillary fringe) Yes No Depth (inches): 0

Wetland Hydrology Present? Yes No

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

WETLAND DETERMINATION DATA FORM – Great Plains Region

Project Site: BLLP 2011 City/County: Ward Sampling Date: 5/19/2011
 Applicant/Owner: McGain State: ND Sampling Point: blpu1
 Investigator(s): GWM / CET Section, Township, Range: 20. 156. 86
 Landform (hillslope, terrace, etc.): slope Local relief (concave, convex, none): concave Slope (%): 2
 Subregion (LRR): E Lat: 48.321081 N Long: -101.760945 W Datum: NAD 83
 Soil Map Unit Name: WIB Williams loam gently undulating NWI classification: none

Are climatic / hydrologic conditions on the site typical for this time of year? Yes No (If no, explain in Remarks.)
 Are Vegetation , Soil , or Hydrology , significantly disturbed? Are "Normal Circumstances" present? Yes No
 Are Vegetation , Soil , or Hydrology , naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

| | | | |
|--|------------------------------|--|--|
| Hydrophytic Vegetation Present? | Yes <input type="checkbox"/> | No <input checked="" type="checkbox"/> | Is the Sampling Area within a Wetland? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> |
| Hydric Soil Present? | Yes <input type="checkbox"/> | No <input checked="" type="checkbox"/> | |
| Wetland Hydrology Present? | Yes <input type="checkbox"/> | No <input checked="" type="checkbox"/> | |
| Remarks: upland comparison point in cultivated field | | | |

VEGETATION – Use scientific names of plants

| Tree Stratum (Plot Size: _____) | Absolute % Cover | Dominant Species? | Indicator Status | Dominance Test Worksheet: |
|--|------------------|-------------------|------------------|--|
| 1. _____ | _____ | _____ | _____ | Number of Dominant Species That Are OBL, FACW, or FAC: <u>0</u> (A) Total Number of Dominant Species Across All Strata: <u>1</u> (B) Percent of Dominant Species That Are OBL, FACW, or FAC: <u>0</u> (A/B) |
| 2. _____ | _____ | _____ | _____ | |
| 3. _____ | _____ | _____ | _____ | |
| 4. _____ | _____ | _____ | _____ | |
| = Total Cover | | | | Prevalence Index worksheet: Total % Cover of: Multiply by: OBL species _____ x1 = _____ FACW species _____ x2 = _____ FAC species _____ x3 = _____ FACU species _____ x4 = _____ UPL species _____ x5 = _____ Column Totals: _____ (A) _____ (B) Prevalence Index = B/A = _____ |
| Sapling/Shrub Stratum (Plot Size: _____) | | | | |
| 1. _____ | _____ | _____ | _____ | |
| 2. _____ | _____ | _____ | _____ | |
| 3. _____ | _____ | _____ | _____ | |
| 4. _____ | _____ | _____ | _____ | |
| 5. _____ | _____ | _____ | _____ | |
| = Total Cover | | | | |
| Herb Stratum (Plot Size: 5') | | | | |
| 1. <u>soybean stubble</u> | <u>30</u> | <u>yes</u> | <u>UPL</u> | |
| 2. _____ | _____ | _____ | _____ | |
| 3. _____ | _____ | _____ | _____ | |
| 4. _____ | _____ | _____ | _____ | |
| 5. _____ | _____ | _____ | _____ | |
| 6. _____ | _____ | _____ | _____ | |
| 7. _____ | _____ | _____ | _____ | |
| 8. _____ | _____ | _____ | _____ | |
| 9. _____ | _____ | _____ | _____ | |
| 10. _____ | _____ | _____ | _____ | |
| = Total Cover | | | | |
| Woody Vine Stratum (Plot Size: _____) | | | | |
| 1. _____ | _____ | _____ | _____ | |
| 2. _____ | _____ | _____ | _____ | |
| = Total Cover | | | | |
| % Bare Ground in Herb Stratum <u>70</u> | | | | |
| Hydrophytic Vegetation Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> | | | | |

Remarks:

SOIL

Sampling Point: blpu1

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

| Depth (inches) | Matrix | | Redox Features | | | | Texture | Remarks |
|-------------------|---------------|-------|----------------|-------|-------------------|------------------|---------|---------|
| | Color (moist) | % | Color (Moist) | % | Type ¹ | Loc ² | | |
| 0-7 | 10YR 2/1 | 100 | _____ | _____ | _____ | _____ | sicl | _____ |
| 7-15 | 10YR 3/1 | 100 | _____ | _____ | _____ | _____ | sicl | _____ |
| 15-20+ | 2.5Y 4/3 | 100 | _____ | _____ | _____ | _____ | sicl | _____ |
| _____ | _____ | _____ | _____ | _____ | _____ | _____ | _____ | _____ |
| _____ | _____ | _____ | _____ | _____ | _____ | _____ | _____ | _____ |
| _____ | _____ | _____ | _____ | _____ | _____ | _____ | _____ | _____ |
| _____ | _____ | _____ | _____ | _____ | _____ | _____ | _____ | _____ |

¹Type: C= Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. ²Location: PL=Pore Lining, M=Matrix

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- Histosol (A1)
- Histic Epipedon (A2)
- Black Histic (A3)
- Hydrogen Sulfide (A4)
- Stratified Layers (A5) **(LRR F)**
- 1 cm Muck (A9) **(LRR F, G, H)**
- Depleted Below Dark Surface (A11)
- Thick Dark Surface (A12)
- Sandy Mucky Mineral (S1)
- 2.5 CM Mucky Peat or Peat (S2) **(LRR G, H)**
- 5 cm Mucky Peat or Peat (S3) **(LRR F)**
- Sandy Gleyed Matrix (S4)
- Sandy Redox (S5)
- Stripped Matrix (S6)
- Loamy Mucky Mineral (F1)
- Loamy Gleyed Matrix (F2)
- Depleted Matrix (F3)
- Redox Dark Surface (F6)
- Depleted Dark Surface (F7)
- Redox Depressions (F8)
- High Plains Depressions (F16) **(MLRA 72 & 73 of LRR H)**

Indicators for Problematic Hydric Soils³:

- 1 cm Muck (A9) **(LRR I, J)**
- Coast Prairie Redox (A16) **(LRR F, G, H)**
- Dark Surface (S7) **(LRR G)**
- High Plains Depressions (F16) **(LRR H outside of MLRA 72 & 73)**
- Reduced Vertic (F18)
- Red Parent Material (TF2)
- Very Shallow Dark Surface (TF 12)
- Other (Explain in Remarks)

³Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type: _____
Depth (Inches): _____

Hydric Soils Present? Yes No

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

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

- Surface Water (A1)
- High Water Table (A2)
- Saturation (A3)
- Water Marks (B1)
- Sediment Deposits (B2)
- Drift Deposits (B3)
- Algal Mat or Crust (B4)
- Iron Deposits (B5)
- Inundation Visible on Aerial Imagery (B7)
- Water-Stained Leaves (B9)
- Salt Crust (B11)
- Aquatic Invertebrates (B13)
- Hydrogen Sulfide Odor (C1)
- Dry Season Water Table (C2)
- Oxidized Rhizospheres along Living Roots (C3) **(where not tilled)**
- Presence of Reduced Iron (C4)
- Thin Muck Surface (C7)
- Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- Surface Soil Cracks (B6)
- Sparsely Vegetated Concave Surface (B8)
- Drainage Patterns (B10)
- Oxidized Rhizospheres along Living Roots (C3) **(where tilled)**
- Crayfish Burrows (C8)
- Saturation Visible on Aerial Imagery (C9)
- Geomorphic Position (D2)
- FAC-Neutral Test (D5)
- Frost-Heave Hummocks (D7) **(LRR F)**

Field Observations:

Surface Water Present? Yes No Depth (inches): _____
 Water Table Present? Yes No Depth (inches): _____
 Saturation Present? (includes capillary fringe) Yes No Depth (inches): _____

Wetland Hydrology Present? Yes No

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

WETLAND DETERMINATION DATA FORM – Great Plains Region

Project Site: BLLP 2011 City/County: Ward Sampling Date: 5/19/2011
 Applicant/Owner: McCain State: ND Sampling Point: bllpw2
 Investigator(s): GWM / CET Section, Township, Range: 20. 156. 86
 Landform (hillslope, terrace, etc.): depression Local relief (concave, convex, none): concave Slope (%): 1
 Subregion (LRR): E Lat: 48.322066 N Long: -101.761288 W Datum: NAD 83
 Soil Map Unit Name: WIA Williams loam level NWI classification: none

Are climatic / hydrologic conditions on the site typical for this time of year? Yes No (If no, explain in Remarks.)
 Are Vegetation , Soil , or Hydrology , significantly disturbed? Are "Normal Circumstances" present? Yes No
 Are Vegetation , Soil , or Hydrology , naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

| | | | |
|--|---|-----------------------------|--|
| Hydrophytic Vegetation Present? | Yes <input checked="" type="checkbox"/> | No <input type="checkbox"/> | Is the Sampling Area within a Wetland? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> |
| Hydric Soil Present? | Yes <input checked="" type="checkbox"/> | No <input type="checkbox"/> | |
| Wetland Hydrology Present? | Yes <input checked="" type="checkbox"/> | No <input type="checkbox"/> | |
| Remarks: Depression wetland in cultivated field. | | | |

VEGETATION – Use scientific names of plants

| Tree Stratum (Plot Size: _____) | Absolute % Cover | Dominant Species? | Indicator Status | Dominance Test Worksheet: | | | | | | | | | | | | | | | | |
|--|---------------------|-------------------|------------------|--|--------------------------|---------------------|-------------------|------------|--------------------|------------|-------------------|------------|--------------------|------------|-------------------|------------|----------------------|---------------------|--------------------------------|--|
| 1. _____ | _____ | _____ | _____ | Number of Dominant Species That Are OBL, FACW, or FAC: _____ (A) Total Number of Dominant Species Across All Strata: _____ (B) Percent of Dominant Species That Are OBL, FACW, or FAC: _____ (A/B) | | | | | | | | | | | | | | | | |
| 2. _____ | _____ | _____ | _____ | | | | | | | | | | | | | | | | | |
| 3. _____ | _____ | _____ | _____ | | | | | | | | | | | | | | | | | |
| 4. _____ | _____ | _____ | _____ | | | | | | | | | | | | | | | | | |
| = Total Cover | | | | Prevalence Index worksheet: <table style="width: 100%; border: none;"> <tr> <td style="text-align: center;"><u>Total % Cover of:</u></td> <td style="text-align: center;"><u>Multiply by:</u></td> </tr> <tr> <td>OBL species _____</td> <td>x1 = _____</td> </tr> <tr> <td>FACW species _____</td> <td>x2 = _____</td> </tr> <tr> <td>FAC species _____</td> <td>x3 = _____</td> </tr> <tr> <td>FACU species _____</td> <td>x4 = _____</td> </tr> <tr> <td>UPL species _____</td> <td>x5 = _____</td> </tr> <tr> <td>Column Totals: _____</td> <td>(A) _____ (B) _____</td> </tr> <tr> <td colspan="2" style="text-align: center;">Prevalence Index = B/A = _____</td> </tr> </table> | <u>Total % Cover of:</u> | <u>Multiply by:</u> | OBL species _____ | x1 = _____ | FACW species _____ | x2 = _____ | FAC species _____ | x3 = _____ | FACU species _____ | x4 = _____ | UPL species _____ | x5 = _____ | Column Totals: _____ | (A) _____ (B) _____ | Prevalence Index = B/A = _____ | |
| <u>Total % Cover of:</u> | <u>Multiply by:</u> | | | | | | | | | | | | | | | | | | | |
| OBL species _____ | x1 = _____ | | | | | | | | | | | | | | | | | | | |
| FACW species _____ | x2 = _____ | | | | | | | | | | | | | | | | | | | |
| FAC species _____ | x3 = _____ | | | | | | | | | | | | | | | | | | | |
| FACU species _____ | x4 = _____ | | | | | | | | | | | | | | | | | | | |
| UPL species _____ | x5 = _____ | | | | | | | | | | | | | | | | | | | |
| Column Totals: _____ | (A) _____ (B) _____ | | | | | | | | | | | | | | | | | | | |
| Prevalence Index = B/A = _____ | | | | | | | | | | | | | | | | | | | | |
| Sapling/Shrub Stratum (Plot Size: _____) | | | | | | | | | | | | | | | | | | | | |
| 1. _____ | _____ | _____ | _____ | | | | | | | | | | | | | | | | | |
| 2. _____ | _____ | _____ | _____ | | | | | | | | | | | | | | | | | |
| 3. _____ | _____ | _____ | _____ | | | | | | | | | | | | | | | | | |
| 4. _____ | _____ | _____ | _____ | | | | | | | | | | | | | | | | | |
| 5. _____ | _____ | _____ | _____ | | | | | | | | | | | | | | | | | |
| = Total Cover | | | | | | | | | | | | | | | | | | | | |
| Herb Stratum (Plot Size: 5') | | | | | | | | | | | | | | | | | | | | |
| 1. <u>Kochia scoparia</u> | <u>5</u> | <u>no</u> | <u>FAC</u> | | | | | | | | | | | | | | | | | |
| 2. <u>soybean stubble</u> | <u>80</u> | <u>yes</u> | <u>UPL</u> | | | | | | | | | | | | | | | | | |
| 3. _____ | _____ | _____ | _____ | | | | | | | | | | | | | | | | | |
| 4. _____ | _____ | _____ | _____ | | | | | | | | | | | | | | | | | |
| 5. _____ | _____ | _____ | _____ | | | | | | | | | | | | | | | | | |
| 6. _____ | _____ | _____ | _____ | | | | | | | | | | | | | | | | | |
| 7. _____ | _____ | _____ | _____ | | | | | | | | | | | | | | | | | |
| 8. _____ | _____ | _____ | _____ | | | | | | | | | | | | | | | | | |
| 9. _____ | _____ | _____ | _____ | | | | | | | | | | | | | | | | | |
| 10. _____ | _____ | _____ | _____ | | | | | | | | | | | | | | | | | |
| = Total Cover | | | | | | | | | | | | | | | | | | | | |
| Woody Vine Stratum (Plot Size: _____) | | | | | | | | | | | | | | | | | | | | |
| 1. _____ | _____ | _____ | _____ | | | | | | | | | | | | | | | | | |
| 2. _____ | _____ | _____ | _____ | | | | | | | | | | | | | | | | | |
| = Total Cover | | | | | | | | | | | | | | | | | | | | |
| % Bare Ground in Herb Stratum <u>15</u> | | | | | | | | | | | | | | | | | | | | |
| Hydrophytic Vegetation Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> | | | | | | | | | | | | | | | | | | | | |

Remarks:
Cultivation impacted vegetation at wetland. Comparable uncultivated wetlands have prairie cordgrass and curled dock.

SOIL

Sampling Point: blpw2

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

| Depth (inches) | Matrix | | Redox Features | | | | Texture | Remarks |
|-------------------|---------------|-----|----------------|----|-------------------|------------------|---------|---------|
| | Color (moist) | % | Color (Moist) | % | Type ¹ | Loc ² | | |
| 0-8 | 10YR 2/1 | 100 | | | | | sicl | |
| 8-18+ | 2.5Y 4/2 | 70 | 10YR 5/6 | 30 | c | m | sicl | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |

¹Type: C= Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. ²Location: PL=Pore Lining, M=Matrix

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- Histosol (A1)
- Histic Epipedon (A2)
- Black Histic (A3)
- Hydrogen Sulfide (A4)
- Stratified Layers (A5) (LRR F)
- 1 cm Muck (A9) (LRR F, G, H)
- Depleted Below Dark Surface (A11)
- Thick Dark Surface (A12)
- Sandy Mucky Mineral (S1)
- 2.5 CM Mucky Peat or Peat (S2)(LRR G, H)
- 5 cm Mucky Peat or Peat (S3) (LRR F)
- Sandy Gleyed Matrix (S4)
- Sandy Redox (S5)
- Stripped Matrix (S6)
- Loamy Mucky Mineral (F1)
- Loamy Gleyed Matrix (F2)
- Depleted Matrix (F3)
- Redox Dark Surface (F6)
- Depleted Dark Surface (F7)
- Redox Depressions (F8)
- High Plains Depressions (F16)

Indicators for Problematic Hydric Soils³:

- 1 cm Muck (A9) (LRR I, J)
- Coast Prairie Redox (A16) (LRR F, G, H)
- Dark Surface (S7) (LRR G)
- High Plains Depressions (F16)
- (LRR H outside of MLRA 72 & 73)**
- Reduced Vertic (F18)
- Red Parent Material (TF2)
- Very Shallow Dark Surface (TF 12)
- Other (Explain in Remarks)

³Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type: _____
Depth (Inches): _____

Hydric Soils Present? Yes No

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

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

Secondary Indicators (2 or more required)

- | | | |
|---|---|---|
| <ul style="list-style-type: none"> <input checked="" type="checkbox"/> Surface Water (A1) <input checked="" type="checkbox"/> High Water Table (A2) <input checked="" type="checkbox"/> Saturation (A3) <input type="checkbox"/> Water Marks (B1) <input type="checkbox"/> Sediment Deposits (B2) <input type="checkbox"/> Drift Deposits (B3) <input type="checkbox"/> Algal Mat or Crust (B4) <input type="checkbox"/> Iron Deposits (B5) <input type="checkbox"/> Inundation Visible on Aerial Imagery (B7) <input type="checkbox"/> Water-Stained Leaves (B9) | <ul style="list-style-type: none"> <input type="checkbox"/> Salt Crust (B11) <input type="checkbox"/> Aquatic Invertebrates (B13) <input type="checkbox"/> Hydrogen Sulfide Odor (C1) <input type="checkbox"/> Dry Season Water Table (C2) <input type="checkbox"/> Oxidized Rhizospheres along Living Roots (C3) (where not tilled) <input type="checkbox"/> Presence of Reduced Iron (C4) <input type="checkbox"/> Thin Muck Surface (C7) <input type="checkbox"/> Other (Explain in Remarks) | <ul style="list-style-type: none"> <input type="checkbox"/> Surface Soil Cracks (B6) <input type="checkbox"/> Sparsely Vegetated Concave Surface (B8) <input type="checkbox"/> Drainage Patterns (B10) <input type="checkbox"/> Oxidized Rhizospheres along Living Roots (C3) (where tilled) <input type="checkbox"/> Crayfish Burrows (C8) <input checked="" type="checkbox"/> Saturation Visible on Aerial Imagery (C9) <input checked="" type="checkbox"/> Geomorphic Position (D2) <input type="checkbox"/> FAC-Neutral Test (D5) <input type="checkbox"/> Frost-Heave Hummocks (D7) (LRR F) |
|---|---|---|

Field Observations:

Surface Water Present? Yes No Depth (inches): 2
 Water Table Present? Yes No Depth (inches): 0
 Saturation Present? (includes capillary fringe) Yes No Depth (inches): 0

Wetland Hydrology Present? Yes No

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

WETLAND DETERMINATION DATA FORM – Great Plains Region

Project Site: BLLP 2011 City/County: Ward Sampling Date: 5/19/2011
 Applicant/Owner: McCain State: ND Sampling Point: blpu2
 Investigator(s): GWM / CET Section, Township, Range: 20. 156. 86
 Landform (hillslope, terrace, etc.): slope Local relief (concave, convex, none): concave Slope (%): 2
 Subregion (LRR): E Lat: 48.321970 N Long: -101.761312 W Datum: NAD 83
 Soil Map Unit Name: WIA Williams loam level NWI classification: none

Are climatic / hydrologic conditions on the site typical for this time of year? Yes No (If no, explain in Remarks.)
 Are Vegetation , Soil , or Hydrology , significantly disturbed? Are "Normal Circumstances" present? Yes No
 Are Vegetation , Soil , or Hydrology , naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

| | | | |
|--|------------------------------|--|--|
| Hydrophytic Vegetation Present? | Yes <input type="checkbox"/> | No <input checked="" type="checkbox"/> | Is the Sampling Area within a Wetland? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> |
| Hydric Soil Present? | Yes <input type="checkbox"/> | No <input checked="" type="checkbox"/> | |
| Wetland Hydrology Present? | Yes <input type="checkbox"/> | No <input checked="" type="checkbox"/> | |
| Remarks: upland comparison point in cultivated field | | | |

VEGETATION – Use scientific names of plants

| Tree Stratum (Plot Size: _____) | Absolute % Cover | Dominant Species? | Indicator Status | Dominance Test Worksheet: | | | | | | | | | | | | | | | | |
|--|---------------------|-------------------|------------------|--|--------------------------|---------------------|-------------------|------------|--------------------|------------|-------------------|------------|--------------------|------------|-------------------|------------|----------------------|---------------------|--------------------------------|--|
| 1. _____ | _____ | _____ | _____ | Number of Dominant Species That Are OBL, FACW, or FAC: <u>0</u> (A) Total Number of Dominant Species Across All Strata: <u>1</u> (B) Percent of Dominant Species That Are OBL, FACW, or FAC: <u>0</u> (A/B) | | | | | | | | | | | | | | | | |
| 2. _____ | _____ | _____ | _____ | | | | | | | | | | | | | | | | | |
| 3. _____ | _____ | _____ | _____ | | | | | | | | | | | | | | | | | |
| 4. _____ | _____ | _____ | _____ | | | | | | | | | | | | | | | | | |
| = Total Cover | | | | Prevalence Index worksheet: <table style="width: 100%; border: none;"> <tr> <td style="text-align: center;"><u>Total % Cover of:</u></td> <td style="text-align: center;"><u>Multiply by:</u></td> </tr> <tr> <td>OBL species _____</td> <td>x1 = _____</td> </tr> <tr> <td>FACW species _____</td> <td>x2 = _____</td> </tr> <tr> <td>FAC species _____</td> <td>x3 = _____</td> </tr> <tr> <td>FACU species _____</td> <td>x4 = _____</td> </tr> <tr> <td>UPL species _____</td> <td>x5 = _____</td> </tr> <tr> <td>Column Totals: _____</td> <td>(A) _____ (B) _____</td> </tr> <tr> <td colspan="2" style="text-align: center;">Prevalence Index = B/A = _____</td> </tr> </table> | <u>Total % Cover of:</u> | <u>Multiply by:</u> | OBL species _____ | x1 = _____ | FACW species _____ | x2 = _____ | FAC species _____ | x3 = _____ | FACU species _____ | x4 = _____ | UPL species _____ | x5 = _____ | Column Totals: _____ | (A) _____ (B) _____ | Prevalence Index = B/A = _____ | |
| <u>Total % Cover of:</u> | <u>Multiply by:</u> | | | | | | | | | | | | | | | | | | | |
| OBL species _____ | x1 = _____ | | | | | | | | | | | | | | | | | | | |
| FACW species _____ | x2 = _____ | | | | | | | | | | | | | | | | | | | |
| FAC species _____ | x3 = _____ | | | | | | | | | | | | | | | | | | | |
| FACU species _____ | x4 = _____ | | | | | | | | | | | | | | | | | | | |
| UPL species _____ | x5 = _____ | | | | | | | | | | | | | | | | | | | |
| Column Totals: _____ | (A) _____ (B) _____ | | | | | | | | | | | | | | | | | | | |
| Prevalence Index = B/A = _____ | | | | | | | | | | | | | | | | | | | | |
| <u>Sapling/Shrub Stratum</u> (Plot Size: _____) | | | | | | | | | | | | | | | | | | | | |
| 1. _____ | _____ | _____ | _____ | | | | | | | | | | | | | | | | | |
| 2. _____ | _____ | _____ | _____ | | | | | | | | | | | | | | | | | |
| 3. _____ | _____ | _____ | _____ | | | | | | | | | | | | | | | | | |
| 4. _____ | _____ | _____ | _____ | | | | | | | | | | | | | | | | | |
| 5. _____ | _____ | _____ | _____ | | | | | | | | | | | | | | | | | |
| = Total Cover | | | | | | | | | | | | | | | | | | | | |
| <u>Herb Stratum</u> (Plot Size: <u>5'</u>) | | | | | | | | | | | | | | | | | | | | |
| 1. <u>soybean stubble</u> | <u>30</u> | <u>yes</u> | <u>UPL</u> | | | | | | | | | | | | | | | | | |
| 2. _____ | _____ | _____ | _____ | | | | | | | | | | | | | | | | | |
| 3. _____ | _____ | _____ | _____ | | | | | | | | | | | | | | | | | |
| 4. _____ | _____ | _____ | _____ | | | | | | | | | | | | | | | | | |
| 5. _____ | _____ | _____ | _____ | | | | | | | | | | | | | | | | | |
| 6. _____ | _____ | _____ | _____ | | | | | | | | | | | | | | | | | |
| 7. _____ | _____ | _____ | _____ | | | | | | | | | | | | | | | | | |
| 8. _____ | _____ | _____ | _____ | | | | | | | | | | | | | | | | | |
| 9. _____ | _____ | _____ | _____ | | | | | | | | | | | | | | | | | |
| 10. _____ | _____ | _____ | _____ | | | | | | | | | | | | | | | | | |
| = Total Cover | | | | | | | | | | | | | | | | | | | | |
| <u>Woody Vine Stratum</u> (Plot Size: _____) | | | | | | | | | | | | | | | | | | | | |
| 1. _____ | _____ | _____ | _____ | | | | | | | | | | | | | | | | | |
| 2. _____ | _____ | _____ | _____ | | | | | | | | | | | | | | | | | |
| = Total Cover | | | | | | | | | | | | | | | | | | | | |
| % Bare Ground in Herb Stratum <u>70</u> | | | | | | | | | | | | | | | | | | | | |
| Hydrophytic Vegetation Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> | | | | | | | | | | | | | | | | | | | | |
| Remarks: | | | | | | | | | | | | | | | | | | | | |

SOIL

Sampling Point: blpu2

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

| Depth (inches) | Matrix | | Redox Features | | | | Texture | Remarks |
|-------------------|---------------|-------|----------------|-------|-------------------|------------------|---------|---------|
| | Color (moist) | % | Color (Moist) | % | Type ¹ | Loc ² | | |
| 0-7 | 10YR 3/1 | 100 | _____ | _____ | _____ | _____ | sicl | _____ |
| 7-13 | 10YR 3/3 | 50 | _____ | _____ | _____ | _____ | sicl | _____ |
| 7-13 | 10YR 3/1 | 50 | _____ | _____ | _____ | _____ | sicl | _____ |
| 13-18+ | 2.5Y 4/4 | 90 | 10YR 5/4 | 10 | c | m | sicl | _____ |
| _____ | _____ | _____ | _____ | _____ | _____ | _____ | _____ | _____ |
| _____ | _____ | _____ | _____ | _____ | _____ | _____ | _____ | _____ |
| _____ | _____ | _____ | _____ | _____ | _____ | _____ | _____ | _____ |
| _____ | _____ | _____ | _____ | _____ | _____ | _____ | _____ | _____ |

¹Type: C= Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. ²Location: PL=Pore Lining, M=Matrix

| | | |
|--|--|---|
| Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.) | | Indicators for Problematic Hydric Soils³: |
| <input type="checkbox"/> Histosol (A1) | <input type="checkbox"/> Sandy Gleyed Matrix (S4) | <input type="checkbox"/> 1 cm Muck (A9) (LRR I, J) |
| <input type="checkbox"/> Histic Epipedon (A2) | <input type="checkbox"/> Sandy Redox (S5) | <input type="checkbox"/> Coast Prairie Redox (A16) (LRR F, G, H) |
| <input type="checkbox"/> Black Histic (A3) | <input type="checkbox"/> Stripped Matrix (S6) | <input type="checkbox"/> Dark Surface (S7) (LRR G) |
| <input type="checkbox"/> Hydrogen Sulfide (A4) | <input type="checkbox"/> Loamy Mucky Mineral (F1) | <input type="checkbox"/> High Plains Depressions (F16) |
| <input type="checkbox"/> Stratified Layers (A5) (LRR F) | <input type="checkbox"/> Loamy Gleyed Matrix (F2) | (LRR H outside of MLRA 72 & 73) |
| <input type="checkbox"/> 1 cm Muck (A9) (LRR F, G, H) | <input type="checkbox"/> Depleted Matrix (F3) | <input type="checkbox"/> Reduced Vertic (F18) |
| <input type="checkbox"/> Depleted Below Dark Surface (A11) | <input type="checkbox"/> Redox Dark Surface (F6) | <input type="checkbox"/> Red Parent Material (TF2) |
| <input type="checkbox"/> Thick Dark Surface (A12) | <input type="checkbox"/> Depleted Dark Surface (F7) | <input type="checkbox"/> Very Shallow Dark Surface (TF 12) |
| <input type="checkbox"/> Sandy Mucky Mineral (S1) | <input type="checkbox"/> Redox Depressions (F8) | <input type="checkbox"/> Other (Explain in Remarks) |
| <input type="checkbox"/> 2.5 CM Mucky Peat or Peat (S2)(LRR G, H) | <input type="checkbox"/> High Plains Depressions (F16) | ³ Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic. |
| <input type="checkbox"/> 5 cm Mucky Peat or Peat (S3) (LRR F) | (MLRA 72 & 73 of LRR H) | |

Restrictive Layer (if present):

Type: _____

Depth (Inches): _____

Remarks: _____

Hydric Soils Present? Yes No

HYDROLOGY

| | |
|--|--|
| Wetland Hydrology Indicators: | |
| Primary Indicators (minimum of one required; check all that apply) | Secondary Indicators (2 or more required) |
| <input type="checkbox"/> Surface Water (A1) | <input type="checkbox"/> Surface Soil Cracks (B6) |
| <input type="checkbox"/> High Water Table (A2) | <input type="checkbox"/> Sparsely Vegetated Concave Surface (B8) |
| <input type="checkbox"/> Saturation (A3) | <input type="checkbox"/> Drainage Patterns (B10) |
| <input type="checkbox"/> Water Marks (B1) | <input type="checkbox"/> Oxidized Rhizospheres along Living Roots (C3) |
| <input type="checkbox"/> Sediment Deposits (B2) | (where tilled) |
| <input type="checkbox"/> Drift Deposits (B3) | <input type="checkbox"/> Crayfish Burrows (C8) |
| <input type="checkbox"/> Algal Mat or Crust (B4) | <input type="checkbox"/> Saturation Visible on Aerial Imagery (C9) |
| <input type="checkbox"/> Iron Deposits (B5) | <input type="checkbox"/> Geomorphic Position (D2) |
| <input type="checkbox"/> Inundation Visible on Aerial Imagery (B7) | <input type="checkbox"/> FAC-Neutral Test (D5) |
| <input type="checkbox"/> Water-Stained Leaves (B9) | <input type="checkbox"/> Frost-Heave Hummocks (D7) (LRR F) |
| <input type="checkbox"/> Salt Crust (B11) | |
| <input type="checkbox"/> Aquatic Invertebrates (B13) | |
| <input type="checkbox"/> Hydrogen Sulfide Odor (C1) | |
| <input type="checkbox"/> Dry Season Water Table (C2) | |
| <input type="checkbox"/> Oxidized Rhizospheres along Living Roots (C3) | |
| (where not tilled) | |
| <input type="checkbox"/> Presence of Reduced Iron (C4) | |
| <input type="checkbox"/> Thin Muck Surface (C7) | |
| <input type="checkbox"/> Other (Explain in Remarks) | |

Field Observations:

Surface Water Present? Yes No Depth (inches): _____

Water Table Present? Yes No Depth (inches): _____

Saturation Present? (includes capillary fringe) Yes No Depth (inches): _____

Wetland Hydrology Present? Yes No

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks: _____

WETLAND DETERMINATION DATA FORM – Great Plains Region

Project Site: BLLP 2011 City/County: Ward Sampling Date: 5/19/2011
 Applicant/Owner: McCain State: ND Sampling Point: bllpw3
 Investigator(s): GWM / CET Section, Township, Range: 20. 156. 86
 Landform (hillslope, terrace, etc.): depression Local relief (concave, convex, none): concave Slope (%): 1
 Subregion (LRR): E Lat: 48.321049 N Long: -101.762708 W Datum: NAD 83
 Soil Map Unit Name: WIB Williams loam gently undulating NWI classification: none

Are climatic / hydrologic conditions on the site typical for this time of year? Yes No (If no, explain in Remarks.)
 Are Vegetation , Soil , or Hydrology , significantly disturbed? Are "Normal Circumstances" present? Yes No
 Are Vegetation , Soil , or Hydrology , naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

| | | | |
|---|---|-----------------------------|--|
| Hydrophytic Vegetation Present? | Yes <input checked="" type="checkbox"/> | No <input type="checkbox"/> | Is the Sampling Area within a Wetland? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> |
| Hydric Soil Present? | Yes <input checked="" type="checkbox"/> | No <input type="checkbox"/> | |
| Wetland Hydrology Present? | Yes <input checked="" type="checkbox"/> | No <input type="checkbox"/> | |
| Remarks: Depression wetland between cultivated field and railroad right-of-way. | | | |

VEGETATION – Use scientific names of plants

| Tree Stratum (Plot Size: _____) | Absolute % Cover | Dominant Species? | Indicator Status | Dominance Test Worksheet: |
|---|------------------|-------------------|------------------|--|
| 1. _____ | _____ | _____ | _____ | Number of Dominant Species That Are OBL, FACW, or FAC: _____ (A) Total Number of Dominant Species Across All Strata: _____ (B) Percent of Dominant Species That Are OBL, FACW, or FAC: _____ (A/B) |
| 2. _____ | _____ | _____ | _____ | |
| 3. _____ | _____ | _____ | _____ | |
| 4. _____ | _____ | _____ | _____ | |
| = Total Cover | | | | |
| Sapling/Shrub Stratum (Plot Size: _____) | | | | |
| 1. _____ | _____ | _____ | _____ | Prevalence Index worksheet: Total % Cover of: Multiply by: OBL species _____ x1 = _____ FACW species _____ x2 = _____ FAC species _____ x3 = _____ FACU species _____ x4 = _____ UPL species _____ x5 = _____ Column Totals: _____ (A) _____ (B) Prevalence Index = B/A = _____ |
| 2. _____ | _____ | _____ | _____ | |
| 3. _____ | _____ | _____ | _____ | |
| 4. _____ | _____ | _____ | _____ | |
| 5. _____ | _____ | _____ | _____ | |
| = Total Cover | | | | |
| Herb Stratum (Plot Size: 5') | | | | |
| 1. <u>Spartina pectinata</u> | <u>90</u> | <u>yes</u> | <u>FACW</u> | Hydrophytic Vegetation Indicators: <input checked="" type="checkbox"/> 1 – Rapid Test for Hydrophytic Vegetation _____ 2 - Dominance Test is >50% _____ 3 – Prevalence Index is ≤3.0 ¹ _____ 4 - Morphological Adaptations ¹ (Provide supporting data in Remarks or on a separate sheet) _____ Problematic Hydrophytic Vegetation ¹ (Explain) ¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic. |
| 2. <u>Bromus inermis</u> | <u>10</u> | <u>no</u> | <u>FACU</u> | |
| 3. _____ | _____ | _____ | _____ | |
| 4. _____ | _____ | _____ | _____ | |
| 5. _____ | _____ | _____ | _____ | |
| 6. _____ | _____ | _____ | _____ | |
| 7. _____ | _____ | _____ | _____ | |
| 8. _____ | _____ | _____ | _____ | |
| 9. _____ | _____ | _____ | _____ | |
| 10. _____ | _____ | _____ | _____ | |
| 100 | | | = Total Cover | |
| Woody Vine Stratum (Plot Size: _____) | | | | |
| 1. _____ | _____ | _____ | _____ | |
| 2. _____ | _____ | _____ | _____ | |
| = Total Cover | | | | |
| % Bare Ground in Herb Stratum <u>0</u> | | | | Hydrophytic Vegetation Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> |
| Remarks: | | | | |

SOIL

Sampling Point: blpw3

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

| Depth (inches) | Matrix | | Redox Features | | | | Texture | Remarks |
|-------------------|---------------|-----|----------------|----|-------------------|------------------|---------|---------|
| | Color (moist) | % | Color (Moist) | % | Type ¹ | Loc ² | | |
| 0-2 | 10YR 2/1 | 100 | | | | | sicl | |
| 2-10 | 10YR 3/1 | 50 | 10YR 5/4 | 10 | c | m | sicl | |
| | 2.5Y 4/2 | 40 | | | | | | |
| 10-17 | 2.5Y 4/2 | 70 | 10YR 5/4 | 10 | c | m | sicl | |
| | 10YR 3/1 | 20 | | | | | | |
| 17-24+ | 2.5Y 4/2 | 90 | 10YR 5/4 | 5 | c | m | sicl | |
| | | | 7.5YR 5/6 | 5 | c | m | sicl | |

¹Type: C= Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. ²Location: PL=Pore Lining, M=Matrix

| | | |
|--|---|---|
| Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.) | | Indicators for Problematic Hydric Soils³: |
| <input type="checkbox"/> Histosol (A1) | <input type="checkbox"/> Sandy Gleyed Matrix (S4) | <input type="checkbox"/> 1 cm Muck (A9) (LRR I, J) |
| <input type="checkbox"/> Histic Epipedon (A2) | <input type="checkbox"/> Sandy Redox (S5) | <input type="checkbox"/> Coast Prairie Redox (A16) (LRR F, G, H) |
| <input type="checkbox"/> Black Histic (A3) | <input type="checkbox"/> Stripped Matrix (S6) | <input type="checkbox"/> Dark Surface (S7) (LRR G) |
| <input type="checkbox"/> Hydrogen Sulfide (A4) | <input type="checkbox"/> Loamy Mucky Mineral (F1) | <input type="checkbox"/> High Plains Depressions (F16) |
| <input type="checkbox"/> Stratified Layers (A5) (LRR F) | <input type="checkbox"/> Loamy Gleyed Matrix (F2) | (LRR H outside of MLRA 72 & 73) |
| <input type="checkbox"/> 1 cm Muck (A9) (LRR F, G, H) | <input type="checkbox"/> Depleted Matrix (F3) | <input type="checkbox"/> Reduced Vertic (F18) |
| <input checked="" type="checkbox"/> Depleted Below Dark Surface (A11) | <input checked="" type="checkbox"/> Redox Dark Surface (F6) | <input type="checkbox"/> Red Parent Material (TF2) |
| <input type="checkbox"/> Thick Dark Surface (A12) | <input type="checkbox"/> Depleted Dark Surface (F7) | <input type="checkbox"/> Very Shallow Dark Surface (TF 12) |
| <input type="checkbox"/> Sandy Mucky Mineral (S1) | <input type="checkbox"/> Redox Depressions (F8) | <input type="checkbox"/> Other (Explain in Remarks) |
| <input type="checkbox"/> 2.5 CM Mucky Peat or Peat (S2)(LRR G, H) | <input type="checkbox"/> High Plains Depressions (F16) | ³ Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic. |
| <input type="checkbox"/> 5 cm Mucky Peat or Peat (S3) (LRR F) | (MLRA 72 & 73 of LRR H) | |

Restrictive Layer (if present):

Type: _____

Depth (Inches): _____

Remarks:
Mixed soils due to railroad construction.

Hydric Soils Present? Yes No

HYDROLOGY

| | |
|--|---|
| Wetland Hydrology Indicators: | |
| Primary Indicators (minimum of one required; check all that apply) | Secondary Indicators (2 or more required) |
| <input checked="" type="checkbox"/> Surface Water (A1) | <input type="checkbox"/> Surface Soil Cracks (B6) |
| <input checked="" type="checkbox"/> High Water Table (A2) | <input type="checkbox"/> Sparsely Vegetated Concave Surface (B8) |
| <input checked="" type="checkbox"/> Saturation (A3) | <input type="checkbox"/> Drainage Patterns (B10) |
| <input type="checkbox"/> Water Marks (B1) | <input type="checkbox"/> Oxidized Rhizospheres along Living Roots (C3) |
| <input type="checkbox"/> Sediment Deposits (B2) | (where tilled) |
| <input type="checkbox"/> Drift Deposits (B3) | <input type="checkbox"/> Crayfish Burrows (C8) |
| <input type="checkbox"/> Algal Mat or Crust (B4) | <input checked="" type="checkbox"/> Saturation Visible on Aerial Imagery (C9) |
| <input type="checkbox"/> Iron Deposits (B5) | <input checked="" type="checkbox"/> Geomorphic Position (D2) |
| <input type="checkbox"/> Inundation Visible on Aerial Imagery (B7) | <input type="checkbox"/> FAC-Neutral Test (D5) |
| <input type="checkbox"/> Water-Stained Leaves (B9) | <input type="checkbox"/> Frost-Heave Hummocks (D7) (LRR F) |
| <input type="checkbox"/> Salt Crust (B11) | |
| <input type="checkbox"/> Aquatic Invertebrates (B13) | |
| <input type="checkbox"/> Hydrogen Sulfide Odor (C1) | |
| <input type="checkbox"/> Dry Season Water Table (C2) | |
| <input type="checkbox"/> Oxidized Rhizospheres along Living Roots (C3) | |
| (where not tilled) | |
| <input type="checkbox"/> Presence of Reduced Iron (C4) | |
| <input type="checkbox"/> Thin Muck Surface (C7) | |
| <input type="checkbox"/> Other (Explain in Remarks) | |

Field Observations:

Surface Water Present? Yes No Depth (inches): 6

Water Table Present? Yes No Depth (inches): 8

Saturation Present? (includes capillary fringe) Yes No Depth (inches): 2

Wetland Hydrology Present? Yes No

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

WETLAND DETERMINATION DATA FORM – Great Plains Region

Project Site: BLLP 2011 City/County: Ward Sampling Date: 5/19/2011
 Applicant/Owner: McCain State: ND Sampling Point: blpu3
 Investigator(s): GWM / CET Section, Township, Range: 20. 156. 86
 Landform (hillslope, terrace, etc.): slope Local relief (concave, convex, none): concave Slope (%): 2
 Subregion (LRR): E Lat: 48.321112 N Long: -101.762815 W Datum: NAD 83
 Soil Map Unit Name: WIB Williams loam gently undulating NWI classification: none

Are climatic / hydrologic conditions on the site typical for this time of year? Yes No (If no, explain in Remarks.)
 Are Vegetation , Soil , or Hydrology , significantly disturbed? Are "Normal Circumstances" present? Yes No
 Are Vegetation , Soil , or Hydrology , naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

| | | | |
|---|---|--|--|
| Hydrophytic Vegetation Present? | Yes <input type="checkbox"/> | No <input checked="" type="checkbox"/> | Is the Sampling Area within a Wetland? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> |
| Hydric Soil Present? | Yes <input checked="" type="checkbox"/> | No <input type="checkbox"/> | |
| Wetland Hydrology Present? | Yes <input type="checkbox"/> | No <input checked="" type="checkbox"/> | |
| Remarks: upland comparison point along edge of cultivated field | | | |

VEGETATION – Use scientific names of plants

| Tree Stratum (Plot Size: _____) | Absolute % Cover | Dominant Species? | Indicator Status | Dominance Test Worksheet: |
|--|------------------|-------------------|------------------|--|
| 1. _____ | _____ | _____ | _____ | Number of Dominant Species That Are OBL, FACW, or FAC: <u>0</u> (A) Total Number of Dominant Species Across All Strata: <u>1</u> (B) Percent of Dominant Species That Are OBL, FACW, or FAC: <u>0</u> (A/B) |
| 2. _____ | _____ | _____ | _____ | |
| 3. _____ | _____ | _____ | _____ | |
| 4. _____ | _____ | _____ | _____ | |
| = Total Cover | | | | Prevalence Index worksheet: Total % Cover of: Multiply by: OBL species _____ x1 = _____ FACW species _____ x2 = _____ FAC species _____ x3 = _____ FACU species _____ x4 = _____ UPL species _____ x5 = _____ Column Totals: _____ (A) _____ (B) Prevalence Index = B/A = _____ |
| <u>Sapling/Shrub Stratum</u> (Plot Size: _____) | | | | |
| 1. _____ | _____ | _____ | _____ | |
| 2. _____ | _____ | _____ | _____ | |
| 3. _____ | _____ | _____ | _____ | |
| 4. _____ | _____ | _____ | _____ | |
| 5. _____ | _____ | _____ | _____ | |
| = Total Cover | | | | |
| <u>Herb Stratum</u> (Plot Size: 5') | | | | |
| 1. <u>Bromus inermis</u> | <u>90</u> | <u>yes</u> | <u>FACU</u> | |
| 2. <u>Poa pratensis</u> | <u>10</u> | <u>no</u> | <u>FACU</u> | |
| 3. _____ | _____ | _____ | _____ | |
| 4. _____ | _____ | _____ | _____ | |
| 5. _____ | _____ | _____ | _____ | |
| 6. _____ | _____ | _____ | _____ | |
| 7. _____ | _____ | _____ | _____ | |
| 8. _____ | _____ | _____ | _____ | |
| 9. _____ | _____ | _____ | _____ | |
| 10. _____ | _____ | _____ | _____ | |
| <u>100</u> | | | = Total Cover | |
| <u>Woody Vine Stratum</u> (Plot Size: _____) | | | | |
| 1. _____ | _____ | _____ | _____ | |
| 2. _____ | _____ | _____ | _____ | |
| = Total Cover | | | | |
| % Bare Ground in Herb Stratum <u>0</u> | | | | |
| Hydrophytic Vegetation Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> | | | | |
| Remarks: | | | | |

SOIL

Sampling Point: blpu3

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

| Depth (inches) | Matrix | | Redox Features | | | | Texture | Remarks |
|-------------------|---------------|-------|----------------|-------|-------------------|------------------|---------|---------|
| | Color (moist) | % | Color (Moist) | % | Type ¹ | Loc ² | | |
| 0-4 | 10YR 3/1 | 100 | | | | | sicl | |
| 4-20 | 2.5Y 4/2 | 90 | 7.5YR 5/6 | 10 | c | m | sicl | |
| _____ | _____ | _____ | _____ | _____ | _____ | _____ | _____ | _____ |
| _____ | _____ | _____ | _____ | _____ | _____ | _____ | _____ | _____ |
| _____ | _____ | _____ | _____ | _____ | _____ | _____ | _____ | _____ |
| _____ | _____ | _____ | _____ | _____ | _____ | _____ | _____ | _____ |

¹Type: C= Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. ²Location: PL=Pore Lining, M=Matrix

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- Histosol (A1)
- Histic Epipedon (A2)
- Black Histic (A3)
- Hydrogen Sulfide (A4)
- Stratified Layers (A5) (LRR F)
- 1 cm Muck (A9) (LRR F, G, H)
- Depleted Below Dark Surface (A11)
- Thick Dark Surface (A12)
- Sandy Mucky Mineral (S1)
- 2.5 CM Mucky Peat or Peat (S2)(LRR G, H)
- 5 cm Mucky Peat or Peat (S3) (LRR F)
- Sandy Gleyed Matrix (S4)
- Sandy Redox (S5)
- Stripped Matrix (S6)
- Loamy Mucky Mineral (F1)
- Loamy Gleyed Matrix (F2)
- Depleted Matrix (F3)
- Redox Dark Surface (F6)
- Depleted Dark Surface (F7)
- Redox Depressions (F8)
- High Plains Depressions (F16)

Indicators for Problematic Hydric Soils³:

- 1 cm Muck (A9) (LRR I, J)
- Coast Prairie Redox (A16) (LRR F, G, H)
- Dark Surface (S7) (LRR G)
- High Plains Depressions (F16)
- (LRR H outside of MLRA 72 & 73)**
- Reduced Vertic (F18)
- Red Parent Material (TF2)
- Very Shallow Dark Surface (TF 12)
- Other (Explain in Remarks)

³Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type: _____
Depth (Inches): _____

Hydric Soils Present? Yes No

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

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

- Surface Water (A1)
- High Water Table (A2)
- Saturation (A3)
- Water Marks (B1)
- Sediment Deposits (B2)
- Drift Deposits (B3)
- Algal Mat or Crust (B4)
- Iron Deposits (B5)
- Inundation Visible on Aerial Imagery (B7)
- Water-Stained Leaves (B9)
- Salt Crust (B11)
- Aquatic Invertebrates (B13)
- Hydrogen Sulfide Odor (C1)
- Dry Season Water Table (C2)
- Oxidized Rhizospheres along Living Roots (C3) (where not tilled)
- Presence of Reduced Iron (C4)
- Thin Muck Surface (C7)
- Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- Surface Soil Cracks (B6)
- Sparsely Vegetated Concave Surface (B8)
- Drainage Patterns (B10)
- Oxidized Rhizospheres along Living Roots (C3) (where tilled)
- Crayfish Burrows (C8)
- Saturation Visible on Aerial Imagery (C9)
- Geomorphic Position (D2)
- FAC-Neutral Test (D5)
- Frost-Heave Hummocks (D7) (LRR F)

Field Observations:

Surface Water Present? Yes No Depth (inches): _____
 Water Table Present? Yes No Depth (inches): _____
 Saturation Present? (includes capillary fringe) Yes No Depth (inches): _____

Wetland Hydrology Present? Yes No

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

WETLAND DETERMINATION DATA FORM – Great Plains Region

Project Site: BLLP 2011 City/County: Ward Sampling Date: 5/19/2011
 Applicant/Owner: McCain State: ND Sampling Point: bllpw4
 Investigator(s): GWM / CET Section, Township, Range: 20. 156. 86
 Landform (hillslope, terrace, etc.): depression Local relief (concave, convex, none): concave Slope (%): 1
 Subregion (LRR): E Lat: 48.322432 N Long: -101.764566 W Datum: NAD 83
 Soil Map Unit Name: WIA Williams loam level NWI classification: none

Are climatic / hydrologic conditions on the site typical for this time of year? Yes No (If no, explain in Remarks.)
 Are Vegetation , Soil , or Hydrology , significantly disturbed? Are "Normal Circumstances" present? Yes No
 Are Vegetation , Soil , or Hydrology , naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

| | | | |
|--|---|-----------------------------|--|
| Hydrophytic Vegetation Present? | Yes <input checked="" type="checkbox"/> | No <input type="checkbox"/> | Is the Sampling Area within a Wetland? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> |
| Hydric Soil Present? | Yes <input checked="" type="checkbox"/> | No <input type="checkbox"/> | |
| Wetland Hydrology Present? | Yes <input checked="" type="checkbox"/> | No <input type="checkbox"/> | |
| Remarks: Depression wetland in cultivated field. | | | |

VEGETATION – Use scientific names of plants

| Tree Stratum (Plot Size: _____) | Absolute % Cover | Dominant Species? | Indicator Status | Dominance Test Worksheet: | | | | | | | | | | | | | | | | |
|--|---------------------|-------------------|------------------|--|--------------------------|---------------------|-------------------|------------|--------------------|------------|-------------------|------------|--------------------|------------|-------------------|------------|----------------------|---------------------|--------------------------------|--|
| 1. _____ | _____ | _____ | _____ | Number of Dominant Species That Are OBL, FACW, or FAC: _____ (A) Total Number of Dominant Species Across All Strata: _____ (B) Percent of Dominant Species That Are OBL, FACW, or FAC: _____ (A/B) | | | | | | | | | | | | | | | | |
| 2. _____ | _____ | _____ | _____ | | | | | | | | | | | | | | | | | |
| 3. _____ | _____ | _____ | _____ | | | | | | | | | | | | | | | | | |
| 4. _____ | _____ | _____ | _____ | | | | | | | | | | | | | | | | | |
| = Total Cover | | | | Prevalence Index worksheet: <table style="width: 100%; border: none;"> <tr> <td style="text-align: center;"><u>Total % Cover of:</u></td> <td style="text-align: center;"><u>Multiply by:</u></td> </tr> <tr> <td>OBL species _____</td> <td>x1 = _____</td> </tr> <tr> <td>FACW species _____</td> <td>x2 = _____</td> </tr> <tr> <td>FAC species _____</td> <td>x3 = _____</td> </tr> <tr> <td>FACU species _____</td> <td>x4 = _____</td> </tr> <tr> <td>UPL species _____</td> <td>x5 = _____</td> </tr> <tr> <td>Column Totals: _____</td> <td>(A) _____ (B) _____</td> </tr> <tr> <td colspan="2" style="text-align: center;">Prevalence Index = B/A = _____</td> </tr> </table> | <u>Total % Cover of:</u> | <u>Multiply by:</u> | OBL species _____ | x1 = _____ | FACW species _____ | x2 = _____ | FAC species _____ | x3 = _____ | FACU species _____ | x4 = _____ | UPL species _____ | x5 = _____ | Column Totals: _____ | (A) _____ (B) _____ | Prevalence Index = B/A = _____ | |
| <u>Total % Cover of:</u> | <u>Multiply by:</u> | | | | | | | | | | | | | | | | | | | |
| OBL species _____ | x1 = _____ | | | | | | | | | | | | | | | | | | | |
| FACW species _____ | x2 = _____ | | | | | | | | | | | | | | | | | | | |
| FAC species _____ | x3 = _____ | | | | | | | | | | | | | | | | | | | |
| FACU species _____ | x4 = _____ | | | | | | | | | | | | | | | | | | | |
| UPL species _____ | x5 = _____ | | | | | | | | | | | | | | | | | | | |
| Column Totals: _____ | (A) _____ (B) _____ | | | | | | | | | | | | | | | | | | | |
| Prevalence Index = B/A = _____ | | | | | | | | | | | | | | | | | | | | |
| Sapling/Shrub Stratum (Plot Size: _____) | | | | | | | | | | | | | | | | | | | | |
| 1. _____ | _____ | _____ | _____ | | | | | | | | | | | | | | | | | |
| 2. _____ | _____ | _____ | _____ | | | | | | | | | | | | | | | | | |
| 3. _____ | _____ | _____ | _____ | | | | | | | | | | | | | | | | | |
| 4. _____ | _____ | _____ | _____ | | | | | | | | | | | | | | | | | |
| 5. _____ | _____ | _____ | _____ | | | | | | | | | | | | | | | | | |
| = Total Cover | | | | | | | | | | | | | | | | | | | | |
| Herb Stratum (Plot Size: 5') | | | | | | | | | | | | | | | | | | | | |
| 1. <u>Kochia scoparia</u> | <u>5</u> | <u>no</u> | <u>FAC</u> | | | | | | | | | | | | | | | | | |
| 2. <u>soybean stubble</u> | <u>80</u> | <u>yes</u> | <u>UPL</u> | | | | | | | | | | | | | | | | | |
| 3. _____ | _____ | _____ | _____ | | | | | | | | | | | | | | | | | |
| 4. _____ | _____ | _____ | _____ | | | | | | | | | | | | | | | | | |
| 5. _____ | _____ | _____ | _____ | | | | | | | | | | | | | | | | | |
| 6. _____ | _____ | _____ | _____ | | | | | | | | | | | | | | | | | |
| 7. _____ | _____ | _____ | _____ | | | | | | | | | | | | | | | | | |
| 8. _____ | _____ | _____ | _____ | | | | | | | | | | | | | | | | | |
| 9. _____ | _____ | _____ | _____ | | | | | | | | | | | | | | | | | |
| 10. _____ | _____ | _____ | _____ | | | | | | | | | | | | | | | | | |
| = Total Cover | | | | | | | | | | | | | | | | | | | | |
| Woody Vine Stratum (Plot Size: _____) | | | | | | | | | | | | | | | | | | | | |
| 1. _____ | _____ | _____ | _____ | | | | | | | | | | | | | | | | | |
| 2. _____ | _____ | _____ | _____ | | | | | | | | | | | | | | | | | |
| = Total Cover | | | | | | | | | | | | | | | | | | | | |
| % Bare Ground in Herb Stratum <u>15</u> | | | | | | | | | | | | | | | | | | | | |
| Hydrophytic Vegetation Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> | | | | | | | | | | | | | | | | | | | | |

Remarks:
Cultivation impacted vegetation at wetland. Comparable uncultivated wetlands have prairie cordgrass and curled dock.

SOIL

Sampling Point: bllpw4

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

| Depth (inches) | Matrix | | Redox Features | | | | Texture | Remarks |
|-------------------|---------------|-------|----------------|-------|-------------------|------------------|---------|---------|
| | Color (moist) | % | Color (Moist) | % | Type ¹ | Loc ² | | |
| 0-5 | 10YR 2/1 | 100 | | | | | sicl | |
| 5-16+ | 2.5Y 4/1 | 80 | 7.5YR 5/6 | 20 | c | m | sicl | |
| _____ | _____ | _____ | _____ | _____ | _____ | _____ | _____ | _____ |
| _____ | _____ | _____ | _____ | _____ | _____ | _____ | _____ | _____ |
| _____ | _____ | _____ | _____ | _____ | _____ | _____ | _____ | _____ |
| _____ | _____ | _____ | _____ | _____ | _____ | _____ | _____ | _____ |

¹Type: C= Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. ²Location: PL=Pore Lining, M=Matrix

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- Histosol (A1)
- Histic Epipedon (A2)
- Black Histic (A3)
- Hydrogen Sulfide (A4)
- Stratified Layers (A5) **(LRR F)**
- 1 cm Muck (A9) **(LRR F, G, H)**
- Depleted Below Dark Surface (A11)
- Thick Dark Surface (A12)
- Sandy Mucky Mineral (S1)
- 2.5 CM Mucky Peat or Peat (S2) **(LRR G, H)**
- 5 cm Mucky Peat or Peat (S3) **(LRR F)**
- Sandy Gleyed Matrix (S4)
- Sandy Redox (S5)
- Stripped Matrix (S6)
- Loamy Mucky Mineral (F1)
- Loamy Gleyed Matrix (F2)
- Depleted Matrix (F3)
- Redox Dark Surface (F6)
- Depleted Dark Surface (F7)
- Redox Depressions (F8)
- High Plains Depressions (F16) **(MLRA 72 & 73 of LRR H)**

Indicators for Problematic Hydric Soils³:

- 1 cm Muck (A9) **(LRR I, J)**
- Coast Prairie Redox (A16) **(LRR F, G, H)**
- Dark Surface (S7) **(LRR G)**
- High Plains Depressions (F16) **(LRR H outside of MLRA 72 & 73)**
- Reduced Vertic (F18)
- Red Parent Material (TF2)
- Very Shallow Dark Surface (TF 12)
- Other (Explain in Remarks)

³Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type: _____
Depth (Inches): _____

Hydric Soils Present? Yes No

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

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

Secondary Indicators (2 or more required)

- | | | |
|--|--|--|
| <input checked="" type="checkbox"/> Surface Water (A1) | <input type="checkbox"/> Salt Crust (B11) | <input type="checkbox"/> Surface Soil Cracks (B6) |
| <input checked="" type="checkbox"/> High Water Table (A2) | <input type="checkbox"/> Aquatic Invertebrates (B13) | <input type="checkbox"/> Sparsely Vegetated Concave Surface (B8) |
| <input checked="" type="checkbox"/> Saturation (A3) | <input type="checkbox"/> Hydrogen Sulfide Odor (C1) | <input type="checkbox"/> Drainage Patterns (B10) |
| <input type="checkbox"/> Water Marks (B1) | <input type="checkbox"/> Dry Season Water Table (C2) | <input type="checkbox"/> Oxidized Rhizospheres along Living Roots (C3) (where tilled) |
| <input type="checkbox"/> Sediment Deposits (B2) | <input type="checkbox"/> Oxidized Rhizospheres along Living Roots (C3) (where not tilled) | <input type="checkbox"/> Crayfish Burrows (C8) |
| <input type="checkbox"/> Drift Deposits (B3) | <input type="checkbox"/> Presence of Reduced Iron (C4) | <input checked="" type="checkbox"/> Saturation Visible on Aerial Imagery (C9) |
| <input type="checkbox"/> Algal Mat or Crust (B4) | <input type="checkbox"/> Thin Muck Surface (C7) | <input checked="" type="checkbox"/> Geomorphic Position (D2) |
| <input type="checkbox"/> Iron Deposits (B5) | <input type="checkbox"/> Other (Explain in Remarks) | <input type="checkbox"/> FAC-Neutral Test (D5) |
| <input type="checkbox"/> Inundation Visible on Aerial Imagery (B7) | | <input type="checkbox"/> Frost-Heave Hummocks (D7) (LRR F) |
| <input type="checkbox"/> Water-Stained Leaves (B9) | | |

Field Observations:

Surface Water Present? Yes No Depth (inches): 12
 Water Table Present? Yes No Depth (inches): 0
 Saturation Present? (includes capillary fringe) Yes No Depth (inches): 0

Wetland Hydrology Present? Yes No

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

WETLAND DETERMINATION DATA FORM – Great Plains Region

Project Site: BLLP 2011 City/County: Ward Sampling Date: 5/19/2011
 Applicant/Owner: McCain State: ND Sampling Point: blpu4
 Investigator(s): GWM / CET Section, Township, Range: 20. 156. 86
 Landform (hillslope, terrace, etc.): slope Local relief (concave, convex, none): concave Slope (%): 2
 Subregion (LRR): E Lat: 48.3223590 N Long: -101.764452 W Datum: NAD 83
 Soil Map Unit Name: WIA Williams loam level NWI classification: none

Are climatic / hydrologic conditions on the site typical for this time of year? Yes No (If no, explain in Remarks.)
 Are Vegetation , Soil , or Hydrology , significantly disturbed? Are "Normal Circumstances" present? Yes No
 Are Vegetation , Soil , or Hydrology , naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

| | | | |
|--|------------------------------|--|--|
| Hydrophytic Vegetation Present? | Yes <input type="checkbox"/> | No <input checked="" type="checkbox"/> | Is the Sampling Area within a Wetland? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> |
| Hydric Soil Present? | Yes <input type="checkbox"/> | No <input checked="" type="checkbox"/> | |
| Wetland Hydrology Present? | Yes <input type="checkbox"/> | No <input checked="" type="checkbox"/> | |
| Remarks: upland comparison point in cultivated field | | | |

VEGETATION – Use scientific names of plants

| Tree Stratum (Plot Size: _____) | Absolute % Cover | Dominant Species? | Indicator Status | Dominance Test Worksheet: |
|--|------------------|-------------------|------------------|--|
| 1. _____ | _____ | _____ | _____ | Number of Dominant Species That Are OBL, FACW, or FAC: <u>0</u> (A) Total Number of Dominant Species Across All Strata: <u>1</u> (B) Percent of Dominant Species That Are OBL, FACW, or FAC: <u>0</u> (A/B) |
| 2. _____ | _____ | _____ | _____ | |
| 3. _____ | _____ | _____ | _____ | |
| 4. _____ | _____ | _____ | _____ | |
| = Total Cover | | | | Prevalence Index worksheet: Total % Cover of: Multiply by: OBL species _____ x1 = _____ FACW species _____ x2 = _____ FAC species _____ x3 = _____ FACU species _____ x4 = _____ UPL species _____ x5 = _____ Column Totals: _____ (A) _____ (B) Prevalence Index = B/A = _____ |
| Sapling/Shrub Stratum (Plot Size: _____) | | | | |
| 1. _____ | _____ | _____ | _____ | |
| 2. _____ | _____ | _____ | _____ | |
| 3. _____ | _____ | _____ | _____ | |
| 4. _____ | _____ | _____ | _____ | |
| = Total Cover | | | | |
| Herb Stratum (Plot Size: 5') | | | | |
| 1. <u>soybean stubble</u> | <u>30</u> | <u>yes</u> | <u>UPL</u> | |
| 2. _____ | _____ | _____ | _____ | |
| 3. _____ | _____ | _____ | _____ | |
| 4. _____ | _____ | _____ | _____ | |
| 5. _____ | _____ | _____ | _____ | |
| 6. _____ | _____ | _____ | _____ | |
| 7. _____ | _____ | _____ | _____ | |
| 8. _____ | _____ | _____ | _____ | |
| 9. _____ | _____ | _____ | _____ | |
| 10. _____ | _____ | _____ | _____ | |
| = Total Cover | | | | |
| Woody Vine Stratum (Plot Size: _____) | | | | |
| 1. _____ | _____ | _____ | _____ | |
| 2. _____ | _____ | _____ | _____ | |
| = Total Cover | | | | |
| % Bare Ground in Herb Stratum <u>70</u> | | | | |
| Hydrophytic Vegetation Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> | | | | |

Remarks:

SOIL

Sampling Point: blpu4

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

| Depth (inches) | Matrix | | Redox Features | | | | Texture | Remarks |
|-------------------|---------------|-------|----------------|-------|-------------------|------------------|---------|---------|
| | Color (moist) | % | Color (Moist) | % | Type ¹ | Loc ² | | |
| 0-7 | 10YR 3/1 | 100 | _____ | _____ | _____ | _____ | sicl | _____ |
| 7-16 | 10YR 3/2 | 100 | _____ | _____ | _____ | _____ | sicl | _____ |
| 16-20+ | 10YR 3/1 | 100 | _____ | _____ | _____ | _____ | sicl | _____ |
| _____ | _____ | _____ | _____ | _____ | _____ | _____ | _____ | _____ |
| _____ | _____ | _____ | _____ | _____ | _____ | _____ | _____ | _____ |
| _____ | _____ | _____ | _____ | _____ | _____ | _____ | _____ | _____ |
| _____ | _____ | _____ | _____ | _____ | _____ | _____ | _____ | _____ |

¹Type: C= Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. ²Location: PL=Pore Lining, M=Matrix

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- Histosol (A1)
- Histic Epipedon (A2)
- Black Histic (A3)
- Hydrogen Sulfide (A4)
- Stratified Layers (A5) **(LRR F)**
- 1 cm Muck (A9) **(LRR F, G, H)**
- Depleted Below Dark Surface (A11)
- Thick Dark Surface (A12)
- Sandy Mucky Mineral (S1)
- 2.5 CM Mucky Peat or Peat (S2) **(LRR G, H)**
- 5 cm Mucky Peat or Peat (S3) **(LRR F)**
- Sandy Gleyed Matrix (S4)
- Sandy Redox (S5)
- Stripped Matrix (S6)
- Loamy Mucky Mineral (F1)
- Loamy Gleyed Matrix (F2)
- Depleted Matrix (F3)
- Redox Dark Surface (F6)
- Depleted Dark Surface (F7)
- Redox Depressions (F8)
- High Plains Depressions (F16) **(MLRA 72 & 73 of LRR H)**

Indicators for Problematic Hydric Soils³:

- 1 cm Muck (A9) **(LRR I, J)**
- Coast Prairie Redox (A16) **(LRR F, G, H)**
- Dark Surface (S7) **(LRR G)**
- High Plains Depressions (F16) **(LRR H outside of MLRA 72 & 73)**
- Reduced Vertic (F18)
- Red Parent Material (TF2)
- Very Shallow Dark Surface (TF 12)
- Other (Explain in Remarks)

³Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type: _____
Depth (Inches): _____

Hydric Soils Present? Yes No

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

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

- Surface Water (A1)
- High Water Table (A2)
- Saturation (A3)
- Water Marks (B1)
- Sediment Deposits (B2)
- Drift Deposits (B3)
- Algal Mat or Crust (B4)
- Iron Deposits (B5)
- Inundation Visible on Aerial Imagery (B7)
- Water-Stained Leaves (B9)
- Salt Crust (B11)
- Aquatic Invertebrates (B13)
- Hydrogen Sulfide Odor (C1)
- Dry Season Water Table (C2)
- Oxidized Rhizospheres along Living Roots (C3) **(where not tilled)**
- Presence of Reduced Iron (C4)
- Thin Muck Surface (C7)
- Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- Surface Soil Cracks (B6)
- Sparsely Vegetated Concave Surface (B8)
- Drainage Patterns (B10)
- Oxidized Rhizospheres along Living Roots (C3) **(where tilled)**
- Crayfish Burrows (C8)
- Saturation Visible on Aerial Imagery (C9)
- Geomorphic Position (D2)
- FAC-Neutral Test (D5)
- Frost-Heave Hummocks (D7) **(LRR F)**

Field Observations:

Surface Water Present? Yes No Depth (inches): _____
 Water Table Present? Yes No Depth (inches): _____
 Saturation Present? (includes capillary fringe) Yes No Depth (inches): _____

Wetland Hydrology Present? Yes No

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

WETLAND DETERMINATION DATA FORM – Great Plains Region

Project Site: BLLP 2011 City/County: Ward Sampling Date: 5/19/2011
 Applicant/Owner: McCain State: ND Sampling Point: bllpw5
 Investigator(s): GWM / CET Section, Township, Range: 20. 156. 86
 Landform (hillslope, terrace, etc.): depression Local relief (concave, convex, none): concave Slope (%): 1
 Subregion (LRR): E Lat: 48.321612 N Long: -101.765924 W Datum: NAD 83
 Soil Map Unit Name: WIB Williams loam gently undulating NWI classification: none

Are climatic / hydrologic conditions on the site typical for this time of year? Yes No (If no, explain in Remarks.)
 Are Vegetation , Soil , or Hydrology , significantly disturbed? Are "Normal Circumstances" present? Yes No
 Are Vegetation , Soil , or Hydrology , naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

| | | | |
|--|---|-----------------------------|--|
| Hydrophytic Vegetation Present? | Yes <input checked="" type="checkbox"/> | No <input type="checkbox"/> | Is the Sampling Area within a Wetland? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> |
| Hydric Soil Present? | Yes <input checked="" type="checkbox"/> | No <input type="checkbox"/> | |
| Wetland Hydrology Present? | Yes <input checked="" type="checkbox"/> | No <input type="checkbox"/> | |
| Remarks: Depression wetland at edge of cultivated field. | | | |

VEGETATION – Use scientific names of plants

| Tree Stratum (Plot Size: _____) | Absolute % Cover | Dominant Species? | Indicator Status | Dominance Test Worksheet: | | | | | | | | | | | | | | | | |
|--|---------------------|-------------------|-------------------|--|--------------------------|---------------------|-------------------|------------|--------------------|------------|-------------------|------------|--------------------|------------|-------------------|------------|----------------------|---------------------|--------------------------------|--|
| 1. _____ | _____ | _____ | _____ | Number of Dominant Species That Are OBL, FACW, or FAC: _____ (A) Total Number of Dominant Species Across All Strata: _____ (B) Percent of Dominant Species That Are OBL, FACW, or FAC: _____ (A/B) | | | | | | | | | | | | | | | | |
| 2. _____ | _____ | _____ | _____ | | | | | | | | | | | | | | | | | |
| 3. _____ | _____ | _____ | _____ | | | | | | | | | | | | | | | | | |
| 4. _____ | _____ | _____ | _____ | | | | | | | | | | | | | | | | | |
| = Total Cover | | | | Prevalence Index worksheet: <table style="width: 100%; border: none;"> <tr> <td style="text-align: center;"><u>Total % Cover of:</u></td> <td style="text-align: center;"><u>Multiply by:</u></td> </tr> <tr> <td>OBL species _____</td> <td>x1 = _____</td> </tr> <tr> <td>FACW species _____</td> <td>x2 = _____</td> </tr> <tr> <td>FAC species _____</td> <td>x3 = _____</td> </tr> <tr> <td>FACU species _____</td> <td>x4 = _____</td> </tr> <tr> <td>UPL species _____</td> <td>x5 = _____</td> </tr> <tr> <td>Column Totals: _____</td> <td>(A) _____ (B) _____</td> </tr> <tr> <td colspan="2" style="text-align: center;">Prevalence Index = B/A = _____</td> </tr> </table> | <u>Total % Cover of:</u> | <u>Multiply by:</u> | OBL species _____ | x1 = _____ | FACW species _____ | x2 = _____ | FAC species _____ | x3 = _____ | FACU species _____ | x4 = _____ | UPL species _____ | x5 = _____ | Column Totals: _____ | (A) _____ (B) _____ | Prevalence Index = B/A = _____ | |
| <u>Total % Cover of:</u> | <u>Multiply by:</u> | | | | | | | | | | | | | | | | | | | |
| OBL species _____ | x1 = _____ | | | | | | | | | | | | | | | | | | | |
| FACW species _____ | x2 = _____ | | | | | | | | | | | | | | | | | | | |
| FAC species _____ | x3 = _____ | | | | | | | | | | | | | | | | | | | |
| FACU species _____ | x4 = _____ | | | | | | | | | | | | | | | | | | | |
| UPL species _____ | x5 = _____ | | | | | | | | | | | | | | | | | | | |
| Column Totals: _____ | (A) _____ (B) _____ | | | | | | | | | | | | | | | | | | | |
| Prevalence Index = B/A = _____ | | | | | | | | | | | | | | | | | | | | |
| <u>Sapling/Shrub Stratum (Plot Size: _____)</u> | | | | | | | | | | | | | | | | | | | | |
| 1. _____ | _____ | _____ | _____ | | | | | | | | | | | | | | | | | |
| 2. _____ | _____ | _____ | _____ | | | | | | | | | | | | | | | | | |
| 3. _____ | _____ | _____ | _____ | | | | | | | | | | | | | | | | | |
| 4. _____ | _____ | _____ | _____ | | | | | | | | | | | | | | | | | |
| 5. _____ | _____ | _____ | _____ | | | | | | | | | | | | | | | | | |
| = Total Cover | | | | | | | | | | | | | | | | | | | | |
| <u>Herb Stratum (Plot Size: 5')</u> | | | | | | | | | | | | | | | | | | | | |
| 1. <u>Typha angustifolia</u> | <u>50</u> | <u>yes</u> | <u>OBL</u> | | | | | | | | | | | | | | | | | |
| 2. _____ | _____ | _____ | _____ | | | | | | | | | | | | | | | | | |
| 3. _____ | _____ | _____ | _____ | | | | | | | | | | | | | | | | | |
| 4. _____ | _____ | _____ | _____ | | | | | | | | | | | | | | | | | |
| 5. _____ | _____ | _____ | _____ | | | | | | | | | | | | | | | | | |
| 6. _____ | _____ | _____ | _____ | | | | | | | | | | | | | | | | | |
| 7. _____ | _____ | _____ | _____ | | | | | | | | | | | | | | | | | |
| 8. _____ | _____ | _____ | _____ | | | | | | | | | | | | | | | | | |
| 9. _____ | _____ | _____ | _____ | | | | | | | | | | | | | | | | | |
| 10. _____ | _____ | _____ | _____ | | | | | | | | | | | | | | | | | |
| = Total Cover | | | | | | | | | | | | | | | | | | | | |
| <u>Woody Vine Stratum (Plot Size: _____)</u> | | | | | | | | | | | | | | | | | | | | |
| 1. _____ | _____ | _____ | _____ | | | | | | | | | | | | | | | | | |
| 2. _____ | _____ | _____ | _____ | | | | | | | | | | | | | | | | | |
| = Total Cover | | | | | | | | | | | | | | | | | | | | |
| % Bare Ground in Herb Stratum <u>50</u> | | | | | | | | | | | | | | | | | | | | |
| Hydrophytic Vegetation Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> | | | | | | | | | | | | | | | | | | | | |
| Remarks: | | | | | | | | | | | | | | | | | | | | |

SOIL

Sampling Point: blpw5

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

| Depth (inches) | Matrix | | Redox Features | | | | Texture | Remarks |
|-------------------|---------------|-----|----------------|----|-------------------|------------------|---------|---------|
| | Color (moist) | % | Color (Moist) | % | Type ¹ | Loc ² | | |
| 0-3 | 10YR 2/1 | 100 | | | | | sicl | |
| 3-15+ | 2.5Y 4/2 | 90 | 10YR 4/6 | 10 | c | m | sicl | |
| — | — | — | — | — | — | — | — | — |
| — | — | — | — | — | — | — | — | — |
| — | — | — | — | — | — | — | — | — |
| — | — | — | — | — | — | — | — | — |

¹Type: C= Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. ²Location: PL=Pore Lining, M=Matrix

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- Histosol (A1)
- Histic Epipedon (A2)
- Black Histic (A3)
- Hydrogen Sulfide (A4)
- Stratified Layers (A5) (LRR F)
- 1 cm Muck (A9) (LRR F, G, H)
- Depleted Below Dark Surface (A11)
- Thick Dark Surface (A12)
- Sandy Mucky Mineral (S1)
- 2.5 CM Mucky Peat or Peat (S2)(LRR G, H)
- 5 cm Mucky Peat or Peat (S3) (LRR F)
- Sandy Gleyed Matrix (S4)
- Sandy Redox (S5)
- Stripped Matrix (S6)
- Loamy Mucky Mineral (F1)
- Loamy Gleyed Matrix (F2)
- Depleted Matrix (F3)
- Redox Dark Surface (F6)
- Depleted Dark Surface (F7)
- Redox Depressions (F8)
- High Plains Depressions (F16)

Indicators for Problematic Hydric Soils³:

- 1 cm Muck (A9) (LRR I, J)
- Coast Prairie Redox (A16) (LRR F, G, H)
- Dark Surface (S7) (LRR G)
- High Plains Depressions (F16)
- (LRR H outside of MLRA 72 & 73)**
- Reduced Vertic (F18)
- Red Parent Material (TF2)
- Very Shallow Dark Surface (TF 12)
- Other (Explain in Remarks)

³Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type: _____
Depth (Inches): _____

Hydric Soils Present? Yes No

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

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

Secondary Indicators (2 or more required)

- | | | |
|---|--|---|
| <input checked="" type="checkbox"/> Surface Water (A1) | <input type="checkbox"/> Salt Crust (B11) | <input type="checkbox"/> Surface Soil Cracks (B6) |
| <input checked="" type="checkbox"/> High Water Table (A2) | <input type="checkbox"/> Aquatic Invertebrates (B13) | <input type="checkbox"/> Sparsely Vegetated Concave Surface (B8) |
| <input checked="" type="checkbox"/> Saturation (A3) | <input type="checkbox"/> Hydrogen Sulfide Odor (C1) | <input type="checkbox"/> Drainage Patterns (B10) |
| <input type="checkbox"/> Water Marks (B1) | <input type="checkbox"/> Dry Season Water Table (C2) | <input type="checkbox"/> Oxidized Rhizospheres along Living Roots (C3) |
| <input type="checkbox"/> Sediment Deposits (B2) | <input type="checkbox"/> Oxidized Rhizospheres along Living Roots (C3) | (where tilled) |
| <input type="checkbox"/> Drift Deposits (B3) | (where not tilled) | <input type="checkbox"/> Crayfish Burrows (C8) |
| <input type="checkbox"/> Algal Mat or Crust (B4) | <input type="checkbox"/> Presence of Reduced Iron (C4) | <input checked="" type="checkbox"/> Saturation Visible on Aerial Imagery (C9) |
| <input type="checkbox"/> Iron Deposits (B5) | <input type="checkbox"/> Thin Muck Surface (C7) | <input checked="" type="checkbox"/> Geomorphic Position (D2) |
| <input checked="" type="checkbox"/> Inundation Visible on Aerial Imagery (B7) | <input type="checkbox"/> Other (Explain in Remarks) | <input type="checkbox"/> FAC-Neutral Test (D5) |
| <input type="checkbox"/> Water-Stained Leaves (B9) | | <input type="checkbox"/> Frost-Heave Hummocks (D7) (LRR F) |

Field Observations:

Surface Water Present? Yes No Depth (inches): 12
 Water Table Present? Yes No Depth (inches): 0
 Saturation Present? (includes capillary fringe) Yes No Depth (inches): 0

Wetland Hydrology Present? Yes No

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

WETLAND DETERMINATION DATA FORM – Great Plains Region

Project Site: BLLP 2011 City/County: Ward Sampling Date: 5/19/2011
 Applicant/Owner: McCain State: ND Sampling Point: blpu5
 Investigator(s): GWM / CET Section, Township, Range: 20. 156. 86
 Landform (hillslope, terrace, etc.): slope Local relief (concave, convex, none): concave Slope (%): 2
 Subregion (LRR): E Lat: 48.321685 N Long: -101.765899 W Datum: NAD 83
 Soil Map Unit Name: WIB Williams loam gently undulating NWI classification: none

Are climatic / hydrologic conditions on the site typical for this time of year? Yes No (If no, explain in Remarks.)
 Are Vegetation , Soil , or Hydrology , significantly disturbed? Are "Normal Circumstances" present? Yes No
 Are Vegetation , Soil , or Hydrology , naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

| | | | |
|--|------------------------------|--|--|
| Hydrophytic Vegetation Present? | Yes <input type="checkbox"/> | No <input checked="" type="checkbox"/> | Is the Sampling Area within a Wetland? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> |
| Hydric Soil Present? | Yes <input type="checkbox"/> | No <input checked="" type="checkbox"/> | |
| Wetland Hydrology Present? | Yes <input type="checkbox"/> | No <input checked="" type="checkbox"/> | |
| Remarks: upland comparison point in cultivated field | | | |

VEGETATION – Use scientific names of plants

| Tree Stratum (Plot Size: _____) | Absolute % Cover | Dominant Species? | Indicator Status | Dominance Test Worksheet: | | | | | | | | | | | | | | | | |
|--|---------------------|-------------------|------------------|--|--------------------------|---------------------|-------------------|------------|--------------------|------------|-------------------|------------|--------------------|------------|-------------------|------------|----------------------|---------------------|--------------------------------|--|
| 1. _____ | _____ | _____ | _____ | Number of Dominant Species That Are OBL, FACW, or FAC: <u>0</u> (A) Total Number of Dominant Species Across All Strata: <u>1</u> (B) Percent of Dominant Species That Are OBL, FACW, or FAC: <u>0</u> (A/B) | | | | | | | | | | | | | | | | |
| 2. _____ | _____ | _____ | _____ | | | | | | | | | | | | | | | | | |
| 3. _____ | _____ | _____ | _____ | | | | | | | | | | | | | | | | | |
| 4. _____ | _____ | _____ | _____ | | | | | | | | | | | | | | | | | |
| = Total Cover | | | | Prevalence Index worksheet: <table style="width: 100%; border: none;"> <tr> <td style="text-align: center;"><u>Total % Cover of:</u></td> <td style="text-align: center;"><u>Multiply by:</u></td> </tr> <tr> <td>OBL species _____</td> <td>x1 = _____</td> </tr> <tr> <td>FACW species _____</td> <td>x2 = _____</td> </tr> <tr> <td>FAC species _____</td> <td>x3 = _____</td> </tr> <tr> <td>FACU species _____</td> <td>x4 = _____</td> </tr> <tr> <td>UPL species _____</td> <td>x5 = _____</td> </tr> <tr> <td>Column Totals: _____</td> <td>(A) _____ (B) _____</td> </tr> <tr> <td colspan="2" style="text-align: center;">Prevalence Index = B/A = _____</td> </tr> </table> | <u>Total % Cover of:</u> | <u>Multiply by:</u> | OBL species _____ | x1 = _____ | FACW species _____ | x2 = _____ | FAC species _____ | x3 = _____ | FACU species _____ | x4 = _____ | UPL species _____ | x5 = _____ | Column Totals: _____ | (A) _____ (B) _____ | Prevalence Index = B/A = _____ | |
| <u>Total % Cover of:</u> | <u>Multiply by:</u> | | | | | | | | | | | | | | | | | | | |
| OBL species _____ | x1 = _____ | | | | | | | | | | | | | | | | | | | |
| FACW species _____ | x2 = _____ | | | | | | | | | | | | | | | | | | | |
| FAC species _____ | x3 = _____ | | | | | | | | | | | | | | | | | | | |
| FACU species _____ | x4 = _____ | | | | | | | | | | | | | | | | | | | |
| UPL species _____ | x5 = _____ | | | | | | | | | | | | | | | | | | | |
| Column Totals: _____ | (A) _____ (B) _____ | | | | | | | | | | | | | | | | | | | |
| Prevalence Index = B/A = _____ | | | | | | | | | | | | | | | | | | | | |
| Sapling/Shrub Stratum (Plot Size: _____) | | | | | | | | | | | | | | | | | | | | |
| 1. _____ | _____ | _____ | _____ | | | | | | | | | | | | | | | | | |
| 2. _____ | _____ | _____ | _____ | | | | | | | | | | | | | | | | | |
| 3. _____ | _____ | _____ | _____ | | | | | | | | | | | | | | | | | |
| 4. _____ | _____ | _____ | _____ | | | | | | | | | | | | | | | | | |
| 5. _____ | _____ | _____ | _____ | | | | | | | | | | | | | | | | | |
| = Total Cover | | | | | | | | | | | | | | | | | | | | |
| Herb Stratum (Plot Size: 5') | | | | | | | | | | | | | | | | | | | | |
| 1. <u>soybean stubble</u> | <u>30</u> | <u>yes</u> | <u>UPL</u> | | | | | | | | | | | | | | | | | |
| 2. _____ | _____ | _____ | _____ | | | | | | | | | | | | | | | | | |
| 3. _____ | _____ | _____ | _____ | | | | | | | | | | | | | | | | | |
| 4. _____ | _____ | _____ | _____ | | | | | | | | | | | | | | | | | |
| 5. _____ | _____ | _____ | _____ | | | | | | | | | | | | | | | | | |
| 6. _____ | _____ | _____ | _____ | | | | | | | | | | | | | | | | | |
| 7. _____ | _____ | _____ | _____ | | | | | | | | | | | | | | | | | |
| 8. _____ | _____ | _____ | _____ | | | | | | | | | | | | | | | | | |
| 9. _____ | _____ | _____ | _____ | | | | | | | | | | | | | | | | | |
| 10. _____ | _____ | _____ | _____ | | | | | | | | | | | | | | | | | |
| = Total Cover | | | | | | | | | | | | | | | | | | | | |
| Woody Vine Stratum (Plot Size: _____) | | | | | | | | | | | | | | | | | | | | |
| 1. _____ | _____ | _____ | _____ | | | | | | | | | | | | | | | | | |
| 2. _____ | _____ | _____ | _____ | | | | | | | | | | | | | | | | | |
| = Total Cover | | | | | | | | | | | | | | | | | | | | |
| % Bare Ground in Herb Stratum <u>70</u> | | | | | | | | | | | | | | | | | | | | |
| Hydrophytic Vegetation Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> | | | | | | | | | | | | | | | | | | | | |
| Remarks: | | | | | | | | | | | | | | | | | | | | |

SOIL

Sampling Point: blpu5

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

| Depth (inches) | Matrix | | Redox Features | | | | Texture | Remarks |
|-------------------|---------------|-------|----------------|-------|-------------------|------------------|---------|---------|
| | Color (moist) | % | Color (Moist) | % | Type ¹ | Loc ² | | |
| 0-4 | 10YR 3/1 | 100 | | | | | sicl | |
| 4-15+ | 2.5Y 4/3 | 95 | 7.5YR 5/6 | 5 | c | m | sicl | |
| _____ | _____ | _____ | _____ | _____ | _____ | _____ | _____ | _____ |
| _____ | _____ | _____ | _____ | _____ | _____ | _____ | _____ | _____ |
| _____ | _____ | _____ | _____ | _____ | _____ | _____ | _____ | _____ |
| _____ | _____ | _____ | _____ | _____ | _____ | _____ | _____ | _____ |

¹Type: C= Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. ²Location: PL=Pore Lining, M=Matrix

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- Histosol (A1)
- Histic Epipedon (A2)
- Black Histic (A3)
- Hydrogen Sulfide (A4)
- Stratified Layers (A5) **(LRR F)**
- 1 cm Muck (A9) **(LRR F, G, H)**
- Depleted Below Dark Surface (A11)
- Thick Dark Surface (A12)
- Sandy Mucky Mineral (S1)
- 2.5 CM Mucky Peat or Peat (S2) **(LRR G, H)**
- 5 cm Mucky Peat or Peat (S3) **(LRR F)**
- Sandy Gleyed Matrix (S4)
- Sandy Redox (S5)
- Stripped Matrix (S6)
- Loamy Mucky Mineral (F1)
- Loamy Gleyed Matrix (F2)
- Depleted Matrix (F3)
- Redox Dark Surface (F6)
- Depleted Dark Surface (F7)
- Redox Depressions (F8)
- High Plains Depressions (F16) **(MLRA 72 & 73 of LRR H)**

Indicators for Problematic Hydric Soils³:

- 1 cm Muck (A9) **(LRR I, J)**
- Coast Prairie Redox (A16) **(LRR F, G, H)**
- Dark Surface (S7) **(LRR G)**
- High Plains Depressions (F16) **(LRR H outside of MLRA 72 & 73)**
- Reduced Vertic (F18)
- Red Parent Material (TF2)
- Very Shallow Dark Surface (TF 12)
- Other (Explain in Remarks)

³Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type: _____
Depth (Inches): _____

Hydric Soils Present? Yes No

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

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

- Surface Water (A1)
- High Water Table (A2)
- Saturation (A3)
- Water Marks (B1)
- Sediment Deposits (B2)
- Drift Deposits (B3)
- Algal Mat or Crust (B4)
- Iron Deposits (B5)
- Inundation Visible on Aerial Imagery (B7)
- Water-Stained Leaves (B9)
- Salt Crust (B11)
- Aquatic Invertebrates (B13)
- Hydrogen Sulfide Odor (C1)
- Dry Season Water Table (C2)
- Oxidized Rhizospheres along Living Roots (C3) **(where not tilled)**
- Presence of Reduced Iron (C4)
- Thin Muck Surface (C7)
- Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- Surface Soil Cracks (B6)
- Sparsely Vegetated Concave Surface (B8)
- Drainage Patterns (B10)
- Oxidized Rhizospheres along Living Roots (C3) **(where tilled)**
- Crayfish Burrows (C8)
- Saturation Visible on Aerial Imagery (C9)
- Geomorphic Position (D2)
- FAC-Neutral Test (D5)
- Frost-Heave Hummocks (D7) **(LRR F)**

Field Observations:

Surface Water Present? Yes No Depth (inches): _____
 Water Table Present? Yes No Depth (inches): _____
 Saturation Present? (includes capillary fringe) Yes No Depth (inches): _____

Wetland Hydrology Present? Yes No

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

WETLAND DETERMINATION DATA FORM – Great Plains Region

Project Site: BLLP 2011 City/County: Ward Sampling Date: 5/19/2011
 Applicant/Owner: McCain State: ND Sampling Point: bllpw6
 Investigator(s): GWM / CET Section, Township, Range: 20. 156. 86
 Landform (hillslope, terrace, etc.): depression Local relief (concave, convex, none): concave Slope (%): 1
 Subregion (LRR): E Lat: 48.321847 N Long: -101.767786 W Datum: NAD 83
 Soil Map Unit Name: WOA Williams-Bowbells-Tonka-Complex NWI classification: none

Are climatic / hydrologic conditions on the site typical for this time of year? Yes No (If no, explain in Remarks.)
 Are Vegetation , Soil , or Hydrology , significantly disturbed? Are "Normal Circumstances" present? Yes No
 Are Vegetation , Soil , or Hydrology , naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

| | | | |
|--|---|-----------------------------|--|
| Hydrophytic Vegetation Present? | Yes <input checked="" type="checkbox"/> | No <input type="checkbox"/> | Is the Sampling Area within a Wetland? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> |
| Hydric Soil Present? | Yes <input checked="" type="checkbox"/> | No <input type="checkbox"/> | |
| Wetland Hydrology Present? | Yes <input checked="" type="checkbox"/> | No <input type="checkbox"/> | |
| Remarks: Depression wetland at edge of cultivated field. | | | |

VEGETATION – Use scientific names of plants

| Tree Stratum (Plot Size: _____) | Absolute % Cover | Dominant Species? | Indicator Status | Dominance Test Worksheet: |
|--|------------------|-------------------|------------------|--|
| 1. _____ | _____ | _____ | _____ | Number of Dominant Species That Are OBL, FACW, or FAC: <u>2</u> (A) Total Number of Dominant Species Across All Strata: <u>2</u> (B) Percent of Dominant Species That Are OBL, FACW, or FAC: <u>100</u> (A/B) |
| 2. _____ | _____ | _____ | _____ | |
| 3. _____ | _____ | _____ | _____ | |
| 4. _____ | _____ | _____ | _____ | |
| = Total Cover | | | | Prevalence Index worksheet: Total % Cover of: Multiply by: OBL species _____ x1 = _____ FACW species _____ x2 = _____ FAC species _____ x3 = _____ FACU species _____ x4 = _____ UPL species _____ x5 = _____ Column Totals: _____ (A) _____ (B) Prevalence Index = B/A = _____ |
| Sapling/Shrub Stratum (Plot Size: _____) | | | | |
| 1. _____ | _____ | _____ | _____ | |
| 2. _____ | _____ | _____ | _____ | |
| 3. _____ | _____ | _____ | _____ | |
| 4. _____ | _____ | _____ | _____ | |
| 5. _____ | _____ | _____ | _____ | |
| = Total Cover | | | | |
| Herb Stratum (Plot Size: 5') | | | | |
| 1. <u>Scirpus validus</u> | <u>10</u> | <u>yes</u> | <u>OBL</u> | |
| 2. <u>Kochia scoparia</u> | <u>20</u> | <u>yes</u> | <u>FAC</u> | |
| 3. _____ | _____ | _____ | _____ | |
| 4. _____ | _____ | _____ | _____ | |
| 5. _____ | _____ | _____ | _____ | |
| 6. _____ | _____ | _____ | _____ | |
| 7. _____ | _____ | _____ | _____ | |
| 8. _____ | _____ | _____ | _____ | |
| 9. _____ | _____ | _____ | _____ | |
| 10. _____ | _____ | _____ | _____ | |
| = Total Cover | | | | |
| Woody Vine Stratum (Plot Size: _____) | | | | |
| 1. _____ | _____ | _____ | _____ | |
| 2. _____ | _____ | _____ | _____ | |
| = Total Cover | | | | |
| % Bare Ground in Herb Stratum <u>70</u> | | | | |
| Hydrophytic Vegetation Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> | | | | |
| Remarks: | | | | |

SOIL

Sampling Point: blpw6

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

| Depth (inches) | Matrix | | Redox Features | | | | Texture | Remarks |
|-------------------|---------------|-------|----------------|-------|-------------------|------------------|---------|---------|
| | Color (moist) | % | Color (Moist) | % | Type ¹ | Loc ² | | |
| 0-5 | 10YR 2/1 | 100 | | | | | sicl | |
| 5-10 | 2.5Y 4/2 | 50 | 2.5Y5/1 | 10 | d | m | sicl | |
| - | 10YR 3/1 | 40 | | | | | sicl | |
| 10-16+ | 2.5Y 4/2 | 90 | 7.5YR 5/6 | 10 | c | m | sicl | |
| _____ | _____ | _____ | _____ | _____ | _____ | _____ | _____ | _____ |
| _____ | _____ | _____ | _____ | _____ | _____ | _____ | _____ | _____ |
| _____ | _____ | _____ | _____ | _____ | _____ | _____ | _____ | _____ |
| _____ | _____ | _____ | _____ | _____ | _____ | _____ | _____ | _____ |

¹Type: C= Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. ²Location: PL=Pore Lining, M=Matrix

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- Histosol (A1)
- Histic Epipedon (A2)
- Black Histic (A3)
- Hydrogen Sulfide (A4)
- Stratified Layers (A5) (LRR F)
- 1 cm Muck (A9) (LRR F, G, H)
- Depleted Below Dark Surface (A11)
- Thick Dark Surface (A12)
- Sandy Mucky Mineral (S1)
- 2.5 CM Mucky Peat or Peat (S2)(LRR G, H)
- 5 cm Mucky Peat or Peat (S3) (LRR F)
- Sandy Gleyed Matrix (S4)
- Sandy Redox (S5)
- Stripped Matrix (S6)
- Loamy Mucky Mineral (F1)
- Loamy Gleyed Matrix (F2)
- Depleted Matrix (F3)
- Redox Dark Surface (F6)
- Depleted Dark Surface (F7)
- Redox Depressions (F8)
- High Plains Depressions (F16)

Indicators for Problematic Hydric Soils³:

- 1 cm Muck (A9) (LRR I, J)
- Coast Prairie Redox (A16) (LRR F, G, H)
- Dark Surface (S7) (LRR G)
- High Plains Depressions (F16)
- (LRR H outside of MLRA 72 & 73)**
- Reduced Vertic (F18)
- Red Parent Material (TF2)
- Very Shallow Dark Surface (TF 12)
- Other (Explain in Remarks)

³Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type: _____
Depth (Inches): _____

Hydric Soils Present? Yes No

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

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

Secondary Indicators (2 or more required)

- | | | |
|---|---|---|
| <ul style="list-style-type: none"> <input checked="" type="checkbox"/> Surface Water (A1) <input checked="" type="checkbox"/> High Water Table (A2) <input checked="" type="checkbox"/> Saturation (A3) <input type="checkbox"/> Water Marks (B1) <input type="checkbox"/> Sediment Deposits (B2) <input type="checkbox"/> Drift Deposits (B3) <input type="checkbox"/> Algal Mat or Crust (B4) <input type="checkbox"/> Iron Deposits (B5) <input type="checkbox"/> Inundation Visible on Aerial Imagery (B7) <input type="checkbox"/> Water-Stained Leaves (B9) | <ul style="list-style-type: none"> <input type="checkbox"/> Salt Crust (B11) <input type="checkbox"/> Aquatic Invertebrates (B13) <input type="checkbox"/> Hydrogen Sulfide Odor (C1) <input type="checkbox"/> Dry Season Water Table (C2) <input type="checkbox"/> Oxidized Rhizospheres along Living Roots (C3) (where not tilled) <input type="checkbox"/> Presence of Reduced Iron (C4) <input type="checkbox"/> Thin Muck Surface (C7) <input type="checkbox"/> Other (Explain in Remarks) | <ul style="list-style-type: none"> <input type="checkbox"/> Surface Soil Cracks (B6) <input type="checkbox"/> Sparsely Vegetated Concave Surface (B8) <input type="checkbox"/> Drainage Patterns (B10) <input type="checkbox"/> Oxidized Rhizospheres along Living Roots (C3) (where tilled) <input type="checkbox"/> Crayfish Burrows (C8) <input checked="" type="checkbox"/> Saturation Visible on Aerial Imagery (C9) <input checked="" type="checkbox"/> Geomorphic Position (D2) <input type="checkbox"/> FAC-Neutral Test (D5) <input type="checkbox"/> Frost-Heave Hummocks (D7) (LRR F) |
|---|---|---|

Field Observations:

Surface Water Present? Yes No Depth (inches): 10
 Water Table Present? Yes No Depth (inches): 0
 Saturation Present? (includes capillary fringe) Yes No Depth (inches): 0

Wetland Hydrology Present? Yes No

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

WETLAND DETERMINATION DATA FORM – Great Plains Region

Project Site: BLLP 2011 City/County: Ward Sampling Date: 5/19/2011
 Applicant/Owner: McGain State: ND Sampling Point: bllpw7
 Investigator(s): GWM / CET Section, Township, Range: 20. 156. 86
 Landform (hillslope, terrace, etc.): depression Local relief (concave, convex, none): concave Slope (%): 1
 Subregion (LRR): E Lat: 48.322029 N Long: -101.768105 W Datum: NAD 83
 Soil Map Unit Name: Pa Parnell silty clay loam NWI classification: PEMC

Are climatic / hydrologic conditions on the site typical for this time of year? Yes No (If no, explain in Remarks.)
 Are Vegetation , Soil , or Hydrology , significantly disturbed? Are "Normal Circumstances" present? Yes No
 Are Vegetation , Soil , or Hydrology , naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

| | | | |
|--|---|-----------------------------|--|
| Hydrophytic Vegetation Present? | Yes <input checked="" type="checkbox"/> | No <input type="checkbox"/> | Is the Sampling Area within a Wetland? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> |
| Hydric Soil Present? | Yes <input checked="" type="checkbox"/> | No <input type="checkbox"/> | |
| Wetland Hydrology Present? | Yes <input checked="" type="checkbox"/> | No <input type="checkbox"/> | |
| Remarks: Depression wetland at edge of cultivated field. | | | |

VEGETATION – Use scientific names of plants

| Tree Stratum (Plot Size: _____) | Absolute % Cover | Dominant Species? | Indicator Status | Dominance Test Worksheet: |
|--|------------------|-------------------|------------------|--|
| 1. _____ | _____ | _____ | _____ | Number of Dominant Species That Are OBL, FACW, or FAC: <u>2</u> (A) Total Number of Dominant Species Across All Strata: <u>2</u> (B) Percent of Dominant Species That Are OBL, FACW, or FAC: <u>100</u> (A/B) |
| 2. _____ | _____ | _____ | _____ | |
| 3. _____ | _____ | _____ | _____ | |
| 4. _____ | _____ | _____ | _____ | |
| = Total Cover | | | | Prevalence Index worksheet: Total % Cover of: Multiply by: OBL species _____ x1 = _____ FACW species _____ x2 = _____ FAC species _____ x3 = _____ FACU species _____ x4 = _____ UPL species _____ x5 = _____ Column Totals: _____ (A) _____ (B) Prevalence Index = B/A = _____ |
| Sapling/Shrub Stratum (Plot Size: _____) | | | | |
| 1. _____ | _____ | _____ | _____ | |
| 2. _____ | _____ | _____ | _____ | |
| 3. _____ | _____ | _____ | _____ | |
| 4. _____ | _____ | _____ | _____ | |
| 5. _____ | _____ | _____ | _____ | |
| = Total Cover | | | | |
| Herb Stratum (Plot Size: 5') | | | | |
| 1. <u>Artemisia biennis</u> | <u>10</u> | <u>yes</u> | <u>FAC</u> | |
| 2. <u>Kochia scoparia</u> | <u>10</u> | <u>yes</u> | <u>FAC</u> | |
| 3. _____ | _____ | _____ | _____ | |
| 4. _____ | _____ | _____ | _____ | |
| 5. _____ | _____ | _____ | _____ | |
| 6. _____ | _____ | _____ | _____ | |
| 7. _____ | _____ | _____ | _____ | |
| 8. _____ | _____ | _____ | _____ | |
| 9. _____ | _____ | _____ | _____ | |
| 10. _____ | _____ | _____ | _____ | |
| <u>20</u> | | | = Total Cover | |
| Woody Vine Stratum (Plot Size: _____) | | | | |
| 1. _____ | _____ | _____ | _____ | |
| 2. _____ | _____ | _____ | _____ | |
| _____ | | | = Total Cover | |
| % Bare Ground in Herb Stratum <u>80</u> | | | | |
| Hydrophytic Vegetation Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> | | | | |

Remarks:
Reed canary grass in interior of wetland.

SOIL

Sampling Point: blpw7

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

| Depth (inches) | Matrix | | Redox Features | | | | Texture | Remarks |
|-------------------|---------------|-----|----------------|----|-------------------|------------------|---------|---------|
| | Color (moist) | % | Color (Moist) | % | Type ¹ | Loc ² | | |
| 0-4 | 10YR 2/1 | 100 | | | | | sicl | |
| 4-9 | 2.5Y 4/2 | 70 | 2.5Y5/1 | 5 | d | m | sicl | |
| | | | 2.5Y 6/1 | 15 | d | m | sicl | |
| | | | 10YR 5/6 | 10 | c | m | sicl | |
| 9-15+ | 2.5Y 6/1 | 90 | 10YR 5/6 | 10 | c | m | sicl | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |

¹Type: C= Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. ²Location: PL=Pore Lining, M=Matrix

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- Histosol (A1)
- Histic Epipedon (A2)
- Black Histic (A3)
- Hydrogen Sulfide (A4)
- Stratified Layers (A5) (LRR F)
- 1 cm Muck (A9) (LRR F, G, H)
- Depleted Below Dark Surface (A11)
- Thick Dark Surface (A12)
- Sandy Mucky Mineral (S1)
- 2.5 CM Mucky Peat or Peat (S2)(LRR G, H)
- 5 cm Mucky Peat or Peat (S3) (LRR F)
- Sandy Gleyed Matrix (S4)
- Sandy Redox (S5)
- Stripped Matrix (S6)
- Loamy Mucky Mineral (F1)
- Loamy Gleyed Matrix (F2)
- Depleted Matrix (F3)
- Redox Dark Surface (F6)
- Depleted Dark Surface (F7)
- Redox Depressions (F8)
- High Plains Depressions (F16)

Indicators for Problematic Hydric Soils³:

- 1 cm Muck (A9) (LRR I, J)
- Coast Prairie Redox (A16) (LRR F, G, H)
- Dark Surface (S7) (LRR G)
- High Plains Depressions (F16)
- (LRR H outside of MLRA 72 & 73)**
- Reduced Vertic (F18)
- Red Parent Material (TF2)
- Very Shallow Dark Surface (TF 12)
- Other (Explain in Remarks)

³Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type: _____
Depth (Inches): _____

Hydric Soils Present? Yes No

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

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

Secondary Indicators (2 or more required)

- | | | |
|---|---|---|
| <ul style="list-style-type: none"> <input checked="" type="checkbox"/> Surface Water (A1) <input checked="" type="checkbox"/> High Water Table (A2) <input checked="" type="checkbox"/> Saturation (A3) <input type="checkbox"/> Water Marks (B1) <input type="checkbox"/> Sediment Deposits (B2) <input type="checkbox"/> Drift Deposits (B3) <input type="checkbox"/> Algal Mat or Crust (B4) <input type="checkbox"/> Iron Deposits (B5) <input type="checkbox"/> Inundation Visible on Aerial Imagery (B7) <input type="checkbox"/> Water-Stained Leaves (B9) | <ul style="list-style-type: none"> <input type="checkbox"/> Salt Crust (B11) <input type="checkbox"/> Aquatic Invertebrates (B13) <input type="checkbox"/> Hydrogen Sulfide Odor (C1) <input type="checkbox"/> Dry Season Water Table (C2) <input type="checkbox"/> Oxidized Rhizospheres along Living Roots (C3) (where not tilled) <input type="checkbox"/> Presence of Reduced Iron (C4) <input type="checkbox"/> Thin Muck Surface (C7) <input type="checkbox"/> Other (Explain in Remarks) | <ul style="list-style-type: none"> <input type="checkbox"/> Surface Soil Cracks (B6) <input type="checkbox"/> Sparsely Vegetated Concave Surface (B8) <input type="checkbox"/> Drainage Patterns (B10) <input type="checkbox"/> Oxidized Rhizospheres along Living Roots (C3) (where tilled) <input type="checkbox"/> Crayfish Burrows (C8) <input checked="" type="checkbox"/> Saturation Visible on Aerial Imagery (C9) <input checked="" type="checkbox"/> Geomorphic Position (D2) <input type="checkbox"/> FAC-Neutral Test (D5) <input type="checkbox"/> Frost-Heave Hummocks (D7) (LRR F) |
|---|---|---|

Field Observations:

Surface Water Present? Yes No Depth (inches): 4
 Water Table Present? Yes No Depth (inches): 0
 Saturation Present? (includes capillary fringe) Yes No Depth (inches): 0

Wetland Hydrology Present? Yes No

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

water depth approximately 30" in center

WETLAND DETERMINATION DATA FORM – Great Plains Region

Project Site: BLLP 2011 City/County: Ward Sampling Date: 5/19/2011
 Applicant/Owner: McCain State: ND Sampling Point: blpu7
 Investigator(s): GWM / CET Section, Township, Range: 20. 156. 86
 Landform (hillslope, terrace, etc.): toeslope Local relief (concave, convex, none): concave Slope (%): 1
 Subregion (LRR): E Lat: 48.321969 N Long: -101.768054 W Datum: NAD 83
 Soil Map Unit Name: WOA Williams-Bowbells-Tonka loams, level NWI classification: none

Are climatic / hydrologic conditions on the site typical for this time of year? Yes No (If no, explain in Remarks.)
 Are Vegetation , Soil , or Hydrology , significantly disturbed? Are "Normal Circumstances" present? Yes No
 Are Vegetation , Soil , or Hydrology , naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

| | | | |
|--|------------------------------|--|--|
| Hydrophytic Vegetation Present? | Yes <input type="checkbox"/> | No <input checked="" type="checkbox"/> | Is the Sampling Area within a Wetland? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> |
| Hydric Soil Present? | Yes <input type="checkbox"/> | No <input checked="" type="checkbox"/> | |
| Wetland Hydrology Present? | Yes <input type="checkbox"/> | No <input checked="" type="checkbox"/> | |
| Remarks: upland comparison point in cultivated field | | | |

VEGETATION – Use scientific names of plants

| Tree Stratum (Plot Size: _____) | Absolute % Cover | Dominant Species? | Indicator Status | Dominance Test Worksheet: |
|--|------------------|-------------------|------------------|--|
| 1. _____ | _____ | _____ | _____ | Number of Dominant Species That Are OBL, FACW, or FAC: <u>0</u> (A) Total Number of Dominant Species Across All Strata: <u>1</u> (B) Percent of Dominant Species That Are OBL, FACW, or FAC: <u>0</u> (A/B) |
| 2. _____ | _____ | _____ | _____ | |
| 3. _____ | _____ | _____ | _____ | |
| 4. _____ | _____ | _____ | _____ | |
| = Total Cover | | | | Prevalence Index worksheet: Total % Cover of: Multiply by: OBL species _____ x1 = _____ FACW species _____ x2 = _____ FAC species _____ x3 = _____ FACU species _____ x4 = _____ UPL species _____ x5 = _____ Column Totals: _____ (A) _____ (B) Prevalence Index = B/A = _____ |
| <u>Sapling/Shrub Stratum</u> (Plot Size: _____) | | | | |
| 1. _____ | _____ | _____ | _____ | |
| 2. _____ | _____ | _____ | _____ | |
| 3. _____ | _____ | _____ | _____ | |
| 4. _____ | _____ | _____ | _____ | |
| 5. _____ | _____ | _____ | _____ | |
| = Total Cover | | | | |
| <u>Herb Stratum</u> (Plot Size: <u>5'</u>) | | | | |
| 1. _____ | _____ | _____ | _____ | |
| 2. _____ | _____ | _____ | _____ | |
| 3. _____ | _____ | _____ | _____ | |
| 4. _____ | _____ | _____ | _____ | |
| 5. _____ | _____ | _____ | _____ | |
| 6. _____ | _____ | _____ | _____ | |
| 7. _____ | _____ | _____ | _____ | |
| 8. _____ | _____ | _____ | _____ | |
| 9. _____ | _____ | _____ | _____ | |
| 10. _____ | _____ | _____ | _____ | |
| <u>0</u> = Total Cover | | | | |
| <u>Woody Vine Stratum</u> (Plot Size: _____) | | | | |
| 1. _____ | _____ | _____ | _____ | |
| 2. _____ | _____ | _____ | _____ | |
| = Total Cover | | | | |
| % Bare Ground in Herb Stratum <u>100</u> | | | | |
| Hydrophytic Vegetation Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> | | | | |
| Remarks: no veg at observation point | | | | |

SOIL

Sampling Point: blpu7

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

| Depth (inches) | Matrix | | Redox Features | | | | Texture | Remarks |
|-------------------|---------------|-------|----------------|-------|-------------------|------------------|---------|---------|
| | Color (moist) | % | Color (Moist) | % | Type ¹ | Loc ² | | |
| 0-3 | 10YR 3/1 | 100 | _____ | _____ | _____ | _____ | sicl | _____ |
| 3-10+ | 2.5Y 5/3 | 60 | _____ | _____ | _____ | _____ | sicl | _____ |
| _____ | 10YR 5/4 | 20 | _____ | _____ | _____ | _____ | sicl | _____ |
| _____ | 2.5Y 6/3 | 20 | _____ | _____ | _____ | _____ | sicl | _____ |
| _____ | _____ | _____ | _____ | _____ | _____ | _____ | _____ | _____ |
| _____ | _____ | _____ | _____ | _____ | _____ | _____ | _____ | _____ |
| _____ | _____ | _____ | _____ | _____ | _____ | _____ | _____ | _____ |
| _____ | _____ | _____ | _____ | _____ | _____ | _____ | _____ | _____ |

¹Type: C= Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. ²Location: PL=Pore Lining, M=Matrix

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- Histosol (A1)
- Histic Epipedon (A2)
- Black Histic (A3)
- Hydrogen Sulfide (A4)
- Stratified Layers (A5) **(LRR F)**
- 1 cm Muck (A9) **(LRR F, G, H)**
- Depleted Below Dark Surface (A11)
- Thick Dark Surface (A12)
- Sandy Mucky Mineral (S1)
- 2.5 CM Mucky Peat or Peat (S2) **(LRR G, H)**
- 5 cm Mucky Peat or Peat (S3) **(LRR F)**
- Sandy Gleyed Matrix (S4)
- Sandy Redox (S5)
- Stripped Matrix (S6)
- Loamy Mucky Mineral (F1)
- Loamy Gleyed Matrix (F2)
- Depleted Matrix (F3)
- Redox Dark Surface (F6)
- Depleted Dark Surface (F7)
- Redox Depressions (F8)
- High Plains Depressions (F16) **(MLRA 72 & 73 of LRR H)**

Indicators for Problematic Hydric Soils³:

- 1 cm Muck (A9) **(LRR I, J)**
- Coast Prairie Redox (A16) **(LRR F, G, H)**
- Dark Surface (S7) **(LRR G)**
- High Plains Depressions (F16) **(LRR H outside of MLRA 72 & 73)**
- Reduced Vertic (F18)
- Red Parent Material (TF2)
- Very Shallow Dark Surface (TF 12)
- Other (Explain in Remarks)

³Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type: _____
Depth (Inches): _____

Hydric Soils Present? Yes No

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

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

- Surface Water (A1)
- High Water Table (A2)
- Saturation (A3)
- Water Marks (B1)
- Sediment Deposits (B2)
- Drift Deposits (B3)
- Algal Mat or Crust (B4)
- Iron Deposits (B5)
- Inundation Visible on Aerial Imagery (B7)
- Water-Stained Leaves (B9)
- Salt Crust (B11)
- Aquatic Invertebrates (B13)
- Hydrogen Sulfide Odor (C1)
- Dry Season Water Table (C2)
- Oxidized Rhizospheres along Living Roots (C3) **(where not tilled)**
- Presence of Reduced Iron (C4)
- Thin Muck Surface (C7)
- Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- Surface Soil Cracks (B6)
- Sparsely Vegetated Concave Surface (B8)
- Drainage Patterns (B10)
- Oxidized Rhizospheres along Living Roots (C3) **(where tilled)**
- Crayfish Burrows (C8)
- Saturation Visible on Aerial Imagery (C9)
- Geomorphic Position (D2)
- FAC-Neutral Test (D5)
- Frost-Heave Hummocks (D7) **(LRR F)**

Field Observations:

Surface Water Present? Yes No Depth (inches): _____
 Water Table Present? Yes No Depth (inches): _____
 Saturation Present? (includes capillary fringe) Yes No Depth (inches): _____

Wetland Hydrology Present? Yes No

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

WETLAND DETERMINATION DATA FORM – Great Plains Region

Project Site: BLLP 2011 City/County: Ward Sampling Date: 5/19/2011
 Applicant/Owner: McCain State: ND Sampling Point: bllpw8
 Investigator(s): GWM / CET Section, Township, Range: 19. 156. 86
 Landform (hillslope, terrace, etc.): depression Local relief (concave, convex, none): concave Slope (%): 1
 Subregion (LRR): E Lat: 48.322660 N Long: -101.771897 W Datum: NAD 83
 Soil Map Unit Name: Bt Bowbells-Tonka-Complex NWI classification: none

Are climatic / hydrologic conditions on the site typical for this time of year? Yes No (If no, explain in Remarks.)
 Are Vegetation , Soil , or Hydrology , significantly disturbed? Are "Normal Circumstances" present? Yes No
 Are Vegetation , Soil , or Hydrology , naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

| | | | |
|--|---|-----------------------------|--|
| Hydrophytic Vegetation Present? | Yes <input checked="" type="checkbox"/> | No <input type="checkbox"/> | Is the Sampling Area within a Wetland? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> |
| Hydric Soil Present? | Yes <input checked="" type="checkbox"/> | No <input type="checkbox"/> | |
| Wetland Hydrology Present? | Yes <input checked="" type="checkbox"/> | No <input type="checkbox"/> | |
| Remarks: Depression wetland at edge of cultivated field. | | | |

VEGETATION – Use scientific names of plants

| Tree Stratum (Plot Size: _____) | Absolute % Cover | Dominant Species? | Indicator Status | Dominance Test Worksheet: | | | | | | | | | | | | | | | | |
|--|---------------------|-------------------|------------------|--|--------------------------|---------------------|-------------------|------------|------------------------|-----------------|-------------------|------------|------------------------|----------------|-------------------|------------|---------------------------|--------------------|-------------------------------------|--|
| 1. _____ | _____ | _____ | _____ | Number of Dominant Species That Are OBL, FACW, or FAC: 1 (A) Total Number of Dominant Species Across All Strata: 2 (B) Percent of Dominant Species That Are OBL, FACW, or FAC: 50 (A/B) | | | | | | | | | | | | | | | | |
| 2. _____ | _____ | _____ | _____ | | | | | | | | | | | | | | | | | |
| 3. _____ | _____ | _____ | _____ | | | | | | | | | | | | | | | | | |
| 4. _____ | _____ | _____ | _____ | | | | | | | | | | | | | | | | | |
| = Total Cover | | | | Prevalence Index worksheet: <table style="width: 100%; border: none;"> <tr> <td style="text-align: center;"><u>Total % Cover of:</u></td> <td style="text-align: center;"><u>Multiply by:</u></td> </tr> <tr> <td>OBL species _____</td> <td>x1 = _____</td> </tr> <tr> <td>FACW species 80</td> <td>x2 = 160</td> </tr> <tr> <td>FAC species _____</td> <td>x3 = _____</td> </tr> <tr> <td>FACU species 20</td> <td>x4 = 80</td> </tr> <tr> <td>UPL species _____</td> <td>x5 = _____</td> </tr> <tr> <td>Column Totals: 100</td> <td>(A) 240 (B)</td> </tr> <tr> <td colspan="2" style="text-align: center;">Prevalence Index = B/A = 2.4</td> </tr> </table> | <u>Total % Cover of:</u> | <u>Multiply by:</u> | OBL species _____ | x1 = _____ | FACW species 80 | x2 = 160 | FAC species _____ | x3 = _____ | FACU species 20 | x4 = 80 | UPL species _____ | x5 = _____ | Column Totals: 100 | (A) 240 (B) | Prevalence Index = B/A = 2.4 | |
| <u>Total % Cover of:</u> | <u>Multiply by:</u> | | | | | | | | | | | | | | | | | | | |
| OBL species _____ | x1 = _____ | | | | | | | | | | | | | | | | | | | |
| FACW species 80 | x2 = 160 | | | | | | | | | | | | | | | | | | | |
| FAC species _____ | x3 = _____ | | | | | | | | | | | | | | | | | | | |
| FACU species 20 | x4 = 80 | | | | | | | | | | | | | | | | | | | |
| UPL species _____ | x5 = _____ | | | | | | | | | | | | | | | | | | | |
| Column Totals: 100 | (A) 240 (B) | | | | | | | | | | | | | | | | | | | |
| Prevalence Index = B/A = 2.4 | | | | | | | | | | | | | | | | | | | | |
| Sapling/Shrub Stratum (Plot Size: _____) | | | | | | | | | | | | | | | | | | | | |
| 1. _____ | _____ | _____ | _____ | | | | | | | | | | | | | | | | | |
| 2. _____ | _____ | _____ | _____ | | | | | | | | | | | | | | | | | |
| 3. _____ | _____ | _____ | _____ | | | | | | | | | | | | | | | | | |
| 4. _____ | _____ | _____ | _____ | | | | | | | | | | | | | | | | | |
| 5. _____ | _____ | _____ | _____ | | | | | | | | | | | | | | | | | |
| = Total Cover | | | | | | | | | | | | | | | | | | | | |
| Herb Stratum (Plot Size: 5') | | | | | | | | | | | | | | | | | | | | |
| 1. <u>Phalaris arundinacea</u> | <u>80</u> | <u>yes</u> | <u>FACW</u> | | | | | | | | | | | | | | | | | |
| 2. <u>Bromus inermis</u> | <u>20</u> | <u>yes</u> | <u>FACU</u> | | | | | | | | | | | | | | | | | |
| 3. _____ | _____ | _____ | _____ | | | | | | | | | | | | | | | | | |
| 4. _____ | _____ | _____ | _____ | | | | | | | | | | | | | | | | | |
| 5. _____ | _____ | _____ | _____ | | | | | | | | | | | | | | | | | |
| 6. _____ | _____ | _____ | _____ | | | | | | | | | | | | | | | | | |
| 7. _____ | _____ | _____ | _____ | | | | | | | | | | | | | | | | | |
| 8. _____ | _____ | _____ | _____ | | | | | | | | | | | | | | | | | |
| 9. _____ | _____ | _____ | _____ | | | | | | | | | | | | | | | | | |
| 10. _____ | _____ | _____ | _____ | | | | | | | | | | | | | | | | | |
| 100 | | | = Total Cover | | | | | | | | | | | | | | | | | |
| Woody Vine Stratum (Plot Size: _____) | | | | | | | | | | | | | | | | | | | | |
| 1. _____ | _____ | _____ | _____ | | | | | | | | | | | | | | | | | |
| 2. _____ | _____ | _____ | _____ | | | | | | | | | | | | | | | | | |
| _____ | | | = Total Cover | | | | | | | | | | | | | | | | | |
| % Bare Ground in Herb Stratum 0 | | | | | | | | | | | | | | | | | | | | |
| Hydrophytic Vegetation Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> | | | | | | | | | | | | | | | | | | | | |

Remarks:

SOIL

Sampling Point: blpw8

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

| Depth (inches) | Matrix | | Redox Features | | | | Texture | Remarks |
|-------------------|---------------|-----|----------------|-------|-------------------|------------------|---------|---------|
| | Color (moist) | % | Color (Moist) | % | Type ¹ | Loc ² | | |
| 0-5 | 10YR 2/1 | 100 | _____ | _____ | _____ | _____ | sicl | _____ |
| 5-8 | 10YR 3/1 | 70 | _____ | _____ | _____ | _____ | sicl | _____ |
| | 2.5Y 4/2 | 30 | _____ | _____ | _____ | _____ | sicl | _____ |
| 8-18 | 10YR 3/1 | 98 | 10YR 5/6 | 2 | c | m | sicl | _____ |
| 18-24+ | 2.5Y 6/1 | 90 | _____ | _____ | _____ | _____ | sicl | _____ |
| | 2.5Y 5/1 | 10 | _____ | _____ | _____ | _____ | sicl | _____ |
| | | | _____ | _____ | _____ | _____ | | |
| | | | _____ | _____ | _____ | _____ | | |

¹Type: C= Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. ²Location: PL=Pore Lining, M=Matrix

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- Histosol (A1)
- Histic Epipedon (A2)
- Black Histic (A3)
- Hydrogen Sulfide (A4)
- Stratified Layers (A5) (LRR F)
- 1 cm Muck (A9) (LRR F, G, H)
- Depleted Below Dark Surface (A11)
- Thick Dark Surface (A12)
- Sandy Mucky Mineral (S1)
- 2.5 CM Mucky Peat or Peat (S2) (LRR G, H)
- 5 cm Mucky Peat or Peat (S3) (LRR F)
- Sandy Gleyed Matrix (S4)
- Sandy Redox (S5)
- Stripped Matrix (S6)
- Loamy Mucky Mineral (F1)
- Loamy Gleyed Matrix (F2)
- Depleted Matrix (F3)
- Redox Dark Surface (F6)
- Depleted Dark Surface (F7)
- Redox Depressions (F8)
- High Plains Depressions (F16)

Indicators for Problematic Hydric Soils³:

- 1 cm Muck (A9) (LRR I, J)
- Coast Prairie Redox (A16) (LRR F, G, H)
- Dark Surface (S7) (LRR G)
- High Plains Depressions (F16)
- (LRR H outside of MLRA 72 & 73)**
- Reduced Vertic (F18)
- Red Parent Material (TF2)
- Very Shallow Dark Surface (TF 12)
- Other (Explain in Remarks)

³Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type: _____

Depth (Inches): _____

Hydric Soils Present? Yes No

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

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

Secondary Indicators (2 or more required)

- | | | |
|---|--|---|
| <input checked="" type="checkbox"/> Surface Water (A1) | <input type="checkbox"/> Salt Crust (B11) | <input type="checkbox"/> Surface Soil Cracks (B6) |
| <input checked="" type="checkbox"/> High Water Table (A2) | <input type="checkbox"/> Aquatic Invertebrates (B13) | <input type="checkbox"/> Sparsely Vegetated Concave Surface (B8) |
| <input checked="" type="checkbox"/> Saturation (A3) | <input type="checkbox"/> Hydrogen Sulfide Odor (C1) | <input type="checkbox"/> Drainage Patterns (B10) |
| <input type="checkbox"/> Water Marks (B1) | <input type="checkbox"/> Dry Season Water Table (C2) | <input type="checkbox"/> Oxidized Rhizospheres along Living Roots (C3) |
| <input type="checkbox"/> Sediment Deposits (B2) | <input type="checkbox"/> Oxidized Rhizospheres along Living Roots (C3) | (where tilled) |
| <input type="checkbox"/> Drift Deposits (B3) | (where not tilled) | <input type="checkbox"/> Crayfish Burrows (C8) |
| <input type="checkbox"/> Algal Mat or Crust (B4) | <input type="checkbox"/> Presence of Reduced Iron (C4) | <input checked="" type="checkbox"/> Saturation Visible on Aerial Imagery (C9) |
| <input type="checkbox"/> Iron Deposits (B5) | <input type="checkbox"/> Thin Muck Surface (C7) | <input checked="" type="checkbox"/> Geomorphic Position (D2) |
| <input checked="" type="checkbox"/> Inundation Visible on Aerial Imagery (B7) | <input type="checkbox"/> Other (Explain in Remarks) | <input type="checkbox"/> FAC-Neutral Test (D5) |
| <input type="checkbox"/> Water-Stained Leaves (B9) | | <input type="checkbox"/> Frost-Heave Hummocks (D7) (LRR F) |

Field Observations:

Surface Water Present? Yes No Depth (inches): 8
 Water Table Present? Yes No Depth (inches): 0
 Saturation Present? (includes capillary fringe) Yes No Depth (inches): 0

Wetland Hydrology Present? Yes No

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

water depth approximately 24" in center

WETLAND DETERMINATION DATA FORM – Great Plains Region

Project Site: BLLP 2011 City/County: Ward Sampling Date: 5/19/2011
 Applicant/Owner: McCain State: ND Sampling Point: blpu8
 Investigator(s): GWM / CET Section, Township, Range: 19. 156. 86
 Landform (hillslope, terrace, etc.): toeslope Local relief (concave, convex, none): concave Slope (%): 1
 Subregion (LRR): E Lat: 48.322725 N Long: -101.771929 W Datum: NAD 83
 Soil Map Unit Name: Bt Bowbells-Tonka Complex NWI classification: none

Are climatic / hydrologic conditions on the site typical for this time of year? Yes No (If no, explain in Remarks.)
 Are Vegetation , Soil , or Hydrology , significantly disturbed? Are "Normal Circumstances" present? Yes No
 Are Vegetation , Soil , or Hydrology , naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

| | | | |
|--|------------------------------|--|--|
| Hydrophytic Vegetation Present? | Yes <input type="checkbox"/> | No <input checked="" type="checkbox"/> | Is the Sampling Area within a Wetland? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> |
| Hydric Soil Present? | Yes <input type="checkbox"/> | No <input checked="" type="checkbox"/> | |
| Wetland Hydrology Present? | Yes <input type="checkbox"/> | No <input checked="" type="checkbox"/> | |
| Remarks: upland comparison point at edge of cultivated field | | | |

VEGETATION – Use scientific names of plants

| Tree Stratum (Plot Size: _____) | Absolute % Cover | Dominant Species? | Indicator Status | Dominance Test Worksheet: |
|--|------------------|-------------------|------------------|--|
| 1. _____ | _____ | _____ | _____ | Number of Dominant Species That Are OBL, FACW, or FAC: <u>0</u> (A) Total Number of Dominant Species Across All Strata: <u>1</u> (B) Percent of Dominant Species That Are OBL, FACW, or FAC: <u>0</u> (A/B) |
| 2. _____ | _____ | _____ | _____ | |
| 3. _____ | _____ | _____ | _____ | |
| 4. _____ | _____ | _____ | _____ | |
| = Total Cover | | | | Prevalence Index worksheet: Total % Cover of: Multiply by: OBL species _____ x1 = _____ FACW species _____ x2 = _____ FAC species _____ x3 = _____ FACU species _____ x4 = _____ UPL species _____ x5 = _____ Column Totals: _____ (A) _____ (B) Prevalence Index = B/A = _____ |
| Sapling/Shrub Stratum (Plot Size: _____) | | | | |
| 1. _____ | _____ | _____ | _____ | |
| 2. _____ | _____ | _____ | _____ | |
| 3. _____ | _____ | _____ | _____ | |
| 4. _____ | _____ | _____ | _____ | |
| 5. _____ | _____ | _____ | _____ | |
| = Total Cover | | | | |
| Herb Stratum (Plot Size: <u>5'</u>) | | | | |
| 1. <u>Bromus inermis</u> | <u>100</u> | <u>yes</u> | <u>FACU</u> | |
| 2. _____ | _____ | _____ | _____ | |
| 3. _____ | _____ | _____ | _____ | |
| 4. _____ | _____ | _____ | _____ | |
| 5. _____ | _____ | _____ | _____ | |
| 6. _____ | _____ | _____ | _____ | |
| 7. _____ | _____ | _____ | _____ | |
| 8. _____ | _____ | _____ | _____ | |
| 9. _____ | _____ | _____ | _____ | |
| 10. _____ | _____ | _____ | _____ | |
| <u>100</u> | | | = Total Cover | |
| Woody Vine Stratum (Plot Size: _____) | | | | |
| 1. _____ | _____ | _____ | _____ | |
| 2. _____ | _____ | _____ | _____ | |
| _____ | | | = Total Cover | |
| % Bare Ground in Herb Stratum <u>0</u> | | | | |
| Hydrophytic Vegetation Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> | | | | |

Remarks:

SOIL

Sampling Point: blpu8

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

| Depth (inches) | Matrix | | Redox Features | | | | Texture | Remarks |
|-------------------|---------------|-------|----------------|-------|-------------------|------------------|---------|---------|
| | Color (moist) | % | Color (Moist) | % | Type ¹ | Loc ² | | |
| 0-6 | 10YR 3/1 | 100 | _____ | _____ | _____ | _____ | sicl | _____ |
| 6-18 | 10YR 3/2 | 100 | _____ | _____ | _____ | _____ | sicl | _____ |
| 18-24+ | 10YR 3/1 | 100 | _____ | _____ | _____ | _____ | sicl | _____ |
| _____ | _____ | _____ | _____ | _____ | _____ | _____ | _____ | _____ |
| _____ | _____ | _____ | _____ | _____ | _____ | _____ | _____ | _____ |
| _____ | _____ | _____ | _____ | _____ | _____ | _____ | _____ | _____ |
| _____ | _____ | _____ | _____ | _____ | _____ | _____ | _____ | _____ |

¹Type: C= Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. ²Location: PL=Pore Lining, M=Matrix

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- Histosol (A1)
- Histic Epipedon (A2)
- Black Histic (A3)
- Hydrogen Sulfide (A4)
- Stratified Layers (A5) (LRR F)
- 1 cm Muck (A9) (LRR F, G, H)
- Depleted Below Dark Surface (A11)
- Thick Dark Surface (A12)
- Sandy Mucky Mineral (S1)
- 2.5 CM Mucky Peat or Peat (S2)(LRR G, H)
- 5 cm Mucky Peat or Peat (S3) (LRR F)
- Sandy Gleyed Matrix (S4)
- Sandy Redox (S5)
- Stripped Matrix (S6)
- Loamy Mucky Mineral (F1)
- Loamy Gleyed Matrix (F2)
- Depleted Matrix (F3)
- Redox Dark Surface (F6)
- Depleted Dark Surface (F7)
- Redox Depressions (F8)
- High Plains Depressions (F16)

Indicators for Problematic Hydric Soils³:

- 1 cm Muck (A9) (LRR I, J)
- Coast Prairie Redox (A16) (LRR F, G, H)
- Dark Surface (S7) (LRR G)
- High Plains Depressions (F16)
- (LRR H outside of MLRA 72 & 73)
- Reduced Vertic (F18)
- Red Parent Material (TF2)
- Very Shallow Dark Surface (TF 12)
- Other (Explain in Remarks)

³Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type: _____
Depth (Inches): _____

Hydric Soils Present? Yes No

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

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

- Surface Water (A1)
- High Water Table (A2)
- Saturation (A3)
- Water Marks (B1)
- Sediment Deposits (B2)
- Drift Deposits (B3)
- Algal Mat or Crust (B4)
- Iron Deposits (B5)
- Inundation Visible on Aerial Imagery (B7)
- Water-Stained Leaves (B9)
- Salt Crust (B11)
- Aquatic Invertebrates (B13)
- Hydrogen Sulfide Odor (C1)
- Dry Season Water Table (C2)
- Oxidized Rhizospheres along Living Roots (C3) (where not tilled)
- Presence of Reduced Iron (C4)
- Thin Muck Surface (C7)
- Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- Surface Soil Cracks (B6)
- Sparsely Vegetated Concave Surface (B8)
- Drainage Patterns (B10)
- Oxidized Rhizospheres along Living Roots (C3) (where tilled)
- Crayfish Burrows (C8)
- Saturation Visible on Aerial Imagery (C9)
- Geomorphic Position (D2)
- FAC-Neutral Test (D5)
- Frost-Heave Hummocks (D7) (LRR F)

Field Observations:

Surface Water Present? Yes No Depth (inches): _____
 Water Table Present? Yes No Depth (inches): _____
 Saturation Present? (includes capillary fringe) Yes No Depth (inches): _____

Wetland Hydrology Present? Yes No

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

WETLAND DETERMINATION DATA FORM – Great Plains Region

Project Site: BLLP 2011 City/County: Ward Sampling Date: 5/19/2011
 Applicant/Owner: McCain State: ND Sampling Point: bllpw9
 Investigator(s): GWM / CET Section, Township, Range: 19. 156. 86
 Landform (hillslope, terrace, etc.): depression Local relief (concave, convex, none): concave Slope (%): 1
 Subregion (LRR): E Lat: 48.323306 N Long: -101.773098 W Datum: NAD 83
 Soil Map Unit Name: WIA Williams loam, level NWI classification: none

Are climatic / hydrologic conditions on the site typical for this time of year? Yes No (If no, explain in Remarks.)
 Are Vegetation , Soil , or Hydrology , significantly disturbed? Are "Normal Circumstances" present? Yes No
 Are Vegetation , Soil , or Hydrology , naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

| | | | |
|--|---|-----------------------------|--|
| Hydrophytic Vegetation Present? | Yes <input checked="" type="checkbox"/> | No <input type="checkbox"/> | Is the Sampling Area within a Wetland? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> |
| Hydric Soil Present? | Yes <input checked="" type="checkbox"/> | No <input type="checkbox"/> | |
| Wetland Hydrology Present? | Yes <input checked="" type="checkbox"/> | No <input type="checkbox"/> | |
| Remarks: Shallow depression wetland in cultivated field. | | | |

VEGETATION – Use scientific names of plants

| Tree Stratum (Plot Size: _____) | Absolute % Cover | Dominant Species? | Indicator Status | Dominance Test Worksheet: | | | | | | | | | | | | | | | | |
|--|---------------------|-------------------|------------------|--|--------------------------|---------------------|-------------------|------------|--------------------|------------|-------------------|------------|--------------------|------------|-------------------|------------|----------------------|---------------------|--------------------------------|--|
| 1. _____ | _____ | _____ | _____ | Number of Dominant Species That Are OBL, FACW, or FAC: _____ (A) Total Number of Dominant Species Across All Strata: _____ (B) Percent of Dominant Species That Are OBL, FACW, or FAC: _____ (A/B) | | | | | | | | | | | | | | | | |
| 2. _____ | _____ | _____ | _____ | | | | | | | | | | | | | | | | | |
| 3. _____ | _____ | _____ | _____ | | | | | | | | | | | | | | | | | |
| 4. _____ | _____ | _____ | _____ | | | | | | | | | | | | | | | | | |
| = Total Cover | | | | | | | | | | | | | | | | | | | | |
| Sapling/Shrub Stratum (Plot Size: _____) | | | | Prevalence Index worksheet: | | | | | | | | | | | | | | | | |
| 1. _____ | _____ | _____ | _____ | <table style="width: 100%; border: none;"> <tr> <td style="text-align: center;"><u>Total % Cover of:</u></td> <td style="text-align: center;"><u>Multiply by:</u></td> </tr> <tr> <td>OBL species _____</td> <td>x1 = _____</td> </tr> <tr> <td>FACW species _____</td> <td>x2 = _____</td> </tr> <tr> <td>FAC species _____</td> <td>x3 = _____</td> </tr> <tr> <td>FACU species _____</td> <td>x4 = _____</td> </tr> <tr> <td>UPL species _____</td> <td>x5 = _____</td> </tr> <tr> <td>Column Totals: _____</td> <td>(A) _____ (B) _____</td> </tr> <tr> <td colspan="2" style="text-align: center;">Prevalence Index = B/A = _____</td> </tr> </table> | <u>Total % Cover of:</u> | <u>Multiply by:</u> | OBL species _____ | x1 = _____ | FACW species _____ | x2 = _____ | FAC species _____ | x3 = _____ | FACU species _____ | x4 = _____ | UPL species _____ | x5 = _____ | Column Totals: _____ | (A) _____ (B) _____ | Prevalence Index = B/A = _____ | |
| <u>Total % Cover of:</u> | <u>Multiply by:</u> | | | | | | | | | | | | | | | | | | | |
| OBL species _____ | x1 = _____ | | | | | | | | | | | | | | | | | | | |
| FACW species _____ | x2 = _____ | | | | | | | | | | | | | | | | | | | |
| FAC species _____ | x3 = _____ | | | | | | | | | | | | | | | | | | | |
| FACU species _____ | x4 = _____ | | | | | | | | | | | | | | | | | | | |
| UPL species _____ | x5 = _____ | | | | | | | | | | | | | | | | | | | |
| Column Totals: _____ | (A) _____ (B) _____ | | | | | | | | | | | | | | | | | | | |
| Prevalence Index = B/A = _____ | | | | | | | | | | | | | | | | | | | | |
| 2. _____ | _____ | _____ | _____ | | | | | | | | | | | | | | | | | |
| 3. _____ | _____ | _____ | _____ | | | | | | | | | | | | | | | | | |
| 4. _____ | _____ | _____ | _____ | | | | | | | | | | | | | | | | | |
| 5. _____ | _____ | _____ | _____ | | | | | | | | | | | | | | | | | |
| = Total Cover | | | | | | | | | | | | | | | | | | | | |
| Herb Stratum (Plot Size: 5') | | | | Hydrophytic Vegetation Indicators: | | | | | | | | | | | | | | | | |
| 1. <u>Rumex crispus</u> | <u>30</u> | <u>yes</u> | <u>FACW</u> | <input checked="" type="checkbox"/> 1 – Rapid Test for Hydrophytic Vegetation _____ 2 - Dominance Test is >50% _____ 3 – Prevalence Index is ≤3.0 ¹ _____ 4 - Morphological Adaptations ¹ (Provide supporting data in Remarks or on a separate sheet) _____ Problematic Hydrophytic Vegetation ¹ (Explain) ¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic. | | | | | | | | | | | | | | | | |
| 2. _____ | _____ | _____ | _____ | | | | | | | | | | | | | | | | | |
| 3. _____ | _____ | _____ | _____ | | | | | | | | | | | | | | | | | |
| 4. _____ | _____ | _____ | _____ | | | | | | | | | | | | | | | | | |
| 5. _____ | _____ | _____ | _____ | | | | | | | | | | | | | | | | | |
| 6. _____ | _____ | _____ | _____ | | | | | | | | | | | | | | | | | |
| 7. _____ | _____ | _____ | _____ | | | | | | | | | | | | | | | | | |
| 8. _____ | _____ | _____ | _____ | | | | | | | | | | | | | | | | | |
| 9. _____ | _____ | _____ | _____ | | | | | | | | | | | | | | | | | |
| 10. _____ | _____ | _____ | _____ | | | | | | | | | | | | | | | | | |
| <u>30</u> = Total Cover | | | | | | | | | | | | | | | | | | | | |
| Woody Vine Stratum (Plot Size: _____) | | | | | | | | | | | | | | | | | | | | |
| 1. _____ | _____ | _____ | _____ | | | | | | | | | | | | | | | | | |
| 2. _____ | _____ | _____ | _____ | | | | | | | | | | | | | | | | | |
| = Total Cover | | | | | | | | | | | | | | | | | | | | |
| % Bare Ground in Herb Stratum <u>70</u> | | | | Hydrophytic Vegetation Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> | | | | | | | | | | | | | | | | |
| Remarks: | | | | | | | | | | | | | | | | | | | | |

SOIL

Sampling Point: blpw9

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

| Depth (inches) | Matrix | | Redox Features | | | | Texture | Remarks |
|-------------------|---------------|-------|----------------|-------|-------------------|------------------|---------|---------|
| | Color (moist) | % | Color (Moist) | % | Type ¹ | Loc ² | | |
| 0-4 | 10YR 2/1 | 100 | _____ | _____ | _____ | _____ | sicl | _____ |
| 4-8 | 10YR 3/2 | 100 | _____ | _____ | _____ | _____ | sicl | _____ |
| 8-15 | 10YR 3/1 | 95 | 7.5YR | 5 | c | m | sicl | _____ |
| 15-30+ | 10YR 3/1 | 100 | _____ | _____ | _____ | _____ | _____ | _____ |
| _____ | _____ | _____ | _____ | _____ | _____ | _____ | _____ | _____ |
| _____ | _____ | _____ | _____ | _____ | _____ | _____ | _____ | _____ |
| _____ | _____ | _____ | _____ | _____ | _____ | _____ | _____ | _____ |
| _____ | _____ | _____ | _____ | _____ | _____ | _____ | _____ | _____ |

¹Type: C= Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. ²Location: PL=Pore Lining, M=Matrix

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- Histosol (A1)
- Histic Epipedon (A2)
- Black Histic (A3)
- Hydrogen Sulfide (A4)
- Stratified Layers (A5) (LRR F)
- 1 cm Muck (A9) (LRR F, G, H)
- Depleted Below Dark Surface (A11)
- Thick Dark Surface (A12)
- Sandy Mucky Mineral (S1)
- 2.5 CM Mucky Peat or Peat (S2)(LRR G, H)
- 5 cm Mucky Peat or Peat (S3) (LRR F)
- Sandy Gleyed Matrix (S4)
- Sandy Redox (S5)
- Stripped Matrix (S6)
- Loamy Mucky Mineral (F1)
- Loamy Gleyed Matrix (F2)
- Depleted Matrix (F3)
- Redox Dark Surface (F6)
- Depleted Dark Surface (F7)
- Redox Depressions (F8)
- High Plains Depressions (F16)

Indicators for Problematic Hydric Soils³:

- 1 cm Muck (A9) (LRR I, J)
- Coast Prairie Redox (A16) (LRR F, G, H)
- Dark Surface (S7) (LRR G)
- High Plains Depressions (F16)
- (LRR H outside of MLRA 72 & 73)**
- Reduced Vertic (F18)
- Red Parent Material (TF2)
- Very Shallow Dark Surface (TF 12)
- Other (Explain in Remarks)

³Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type: _____
Depth (Inches): _____

Hydric Soils Present? Yes No

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

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

Secondary Indicators (2 or more required)

- | | | |
|---|---|---|
| <ul style="list-style-type: none"> <input checked="" type="checkbox"/> Surface Water (A1) <input checked="" type="checkbox"/> High Water Table (A2) <input checked="" type="checkbox"/> Saturation (A3) <input type="checkbox"/> Water Marks (B1) <input type="checkbox"/> Sediment Deposits (B2) <input type="checkbox"/> Drift Deposits (B3) <input type="checkbox"/> Algal Mat or Crust (B4) <input type="checkbox"/> Iron Deposits (B5) <input type="checkbox"/> Inundation Visible on Aerial Imagery (B7) <input type="checkbox"/> Water-Stained Leaves (B9) | <ul style="list-style-type: none"> <input type="checkbox"/> Salt Crust (B11) <input type="checkbox"/> Aquatic Invertebrates (B13) <input type="checkbox"/> Hydrogen Sulfide Odor (C1) <input type="checkbox"/> Dry Season Water Table (C2) <input type="checkbox"/> Oxidized Rhizospheres along Living Roots (C3) (where not tilled) <input type="checkbox"/> Presence of Reduced Iron (C4) <input type="checkbox"/> Thin Muck Surface (C7) <input type="checkbox"/> Other (Explain in Remarks) | <ul style="list-style-type: none"> <input type="checkbox"/> Surface Soil Cracks (B6) <input type="checkbox"/> Sparsely Vegetated Concave Surface (B8) <input type="checkbox"/> Drainage Patterns (B10) <input type="checkbox"/> Oxidized Rhizospheres along Living Roots (C3) (where tilled) <input type="checkbox"/> Crayfish Burrows (C8) <input checked="" type="checkbox"/> Saturation Visible on Aerial Imagery (C9) <input checked="" type="checkbox"/> Geomorphic Position (D2) <input type="checkbox"/> FAC-Neutral Test (D5) <input type="checkbox"/> Frost-Heave Hummocks (D7) (LRR F) |
|---|---|---|

Field Observations:

Surface Water Present? Yes No Depth (inches): 3
 Water Table Present? Yes No Depth (inches): 0
 Saturation Present? (includes capillary fringe) Yes No Depth (inches): 0

Wetland Hydrology Present? Yes No

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

WETLAND DETERMINATION DATA FORM – Great Plains Region

Project Site: BLLP 2011 City/County: Ward Sampling Date: 5/19/2011
 Applicant/Owner: McGain State: ND Sampling Point: blpu9
 Investigator(s): GWM / CET Section, Township, Range: 19. 156. 86
 Landform (hillslope, terrace, etc.): toeslope Local relief (concave, convex, none): concave Slope (%): 1
 Subregion (LRR): E Lat: 48.323172 N Long: -101.773325 W Datum: NAD 83
 Soil Map Unit Name: WIA Williams loam, level NWI classification: none

Are climatic / hydrologic conditions on the site typical for this time of year? Yes No (If no, explain in Remarks.)
 Are Vegetation , Soil , or Hydrology , significantly disturbed? Are "Normal Circumstances" present? Yes No
 Are Vegetation , Soil , or Hydrology , naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

| | | | |
|--|------------------------------|--|--|
| Hydrophytic Vegetation Present? | Yes <input type="checkbox"/> | No <input checked="" type="checkbox"/> | Is the Sampling Area within a Wetland? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> |
| Hydric Soil Present? | Yes <input type="checkbox"/> | No <input checked="" type="checkbox"/> | |
| Wetland Hydrology Present? | Yes <input type="checkbox"/> | No <input checked="" type="checkbox"/> | |
| Remarks: upland comparison point in cultivated field | | | |

VEGETATION – Use scientific names of plants

| Tree Stratum (Plot Size: _____) | Absolute % Cover | Dominant Species? | Indicator Status | Dominance Test Worksheet: | | | | | | | | | | | | | | | | |
|--|---------------------|-------------------|------------------|--|--------------------------|---------------------|-------------------|------------|--------------------|------------|-------------------|------------|--------------------|------------|-------------------|------------|----------------------|---------------------|--------------------------------|--|
| 1. _____ | _____ | _____ | _____ | Number of Dominant Species That Are OBL, FACW, or FAC: _____ (A) Total Number of Dominant Species Across All Strata: _____ (B) Percent of Dominant Species That Are OBL, FACW, or FAC: _____ (A/B) | | | | | | | | | | | | | | | | |
| 2. _____ | _____ | _____ | _____ | | | | | | | | | | | | | | | | | |
| 3. _____ | _____ | _____ | _____ | | | | | | | | | | | | | | | | | |
| 4. _____ | _____ | _____ | _____ | | | | | | | | | | | | | | | | | |
| = Total Cover | | | | Prevalence Index worksheet: <table style="width: 100%; border: none;"> <tr> <td style="text-align: center;"><u>Total % Cover of:</u></td> <td style="text-align: center;"><u>Multiply by:</u></td> </tr> <tr> <td>OBL species _____</td> <td>x1 = _____</td> </tr> <tr> <td>FACW species _____</td> <td>x2 = _____</td> </tr> <tr> <td>FAC species _____</td> <td>x3 = _____</td> </tr> <tr> <td>FACU species _____</td> <td>x4 = _____</td> </tr> <tr> <td>UPL species _____</td> <td>x5 = _____</td> </tr> <tr> <td>Column Totals: _____</td> <td>(A) _____ (B) _____</td> </tr> <tr> <td colspan="2" style="text-align: center;">Prevalence Index = B/A = _____</td> </tr> </table> | <u>Total % Cover of:</u> | <u>Multiply by:</u> | OBL species _____ | x1 = _____ | FACW species _____ | x2 = _____ | FAC species _____ | x3 = _____ | FACU species _____ | x4 = _____ | UPL species _____ | x5 = _____ | Column Totals: _____ | (A) _____ (B) _____ | Prevalence Index = B/A = _____ | |
| <u>Total % Cover of:</u> | <u>Multiply by:</u> | | | | | | | | | | | | | | | | | | | |
| OBL species _____ | x1 = _____ | | | | | | | | | | | | | | | | | | | |
| FACW species _____ | x2 = _____ | | | | | | | | | | | | | | | | | | | |
| FAC species _____ | x3 = _____ | | | | | | | | | | | | | | | | | | | |
| FACU species _____ | x4 = _____ | | | | | | | | | | | | | | | | | | | |
| UPL species _____ | x5 = _____ | | | | | | | | | | | | | | | | | | | |
| Column Totals: _____ | (A) _____ (B) _____ | | | | | | | | | | | | | | | | | | | |
| Prevalence Index = B/A = _____ | | | | | | | | | | | | | | | | | | | | |
| <u>Sapling/Shrub Stratum</u> (Plot Size: _____) | | | | | | | | | | | | | | | | | | | | |
| 1. _____ | _____ | _____ | _____ | | | | | | | | | | | | | | | | | |
| 2. _____ | _____ | _____ | _____ | | | | | | | | | | | | | | | | | |
| 3. _____ | _____ | _____ | _____ | | | | | | | | | | | | | | | | | |
| 4. _____ | _____ | _____ | _____ | | | | | | | | | | | | | | | | | |
| 5. _____ | _____ | _____ | _____ | | | | | | | | | | | | | | | | | |
| = Total Cover | | | | | | | | | | | | | | | | | | | | |
| <u>Herb Stratum</u> (Plot Size: 5') | | | | | | | | | | | | | | | | | | | | |
| 1. _____ | _____ | _____ | _____ | | | | | | | | | | | | | | | | | |
| 2. _____ | _____ | _____ | _____ | | | | | | | | | | | | | | | | | |
| 3. _____ | _____ | _____ | _____ | | | | | | | | | | | | | | | | | |
| 4. _____ | _____ | _____ | _____ | | | | | | | | | | | | | | | | | |
| 5. _____ | _____ | _____ | _____ | | | | | | | | | | | | | | | | | |
| 6. _____ | _____ | _____ | _____ | | | | | | | | | | | | | | | | | |
| 7. _____ | _____ | _____ | _____ | | | | | | | | | | | | | | | | | |
| 8. _____ | _____ | _____ | _____ | | | | | | | | | | | | | | | | | |
| 9. _____ | _____ | _____ | _____ | | | | | | | | | | | | | | | | | |
| 10. _____ | _____ | _____ | _____ | | | | | | | | | | | | | | | | | |
| 0 = Total Cover | | | | | | | | | | | | | | | | | | | | |
| <u>Woody Vine Stratum</u> (Plot Size: _____) | | | | | | | | | | | | | | | | | | | | |
| 1. _____ | _____ | _____ | _____ | | | | | | | | | | | | | | | | | |
| 2. _____ | _____ | _____ | _____ | | | | | | | | | | | | | | | | | |
| = Total Cover | | | | | | | | | | | | | | | | | | | | |
| % Bare Ground in Herb Stratum 100 | | | | | | | | | | | | | | | | | | | | |
| Hydrophytic Vegetation Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> | | | | | | | | | | | | | | | | | | | | |
| Remarks: no vegetation at observation point | | | | | | | | | | | | | | | | | | | | |

SOIL

Sampling Point: blpu9

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

| Depth (inches) | Matrix | | Redox Features | | | | Texture | Remarks |
|-------------------|---------------|-------|----------------|-------|-------------------|------------------|---------|---------|
| | Color (moist) | % | Color (Moist) | % | Type ¹ | Loc ² | | |
| 0-7 | 10YR 3/2 | 100 | _____ | _____ | _____ | _____ | sicl | _____ |
| 7-12+ | 10YR 4/4 | 100 | _____ | _____ | _____ | _____ | sicl | _____ |
| _____ | _____ | _____ | _____ | _____ | _____ | _____ | _____ | _____ |
| _____ | _____ | _____ | _____ | _____ | _____ | _____ | _____ | _____ |
| _____ | _____ | _____ | _____ | _____ | _____ | _____ | _____ | _____ |
| _____ | _____ | _____ | _____ | _____ | _____ | _____ | _____ | _____ |

¹Type: C= Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. ²Location: PL=Pore Lining, M=Matrix

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- Histosol (A1)
- Histic Epipedon (A2)
- Black Histic (A3)
- Hydrogen Sulfide (A4)
- Stratified Layers (A5) **(LRR F)**
- 1 cm Muck (A9) **(LRR F, G, H)**
- Depleted Below Dark Surface (A11)
- Thick Dark Surface (A12)
- Sandy Mucky Mineral (S1)
- 2.5 CM Mucky Peat or Peat (S2) **(LRR G, H)**
- 5 cm Mucky Peat or Peat (S3) **(LRR F)**
- Sandy Gleyed Matrix (S4)
- Sandy Redox (S5)
- Stripped Matrix (S6)
- Loamy Mucky Mineral (F1)
- Loamy Gleyed Matrix (F2)
- Depleted Matrix (F3)
- Redox Dark Surface (F6)
- Depleted Dark Surface (F7)
- Redox Depressions (F8)
- High Plains Depressions (F16) **(MLRA 72 & 73 of LRR H)**

Indicators for Problematic Hydric Soils³:

- 1 cm Muck (A9) **(LRR I, J)**
- Coast Prairie Redox (A16) **(LRR F, G, H)**
- Dark Surface (S7) **(LRR G)**
- High Plains Depressions (F16) **(LRR H outside of MLRA 72 & 73)**
- Reduced Vertic (F18)
- Red Parent Material (TF2)
- Very Shallow Dark Surface (TF 12)
- Other (Explain in Remarks)

³Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type: _____
Depth (Inches): _____

Hydric Soils Present? Yes No

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

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

- Surface Water (A1)
- High Water Table (A2)
- Saturation (A3)
- Water Marks (B1)
- Sediment Deposits (B2)
- Drift Deposits (B3)
- Algal Mat or Crust (B4)
- Iron Deposits (B5)
- Inundation Visible on Aerial Imagery (B7)
- Water-Stained Leaves (B9)
- Salt Crust (B11)
- Aquatic Invertebrates (B13)
- Hydrogen Sulfide Odor (C1)
- Dry Season Water Table (C2)
- Oxidized Rhizospheres along Living Roots (C3) **(where not tilled)**
- Presence of Reduced Iron (C4)
- Thin Muck Surface (C7)
- Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- Surface Soil Cracks (B6)
- Sparsely Vegetated Concave Surface (B8)
- Drainage Patterns (B10)
- Oxidized Rhizospheres along Living Roots (C3) **(where tilled)**
- Crayfish Burrows (C8)
- Saturation Visible on Aerial Imagery (C9)
- Geomorphic Position (D2)
- FAC-Neutral Test (D5)
- Frost-Heave Hummocks (D7) **(LRR F)**

Field Observations:

Surface Water Present? Yes No Depth (inches): _____
 Water Table Present? Yes No Depth (inches): _____
 Saturation Present? (includes capillary fringe) Yes No Depth (inches): _____

Wetland Hydrology Present? Yes No

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

WETLAND DETERMINATION DATA FORM – Great Plains Region

Project Site: BLLP 2011 City/County: Ward Sampling Date: 5/19/2011
 Applicant/Owner: McCain State: ND Sampling Point: bllpw10
 Investigator(s): GWM / CET Section, Township, Range: 19. 156. 86
 Landform (hillslope, terrace, etc.): depression Local relief (concave, convex, none): concave Slope (%): 1
 Subregion (LRR): E Lat: 48.323166 N Long: -101.774495 W Datum: NAD 83
 Soil Map Unit Name: WIA Williams loam, level NWI classification: PEMA

Are climatic / hydrologic conditions on the site typical for this time of year? Yes No (If no, explain in Remarks.)
 Are Vegetation , Soil , or Hydrology , significantly disturbed? Are "Normal Circumstances" present? Yes No
 Are Vegetation , Soil , or Hydrology , naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

| | | | |
|--|---|-----------------------------|--|
| Hydrophytic Vegetation Present? | Yes <input checked="" type="checkbox"/> | No <input type="checkbox"/> | Is the Sampling Area within a Wetland? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> |
| Hydric Soil Present? | Yes <input checked="" type="checkbox"/> | No <input type="checkbox"/> | |
| Wetland Hydrology Present? | Yes <input checked="" type="checkbox"/> | No <input type="checkbox"/> | |
| Remarks: Shallow depression wetland in cultivated field. | | | |

VEGETATION – Use scientific names of plants

| Tree Stratum (Plot Size: _____) | Absolute % Cover | Dominant Species? | Indicator Status | Dominance Test Worksheet: |
|--|------------------|-------------------|------------------|--|
| 1. _____ | _____ | _____ | _____ | Number of Dominant Species That Are OBL, FACW, or FAC: <u>2</u> (A) Total Number of Dominant Species Across All Strata: <u>2</u> (B) Percent of Dominant Species That Are OBL, FACW, or FAC: <u>100</u> (A/B) |
| 2. _____ | _____ | _____ | _____ | |
| 3. _____ | _____ | _____ | _____ | |
| 4. _____ | _____ | _____ | _____ | |
| = Total Cover | | | | Prevalence Index worksheet: Total % Cover of: Multiply by: OBL species _____ x1 = _____ FACW species _____ x2 = _____ FAC species _____ x3 = _____ FACU species _____ x4 = _____ UPL species _____ x5 = _____ Column Totals: _____ (A) _____ (B) Prevalence Index = B/A = _____ |
| <u>Sapling/Shrub Stratum</u> (Plot Size: _____) | | | | |
| 1. _____ | _____ | _____ | _____ | |
| 2. _____ | _____ | _____ | _____ | |
| 3. _____ | _____ | _____ | _____ | |
| 4. _____ | _____ | _____ | _____ | |
| 5. _____ | _____ | _____ | _____ | |
| = Total Cover | | | | |
| <u>Herb Stratum</u> (Plot Size: <u>5'</u>) | | | | |
| 1. <u>Rumex crispus</u> | <u>20</u> | <u>yes</u> | <u>FACW</u> | |
| 2. <u>Artemisia biennis</u> | <u>20</u> | <u>yes</u> | <u>FAC</u> | |
| 3. _____ | _____ | _____ | _____ | |
| 4. _____ | _____ | _____ | _____ | |
| 5. _____ | _____ | _____ | _____ | |
| 6. _____ | _____ | _____ | _____ | |
| 7. _____ | _____ | _____ | _____ | |
| 8. _____ | _____ | _____ | _____ | |
| 9. _____ | _____ | _____ | _____ | |
| 10. _____ | _____ | _____ | _____ | |
| <u>40</u> | | | = Total Cover | |
| <u>Woody Vine Stratum</u> (Plot Size: _____) | | | | |
| 1. _____ | _____ | _____ | _____ | |
| 2. _____ | _____ | _____ | _____ | |
| _____ | | | = Total Cover | |
| % Bare Ground in Herb Stratum <u>60</u> | | | | |
| Hydrophytic Vegetation Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> | | | | |
| Remarks: | | | | |

SOIL

Sampling Point: blpw10

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

| Depth (inches) | Matrix | | Redox Features | | | | Texture | Remarks |
|-------------------|---------------|-----|----------------|----|-------------------|------------------|---------|---------|
| | Color (moist) | % | Color (Moist) | % | Type ¹ | Loc ² | | |
| 0-6 | 10YR 2/1 | 100 | | | | | sicl | |
| 6-18+ | 2.5Y 4/2 | 80 | 7.5YR 5/6 | 20 | c | m | sicl | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |

¹Type: C= Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. ²Location: PL=Pore Lining, M=Matrix

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- Histosol (A1)
- Histic Epipedon (A2)
- Black Histic (A3)
- Hydrogen Sulfide (A4)
- Stratified Layers (A5) (LRR F)
- 1 cm Muck (A9) (LRR F, G, H)
- Depleted Below Dark Surface (A11)
- Thick Dark Surface (A12)
- Sandy Mucky Mineral (S1)
- 2.5 CM Mucky Peat or Peat (S2)(LRR G, H)
- 5 cm Mucky Peat or Peat (S3) (LRR F)
- Sandy Gleyed Matrix (S4)
- Sandy Redox (S5)
- Stripped Matrix (S6)
- Loamy Mucky Mineral (F1)
- Loamy Gleyed Matrix (F2)
- Depleted Matrix (F3)
- Redox Dark Surface (F6)
- Depleted Dark Surface (F7)
- Redox Depressions (F8)
- High Plains Depressions (F16)

Indicators for Problematic Hydric Soils³:

- 1 cm Muck (A9) (LRR I, J)
- Coast Prairie Redox (A16) (LRR F, G, H)
- Dark Surface (S7) (LRR G)
- High Plains Depressions (F16)
- (LRR H outside of MLRA 72 & 73)**
- Reduced Vertic (F18)
- Red Parent Material (TF2)
- Very Shallow Dark Surface (TF 12)
- Other (Explain in Remarks)

³Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type: _____
Depth (Inches): _____

Hydric Soils Present? Yes No

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

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

- Surface Water (A1)
- High Water Table (A2)
- Saturation (A3)
- Water Marks (B1)
- Sediment Deposits (B2)
- Drift Deposits (B3)
- Algal Mat or Crust (B4)
- Iron Deposits (B5)
- Inundation Visible on Aerial Imagery (B7)
- Water-Stained Leaves (B9)
- Salt Crust (B11)
- Aquatic Invertebrates (B13)
- Hydrogen Sulfide Odor (C1)
- Dry Season Water Table (C2)
- Oxidized Rhizospheres along Living Roots (C3)
- (where not tilled)**
- Presence of Reduced Iron (C4)
- Thin Muck Surface (C7)
- Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- Surface Soil Cracks (B6)
- Sparsely Vegetated Concave Surface (B8)
- Drainage Patterns (B10)
- Oxidized Rhizospheres along Living Roots (C3)
- (where tilled)**
- Crayfish Burrows (C8)
- Saturation Visible on Aerial Imagery (C9)
- Geomorphic Position (D2)
- FAC-Neutral Test (D5)
- Frost-Heave Hummocks (D7) (LRR F)

Field Observations:

Surface Water Present? Yes No Depth (inches): 6
 Water Table Present? Yes No Depth (inches): 0
 Saturation Present? (includes capillary fringe) Yes No Depth (inches): 0

Wetland Hydrology Present? Yes No

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

WETLAND DETERMINATION DATA FORM – Great Plains Region

Project Site: BLLP 2011 City/County: Ward Sampling Date: 5/19/2011
 Applicant/Owner: McGain State: ND Sampling Point: blpu10
 Investigator(s): GWM / CET Section, Township, Range: 19. 156. 86
 Landform (hillslope, terrace, etc.): toeslope Local relief (concave, convex, none): concave Slope (%): 1
 Subregion (LRR): E Lat: 48.323209 N Long: -101.774384 W Datum: NAD 83
 Soil Map Unit Name: WIA Williams loam, level NWI classification: none

Are climatic / hydrologic conditions on the site typical for this time of year? Yes No (If no, explain in Remarks.)
 Are Vegetation , Soil , or Hydrology , significantly disturbed? Are "Normal Circumstances" present? Yes No
 Are Vegetation , Soil , or Hydrology , naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

| | | | |
|--|------------------------------|--|--|
| Hydrophytic Vegetation Present? | Yes <input type="checkbox"/> | No <input checked="" type="checkbox"/> | Is the Sampling Area within a Wetland? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> |
| Hydric Soil Present? | Yes <input type="checkbox"/> | No <input checked="" type="checkbox"/> | |
| Wetland Hydrology Present? | Yes <input type="checkbox"/> | No <input checked="" type="checkbox"/> | |
| Remarks: upland comparison point in cultivated field | | | |

VEGETATION – Use scientific names of plants

| Tree Stratum (Plot Size: _____) | Absolute % Cover | Dominant Species? | Indicator Status | Dominance Test Worksheet: |
|--|------------------|-------------------|------------------|--|
| 1. _____ | _____ | _____ | _____ | Number of Dominant Species That Are OBL, FACW, or FAC: _____ (A) Total Number of Dominant Species Across All Strata: _____ (B) Percent of Dominant Species That Are OBL, FACW, or FAC: _____ (A/B) |
| 2. _____ | _____ | _____ | _____ | |
| 3. _____ | _____ | _____ | _____ | |
| 4. _____ | _____ | _____ | _____ | |
| = Total Cover | | | | Prevalence Index worksheet: Total % Cover of: Multiply by: OBL species _____ x1 = _____ FACW species _____ x2 = _____ FAC species _____ x3 = _____ FACU species _____ x4 = _____ UPL species _____ x5 = _____ Column Totals: _____ (A) _____ (B) Prevalence Index = B/A = _____ |
| <u>Sapling/Shrub Stratum</u> (Plot Size: _____) | | | | |
| 1. _____ | _____ | _____ | _____ | |
| 2. _____ | _____ | _____ | _____ | |
| 3. _____ | _____ | _____ | _____ | |
| 4. _____ | _____ | _____ | _____ | |
| 5. _____ | _____ | _____ | _____ | |
| = Total Cover | | | | |
| <u>Herb Stratum</u> (Plot Size: 5') | | | | |
| 1. _____ | _____ | _____ | _____ | |
| 2. _____ | _____ | _____ | _____ | |
| 3. _____ | _____ | _____ | _____ | |
| 4. _____ | _____ | _____ | _____ | |
| 5. _____ | _____ | _____ | _____ | |
| 6. _____ | _____ | _____ | _____ | |
| 7. _____ | _____ | _____ | _____ | |
| 8. _____ | _____ | _____ | _____ | |
| 9. _____ | _____ | _____ | _____ | |
| 10. _____ | _____ | _____ | _____ | |
| 0 = Total Cover | | | | |
| <u>Woody Vine Stratum</u> (Plot Size: _____) | | | | |
| 1. _____ | _____ | _____ | _____ | |
| 2. _____ | _____ | _____ | _____ | |
| = Total Cover | | | | |
| % Bare Ground in Herb Stratum 100 | | | | |
| Hydrophytic Vegetation Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> | | | | |
| Remarks: no vegetation at observation point | | | | |

SOIL

Sampling Point: blpu10

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

| Depth (inches) | Matrix | | Redox Features | | | | Texture | Remarks |
|-------------------|---------------|-------|----------------|-------|-------------------|------------------|---------|---------|
| | Color (moist) | % | Color (Moist) | % | Type ¹ | Loc ² | | |
| 0-6 | 10YR 3/1 | 100 | | | | | sicl | |
| 6-9 | 2.5Y 4/2 | 95 | 10YR 4/6 | 5 | c | m | sicl | |
| 9-15+ | 2.5Y 4/3 | 95 | 2.5Y 4/1 | 5 | d | m | sicl | |
| _____ | _____ | _____ | _____ | _____ | _____ | _____ | _____ | _____ |
| _____ | _____ | _____ | _____ | _____ | _____ | _____ | _____ | _____ |
| _____ | _____ | _____ | _____ | _____ | _____ | _____ | _____ | _____ |
| _____ | _____ | _____ | _____ | _____ | _____ | _____ | _____ | _____ |

¹Type: C= Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. ²Location: PL=Pore Lining, M=Matrix

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- Histosol (A1)
- Histic Epipedon (A2)
- Black Histic (A3)
- Hydrogen Sulfide (A4)
- Stratified Layers (A5) **(LRR F)**
- 1 cm Muck (A9) **(LRR F, G, H)**
- Depleted Below Dark Surface (A11)
- Thick Dark Surface (A12)
- Sandy Mucky Mineral (S1)
- 2.5 CM Mucky Peat or Peat (S2) **(LRR G, H)**
- 5 cm Mucky Peat or Peat (S3) **(LRR F)**
- Sandy Gleyed Matrix (S4)
- Sandy Redox (S5)
- Stripped Matrix (S6)
- Loamy Mucky Mineral (F1)
- Loamy Gleyed Matrix (F2)
- Depleted Matrix (F3)
- Redox Dark Surface (F6)
- Depleted Dark Surface (F7)
- Redox Depressions (F8)
- High Plains Depressions (F16) **(MLRA 72 & 73 of LRR H)**

Indicators for Problematic Hydric Soils³:

- 1 cm Muck (A9) **(LRR I, J)**
- Coast Prairie Redox (A16) **(LRR F, G, H)**
- Dark Surface (S7) **(LRR G)**
- High Plains Depressions (F16) **(LRR H outside of MLRA 72 & 73)**
- Reduced Vertic (F18)
- Red Parent Material (TF2)
- Very Shallow Dark Surface (TF 12)
- Other (Explain in Remarks)

³Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type: _____
Depth (Inches): _____

Hydric Soils Present? Yes No

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

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

- Surface Water (A1)
- High Water Table (A2)
- Saturation (A3)
- Water Marks (B1)
- Sediment Deposits (B2)
- Drift Deposits (B3)
- Algal Mat or Crust (B4)
- Iron Deposits (B5)
- Inundation Visible on Aerial Imagery (B7)
- Water-Stained Leaves (B9)
- Salt Crust (B11)
- Aquatic Invertebrates (B13)
- Hydrogen Sulfide Odor (C1)
- Dry Season Water Table (C2)
- Oxidized Rhizospheres along Living Roots (C3) **(where not tilled)**
- Presence of Reduced Iron (C4)
- Thin Muck Surface (C7)
- Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- Surface Soil Cracks (B6)
- Sparsely Vegetated Concave Surface (B8)
- Drainage Patterns (B10)
- Oxidized Rhizospheres along Living Roots (C3) **(where tilled)**
- Crayfish Burrows (C8)
- Saturation Visible on Aerial Imagery (C9)
- Geomorphic Position (D2)
- FAC-Neutral Test (D5)
- Frost-Heave Hummocks (D7) **(LRR F)**

Field Observations:

Surface Water Present? Yes No Depth (inches): _____
 Water Table Present? Yes No Depth (inches): _____
 Saturation Present? (includes capillary fringe) Yes No Depth (inches): _____

Wetland Hydrology Present? Yes No

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

WETLAND DETERMINATION DATA FORM – Great Plains Region

Project Site: BLLP 2011 City/County: Ward Sampling Date: 5/19/2011
 Applicant/Owner: McCain State: ND Sampling Point: bllpw11
 Investigator(s): GWM / CET Section, Township, Range: 19. 156. 86
 Landform (hillslope, terrace, etc.): depression Local relief (concave, convex, none): concave Slope (%): 1
 Subregion (LRR): E Lat: 48.323036 N Long: -101.777855 W Datum: NAD 83
 Soil Map Unit Name: WIB Williams loam, gently undulating NWI classification: PEMC

Are climatic / hydrologic conditions on the site typical for this time of year? Yes No (If no, explain in Remarks.)
 Are Vegetation , Soil , or Hydrology , significantly disturbed? Are "Normal Circumstances" present? Yes No
 Are Vegetation , Soil , or Hydrology , naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

| | | | |
|--|---|-----------------------------|--|
| Hydrophytic Vegetation Present? | Yes <input checked="" type="checkbox"/> | No <input type="checkbox"/> | Is the Sampling Area within a Wetland? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> |
| Hydric Soil Present? | Yes <input checked="" type="checkbox"/> | No <input type="checkbox"/> | |
| Wetland Hydrology Present? | Yes <input checked="" type="checkbox"/> | No <input type="checkbox"/> | |
| Remarks: Depression wetland at edge of cultivated field. | | | |

VEGETATION – Use scientific names of plants

| Tree Stratum (Plot Size: _____) | Absolute % Cover | Dominant Species? | Indicator Status | Dominance Test Worksheet: |
|--|------------------|-------------------|------------------|--|
| 1. _____ | _____ | _____ | _____ | Number of Dominant Species That Are OBL, FACW, or FAC: _____ (A) Total Number of Dominant Species Across All Strata: _____ (B) Percent of Dominant Species That Are OBL, FACW, or FAC: _____ (A/B) |
| 2. _____ | _____ | _____ | _____ | |
| 3. _____ | _____ | _____ | _____ | |
| 4. _____ | _____ | _____ | _____ | |
| = Total Cover | | | | Prevalence Index worksheet: Total % Cover of: Multiply by: OBL species _____ x1 = _____ FACW species _____ x2 = _____ FAC species _____ x3 = _____ FACU species _____ x4 = _____ UPL species _____ x5 = _____ Column Totals: _____ (A) _____ (B) Prevalence Index = B/A = _____ |
| <u>Sapling/Shrub Stratum</u> (Plot Size: _____) | | | | |
| 1. _____ | _____ | _____ | _____ | |
| 2. _____ | _____ | _____ | _____ | |
| 3. _____ | _____ | _____ | _____ | |
| 4. _____ | _____ | _____ | _____ | |
| 5. _____ | _____ | _____ | _____ | |
| = Total Cover | | | | |
| <u>Herb Stratum</u> (Plot Size: 5') | | | | |
| 1. <u>Spartina pectinata</u> | <u>90</u> | <u>yes</u> | <u>FACW</u> | |
| 2. <u>Bromus inermis</u> | <u>10</u> | <u>no</u> | <u>FACU</u> | |
| 3. _____ | _____ | _____ | _____ | |
| 4. _____ | _____ | _____ | _____ | |
| 5. _____ | _____ | _____ | _____ | |
| 6. _____ | _____ | _____ | _____ | |
| 7. _____ | _____ | _____ | _____ | |
| 8. _____ | _____ | _____ | _____ | |
| 9. _____ | _____ | _____ | _____ | |
| 10. _____ | _____ | _____ | _____ | |
| 100 | | | = Total Cover | |
| <u>Woody Vine Stratum</u> (Plot Size: _____) | | | | |
| 1. _____ | _____ | _____ | _____ | |
| 2. _____ | _____ | _____ | _____ | |
| _____ | | | = Total Cover | |
| % Bare Ground in Herb Stratum <u>0</u> | | | | |
| Hydrophytic Vegetation Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> | | | | |
| Remarks: | | | | |

SOIL

Sampling Point: blpw11

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

| Depth (inches) | Matrix | | Redox Features | | | | Texture | Remarks |
|-------------------|---------------|-----|----------------|---|-------------------|------------------|---------|---------|
| | Color (moist) | % | Color (Moist) | % | Type ¹ | Loc ² | | |
| 0-6 | 10YR 2/1 | 100 | | | | | sicl | |
| 6-18+ | 10YR 3/1 | 95 | 7.5YR 5/6 | 3 | c | m | sicl | |
| | | | 2.5Y 4/2 | 2 | d | m | sicl | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |

¹Type: C= Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. ²Location: PL=Pore Lining, M=Matrix

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- Histosol (A1)
- Histic Epipedon (A2)
- Black Histic (A3)
- Hydrogen Sulfide (A4)
- Stratified Layers (A5) **(LRR F)**
- 1 cm Muck (A9) **(LRR F, G, H)**
- Depleted Below Dark Surface (A11)
- Thick Dark Surface (A12)
- Sandy Mucky Mineral (S1)
- 2.5 CM Mucky Peat or Peat (S2) **(LRR G, H)**
- 5 cm Mucky Peat or Peat (S3) **(LRR F)**
- Sandy Gleyed Matrix (S4)
- Sandy Redox (S5)
- Stripped Matrix (S6)
- Loamy Mucky Mineral (F1)
- Loamy Gleyed Matrix (F2)
- Depleted Matrix (F3)
- Redox Dark Surface (F6)
- Depleted Dark Surface (F7)
- Redox Depressions (F8)
- High Plains Depressions (F16) **(MLRA 72 & 73 of LRR H)**

Indicators for Problematic Hydric Soils³:

- 1 cm Muck (A9) **(LRR I, J)**
- Coast Prairie Redox (A16) **(LRR F, G, H)**
- Dark Surface (S7) **(LRR G)**
- High Plains Depressions (F16) **(LRR H outside of MLRA 72 & 73)**
- Reduced Vertic (F18)
- Red Parent Material (TF2)
- Very Shallow Dark Surface (TF 12)
- Other (Explain in Remarks)

³Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type: _____
Depth (Inches): _____

Hydric Soils Present? Yes No

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

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

Secondary Indicators (2 or more required)

- | | | |
|---|--|--|
| <input checked="" type="checkbox"/> Surface Water (A1) | <input type="checkbox"/> Salt Crust (B11) | <input type="checkbox"/> Surface Soil Cracks (B6) |
| <input checked="" type="checkbox"/> High Water Table (A2) | <input type="checkbox"/> Aquatic Invertebrates (B13) | <input type="checkbox"/> Sparsely Vegetated Concave Surface (B8) |
| <input checked="" type="checkbox"/> Saturation (A3) | <input type="checkbox"/> Hydrogen Sulfide Odor (C1) | <input type="checkbox"/> Drainage Patterns (B10) |
| <input type="checkbox"/> Water Marks (B1) | <input type="checkbox"/> Dry Season Water Table (C2) | <input type="checkbox"/> Oxidized Rhizospheres along Living Roots (C3) (where tilled) |
| <input type="checkbox"/> Sediment Deposits (B2) | <input type="checkbox"/> Oxidized Rhizospheres along Living Roots (C3) (where not tilled) | <input type="checkbox"/> Crayfish Burrows (C8) |
| <input type="checkbox"/> Drift Deposits (B3) | <input type="checkbox"/> Presence of Reduced Iron (C4) | <input checked="" type="checkbox"/> Saturation Visible on Aerial Imagery (C9) |
| <input type="checkbox"/> Algal Mat or Crust (B4) | <input type="checkbox"/> Thin Muck Surface (C7) | <input checked="" type="checkbox"/> Geomorphic Position (D2) |
| <input type="checkbox"/> Iron Deposits (B5) | <input type="checkbox"/> Other (Explain in Remarks) | <input type="checkbox"/> FAC-Neutral Test (D5) |
| <input checked="" type="checkbox"/> Inundation Visible on Aerial Imagery (B7) | | <input type="checkbox"/> Frost-Heave Hummocks (D7) (LRR F) |
| <input type="checkbox"/> Water-Stained Leaves (B9) | | |

Field Observations:

Surface Water Present? Yes No Depth (inches): 18
 Water Table Present? Yes No Depth (inches): 0
 Saturation Present? (includes capillary fringe) Yes No Depth (inches): 0

Wetland Hydrology Present? Yes No

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

WETLAND DETERMINATION DATA FORM – Great Plains Region

Project Site: BLLP 2011 City/County: Ward Sampling Date: 5/19/2011
 Applicant/Owner: McCain State: ND Sampling Point: bllpu11
 Investigator(s): GWM / CET Section, Township, Range: 19. 156. 86
 Landform (hillslope, terrace, etc.): toeslope Local relief (concave, convex, none): concave Slope (%): 1
 Subregion (LRR): E Lat: 48.323108 N Long: -101.778136 W Datum: NAD 83
 Soil Map Unit Name: WIB Williams loam.gently undulating NWI classification: none

Are climatic / hydrologic conditions on the site typical for this time of year? Yes No (If no, explain in Remarks.)
 Are Vegetation , Soil , or Hydrology , significantly disturbed? Are "Normal Circumstances" present? Yes No
 Are Vegetation , Soil , or Hydrology , naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

| | | | |
|---|------------------------------|--|--|
| Hydrophytic Vegetation Present? | Yes <input type="checkbox"/> | No <input checked="" type="checkbox"/> | Is the Sampling Area within a Wetland? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> |
| Hydric Soil Present? | Yes <input type="checkbox"/> | No <input checked="" type="checkbox"/> | |
| Wetland Hydrology Present? | Yes <input type="checkbox"/> | No <input checked="" type="checkbox"/> | |
| Remarks: upland comparison point at edge of cultivated field located between Wetlands 11 and 12 | | | |

VEGETATION – Use scientific names of plants

| Tree Stratum (Plot Size: _____) | Absolute % Cover | Dominant Species? | Indicator Status | Dominance Test Worksheet: |
|--|------------------|-------------------|------------------|--|
| 1. _____ | _____ | _____ | _____ | Number of Dominant Species That Are OBL, FACW, or FAC: <u>0</u> (A) Total Number of Dominant Species Across All Strata: <u>1</u> (B) Percent of Dominant Species That Are OBL, FACW, or FAC: <u>0</u> (A/B) |
| 2. _____ | _____ | _____ | _____ | |
| 3. _____ | _____ | _____ | _____ | |
| 4. _____ | _____ | _____ | _____ | |
| = Total Cover | | | | Prevalence Index worksheet: Total % Cover of: Multiply by: OBL species _____ x1 = _____ FACW species _____ x2 = _____ FAC species _____ x3 = _____ FACU species _____ x4 = _____ UPL species _____ x5 = _____ Column Totals: _____ (A) _____ (B) Prevalence Index = B/A = _____ |
| <u>Sapling/Shrub Stratum</u> (Plot Size: _____) | | | | |
| 1. _____ | _____ | _____ | _____ | |
| 2. _____ | _____ | _____ | _____ | |
| 3. _____ | _____ | _____ | _____ | |
| 4. _____ | _____ | _____ | _____ | |
| 5. _____ | _____ | _____ | _____ | |
| = Total Cover | | | | |
| <u>Herb Stratum</u> (Plot Size: <u>5'</u>) | | | | |
| 1. <u>Bromus inermis</u> | <u>90</u> | <u>yes</u> | <u>FACU</u> | |
| 2. <u>Artemisia absinthium</u> | <u>10</u> | <u>no</u> | <u>UPL</u> | |
| 3. _____ | _____ | _____ | _____ | |
| 4. _____ | _____ | _____ | _____ | |
| 5. _____ | _____ | _____ | _____ | |
| 6. _____ | _____ | _____ | _____ | |
| 7. _____ | _____ | _____ | _____ | |
| 8. _____ | _____ | _____ | _____ | |
| 9. _____ | _____ | _____ | _____ | |
| 10. _____ | _____ | _____ | _____ | |
| <u>100</u> | | | = Total Cover | |
| <u>Woody Vine Stratum</u> (Plot Size: _____) | | | | |
| 1. _____ | _____ | _____ | _____ | |
| 2. _____ | _____ | _____ | _____ | |
| _____ | | | = Total Cover | |
| % Bare Ground in Herb Stratum <u>0</u> | | | | |
| Hydrophytic Vegetation Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> | | | | |
| Remarks: | | | | |

SOIL

Sampling Point: blpu11

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

| Depth (inches) | Matrix | | Redox Features | | | | Texture | Remarks |
|-------------------|---------------|-------|----------------|-------|-------------------|------------------|---------|---------|
| | Color (moist) | % | Color (Moist) | % | Type ¹ | Loc ² | | |
| 0-6 | 10YR 3/1 | 100 | _____ | _____ | _____ | _____ | sicl | _____ |
| 6-10 | 10YR 3/2 | 100 | _____ | _____ | _____ | _____ | sicl | _____ |
| 10-18+ | 10YR 3/3 | 100 | _____ | _____ | _____ | _____ | sicl | _____ |
| _____ | _____ | _____ | _____ | _____ | _____ | _____ | _____ | _____ |
| _____ | _____ | _____ | _____ | _____ | _____ | _____ | _____ | _____ |
| _____ | _____ | _____ | _____ | _____ | _____ | _____ | _____ | _____ |
| _____ | _____ | _____ | _____ | _____ | _____ | _____ | _____ | _____ |

¹Type: C= Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. ²Location: PL=Pore Lining, M=Matrix

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- Histosol (A1)
- Histic Epipedon (A2)
- Black Histic (A3)
- Hydrogen Sulfide (A4)
- Stratified Layers (A5) (LRR F)
- 1 cm Muck (A9) (LRR F, G, H)
- Depleted Below Dark Surface (A11)
- Thick Dark Surface (A12)
- Sandy Mucky Mineral (S1)
- 2.5 CM Mucky Peat or Peat (S2)(LRR G, H)
- 5 cm Mucky Peat or Peat (S3) (LRR F)
- Sandy Gleyed Matrix (S4)
- Sandy Redox (S5)
- Stripped Matrix (S6)
- Loamy Mucky Mineral (F1)
- Loamy Gleyed Matrix (F2)
- Depleted Matrix (F3)
- Redox Dark Surface (F6)
- Depleted Dark Surface (F7)
- Redox Depressions (F8)
- High Plains Depressions (F16)

Indicators for Problematic Hydric Soils³:

- 1 cm Muck (A9) (LRR I, J)
- Coast Prairie Redox (A16) (LRR F, G, H)
- Dark Surface (S7) (LRR G)
- High Plains Depressions (F16)
- (LRR H outside of MLRA 72 & 73)
- Reduced Vertic (F18)
- Red Parent Material (TF2)
- Very Shallow Dark Surface (TF 12)
- Other (Explain in Remarks)

³Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type: _____
Depth (Inches): _____

Hydric Soils Present? Yes No

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

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

- Surface Water (A1)
- High Water Table (A2)
- Saturation (A3)
- Water Marks (B1)
- Sediment Deposits (B2)
- Drift Deposits (B3)
- Algal Mat or Crust (B4)
- Iron Deposits (B5)
- Inundation Visible on Aerial Imagery (B7)
- Water-Stained Leaves (B9)
- Salt Crust (B11)
- Aquatic Invertebrates (B13)
- Hydrogen Sulfide Odor (C1)
- Dry Season Water Table (C2)
- Oxidized Rhizospheres along Living Roots (C3) (where not tilled)
- Presence of Reduced Iron (C4)
- Thin Muck Surface (C7)
- Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- Surface Soil Cracks (B6)
- Sparsely Vegetated Concave Surface (B8)
- Drainage Patterns (B10)
- Oxidized Rhizospheres along Living Roots (C3) (where tilled)
- Crayfish Burrows (C8)
- Saturation Visible on Aerial Imagery (C9)
- Geomorphic Position (D2)
- FAC-Neutral Test (D5)
- Frost-Heave Hummocks (D7) (LRR F)

Field Observations:

Surface Water Present? Yes No Depth (inches): _____
 Water Table Present? Yes No Depth (inches): _____
 Saturation Present? (includes capillary fringe) Yes No Depth (inches): _____

Wetland Hydrology Present? Yes No

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

WETLAND DETERMINATION DATA FORM – Great Plains Region

Project Site: BLLP 2011 City/County: Ward Sampling Date: 5/19/2011
 Applicant/Owner: McCain State: ND Sampling Point: bllpw12
 Investigator(s): GWM / CET Section, Township, Range: 19. 156. 86
 Landform (hillslope, terrace, etc.): depression Local relief (concave, convex, none): concave Slope (%): 1
 Subregion (LRR): E Lat: 48.323211 N Long: -101.778902 W Datum: NAD 83
 Soil Map Unit Name: WIA Williams loam, level NWI classification: PEMC

Are climatic / hydrologic conditions on the site typical for this time of year? Yes No (If no, explain in Remarks.)
 Are Vegetation , Soil , or Hydrology , significantly disturbed? Are "Normal Circumstances" present? Yes No
 Are Vegetation , Soil , or Hydrology , naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

| | | | |
|--|---|-----------------------------|--|
| Hydrophytic Vegetation Present? | Yes <input checked="" type="checkbox"/> | No <input type="checkbox"/> | Is the Sampling Area within a Wetland? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> |
| Hydric Soil Present? | Yes <input checked="" type="checkbox"/> | No <input type="checkbox"/> | |
| Wetland Hydrology Present? | Yes <input checked="" type="checkbox"/> | No <input type="checkbox"/> | |
| Remarks: Depression wetland at edge of cultivated field. | | | |

VEGETATION – Use scientific names of plants

| Tree Stratum (Plot Size: _____) | Absolute % Cover | Dominant Species? | Indicator Status | Dominance Test Worksheet: |
|--|------------------|-------------------|------------------|--|
| 1. _____ | _____ | _____ | _____ | Number of Dominant Species That Are OBL, FACW, or FAC: _____ (A) Total Number of Dominant Species Across All Strata: _____ (B) Percent of Dominant Species That Are OBL, FACW, or FAC: _____ (A/B) |
| 2. _____ | _____ | _____ | _____ | |
| 3. _____ | _____ | _____ | _____ | |
| 4. _____ | _____ | _____ | _____ | |
| = Total Cover | | | | Prevalence Index worksheet: Total % Cover of: Multiply by: OBL species _____ x1 = _____ FACW species _____ x2 = _____ FAC species _____ x3 = _____ FACU species _____ x4 = _____ UPL species _____ x5 = _____ Column Totals: _____ (A) _____ (B) Prevalence Index = B/A = _____ |
| Sapling/Shrub Stratum (Plot Size: _____) | | | | |
| 1. _____ | _____ | _____ | _____ | |
| 2. _____ | _____ | _____ | _____ | |
| 3. _____ | _____ | _____ | _____ | |
| 4. _____ | _____ | _____ | _____ | |
| 5. _____ | _____ | _____ | _____ | |
| = Total Cover | | | | |
| Herb Stratum (Plot Size: 5') | | | | |
| 1. <u>Spartina pectinata</u> | <u>100</u> | <u>yes</u> | <u>FACW</u> | |
| 2. _____ | _____ | _____ | _____ | |
| 3. _____ | _____ | _____ | _____ | |
| 4. _____ | _____ | _____ | _____ | |
| 5. _____ | _____ | _____ | _____ | |
| 6. _____ | _____ | _____ | _____ | |
| 7. _____ | _____ | _____ | _____ | |
| 8. _____ | _____ | _____ | _____ | |
| 9. _____ | _____ | _____ | _____ | |
| 10. _____ | _____ | _____ | _____ | |
| 100 | | | = Total Cover | |
| Woody Vine Stratum (Plot Size: _____) | | | | |
| 1. _____ | _____ | _____ | _____ | |
| 2. _____ | _____ | _____ | _____ | |
| _____ | | | = Total Cover | |
| % Bare Ground in Herb Stratum <u>0</u> | | | | |
| Hydrophytic Vegetation Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> | | | | |
| Remarks: | | | | |

SOIL

Sampling Point: blpw12

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

| Depth (inches) | Matrix | | Redox Features | | | | Texture | Remarks |
|-------------------|---------------|-------|----------------|-------|-------------------|------------------|---------|---------|
| | Color (moist) | % | Color (Moist) | % | Type ¹ | Loc ² | | |
| 0-8 | 10YR 2/1 | 100 | | | | | sicl | |
| 8-16+ | 2.5Y 4/2 | 80 | 7.5YR 5/6 | 20 | c | m | sicl | |
| _____ | _____ | _____ | _____ | _____ | _____ | _____ | _____ | _____ |
| _____ | _____ | _____ | _____ | _____ | _____ | _____ | _____ | _____ |
| _____ | _____ | _____ | _____ | _____ | _____ | _____ | _____ | _____ |
| _____ | _____ | _____ | _____ | _____ | _____ | _____ | _____ | _____ |

¹Type: C= Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. ²Location: PL=Pore Lining, M=Matrix

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- Histosol (A1)
- Histic Epipedon (A2)
- Black Histic (A3)
- Hydrogen Sulfide (A4)
- Stratified Layers (A5) **(LRR F)**
- 1 cm Muck (A9) **(LRR F, G, H)**
- Depleted Below Dark Surface (A11)
- Thick Dark Surface (A12)
- Sandy Mucky Mineral (S1)
- 2.5 CM Mucky Peat or Peat (S2) **(LRR G, H)**
- 5 cm Mucky Peat or Peat (S3) **(LRR F)**
- Sandy Gleyed Matrix (S4)
- Sandy Redox (S5)
- Stripped Matrix (S6)
- Loamy Mucky Mineral (F1)
- Loamy Gleyed Matrix (F2)
- Depleted Matrix (F3)
- Redox Dark Surface (F6)
- Depleted Dark Surface (F7)
- Redox Depressions (F8)
- High Plains Depressions (F16) **(MLRA 72 & 73 of LRR H)**

Indicators for Problematic Hydric Soils³:

- 1 cm Muck (A9) **(LRR I, J)**
- Coast Prairie Redox (A16) **(LRR F, G, H)**
- Dark Surface (S7) **(LRR G)**
- High Plains Depressions (F16) **(LRR H outside of MLRA 72 & 73)**
- Reduced Vertic (F18)
- Red Parent Material (TF2)
- Very Shallow Dark Surface (TF 12)
- Other (Explain in Remarks)

³Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type: _____
Depth (Inches): _____

Hydric Soils Present? Yes No

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

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

Secondary Indicators (2 or more required)

- | | | |
|---|--|--|
| <input checked="" type="checkbox"/> Surface Water (A1) | <input type="checkbox"/> Salt Crust (B11) | <input type="checkbox"/> Surface Soil Cracks (B6) |
| <input checked="" type="checkbox"/> High Water Table (A2) | <input type="checkbox"/> Aquatic Invertebrates (B13) | <input type="checkbox"/> Sparsely Vegetated Concave Surface (B8) |
| <input checked="" type="checkbox"/> Saturation (A3) | <input type="checkbox"/> Hydrogen Sulfide Odor (C1) | <input type="checkbox"/> Drainage Patterns (B10) |
| <input type="checkbox"/> Water Marks (B1) | <input type="checkbox"/> Dry Season Water Table (C2) | <input type="checkbox"/> Oxidized Rhizospheres along Living Roots (C3) (where tilled) |
| <input type="checkbox"/> Sediment Deposits (B2) | <input type="checkbox"/> Oxidized Rhizospheres along Living Roots (C3) (where not tilled) | <input type="checkbox"/> Crayfish Burrows (C8) |
| <input type="checkbox"/> Drift Deposits (B3) | <input type="checkbox"/> Presence of Reduced Iron (C4) | <input checked="" type="checkbox"/> Saturation Visible on Aerial Imagery (C9) |
| <input type="checkbox"/> Algal Mat or Crust (B4) | <input type="checkbox"/> Thin Muck Surface (C7) | <input checked="" type="checkbox"/> Geomorphic Position (D2) |
| <input type="checkbox"/> Iron Deposits (B5) | <input type="checkbox"/> Other (Explain in Remarks) | <input type="checkbox"/> FAC-Neutral Test (D5) |
| <input checked="" type="checkbox"/> Inundation Visible on Aerial Imagery (B7) | | <input type="checkbox"/> Frost-Heave Hummocks (D7) (LRR F) |
| <input type="checkbox"/> Water-Stained Leaves (B9) | | |

Field Observations:

Surface Water Present? Yes No Depth (inches): 18
 Water Table Present? Yes No Depth (inches): 3
 Saturation Present? (includes capillary fringe) Yes No Depth (inches): 0

Wetland Hydrology Present? Yes No

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

WETLAND DETERMINATION DATA FORM – Great Plains Region

Project Site: BLLP 2011 City/County: Ward Sampling Date: 5/19/2011
 Applicant/Owner: McCain State: ND Sampling Point: bllpw13
 Investigator(s): GWM / CET Section, Township, Range: 24, 156, 87
 Landform (hillslope, terrace, etc.): depression Local relief (concave, convex, none): concave Slope (%): 1
 Subregion (LRR): E Lat: 48.323512 N Long: -101.801821 W Datum: NAD 83
 Soil Map Unit Name: WIC Williams loam, undulating NWI classification: none

Are climatic / hydrologic conditions on the site typical for this time of year? Yes No (If no, explain in Remarks.)
 Are Vegetation , Soil , or Hydrology , significantly disturbed? Are "Normal Circumstances" present? Yes No
 Are Vegetation , Soil , or Hydrology , naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

| | | | |
|--|---|-----------------------------|--|
| Hydrophytic Vegetation Present? | Yes <input checked="" type="checkbox"/> | No <input type="checkbox"/> | Is the Sampling Area within a Wetland? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> |
| Hydric Soil Present? | Yes <input checked="" type="checkbox"/> | No <input type="checkbox"/> | |
| Wetland Hydrology Present? | Yes <input checked="" type="checkbox"/> | No <input type="checkbox"/> | |
| Remarks: Depression wetland in cultivated field. | | | |

VEGETATION – Use scientific names of plants

| Tree Stratum (Plot Size: _____) | Absolute % Cover | Dominant Species? | Indicator Status | Dominance Test Worksheet: |
|--|------------------|-------------------|------------------|--|
| 1. _____ | _____ | _____ | _____ | Number of Dominant Species That Are OBL, FACW, or FAC: <u>2</u> (A) Total Number of Dominant Species Across All Strata: <u>2</u> (B) Percent of Dominant Species That Are OBL, FACW, or FAC: <u>100</u> (A/B) |
| 2. _____ | _____ | _____ | _____ | |
| 3. _____ | _____ | _____ | _____ | |
| 4. _____ | _____ | _____ | _____ | |
| = Total Cover | | | | |
| Sapling/Shrub Stratum (Plot Size: _____) | | | | Prevalence Index worksheet: Total % Cover of: Multiply by: OBL species _____ x1 = _____ FACW species _____ x2 = _____ FAC species _____ x3 = _____ FACU species _____ x4 = _____ UPL species _____ x5 = _____ Column Totals: _____ (A) _____ (B) Prevalence Index = B/A = _____ |
| 1. _____ | _____ | _____ | _____ | |
| 2. _____ | _____ | _____ | _____ | |
| 3. _____ | _____ | _____ | _____ | |
| 4. _____ | _____ | _____ | _____ | |
| = Total Cover | | | | |
| Herb Stratum (Plot Size: 5') | | | | |
| 1. <u>Artemisia biennis</u> | <u>20</u> | <u>yes</u> | <u>FAC</u> | |
| 2. <u>Rumex crispus</u> | <u>10</u> | <u>yes</u> | <u>FACW</u> | |
| 3. _____ | _____ | _____ | _____ | |
| 4. _____ | _____ | _____ | _____ | |
| 5. _____ | _____ | _____ | _____ | |
| 6. _____ | _____ | _____ | _____ | |
| 7. _____ | _____ | _____ | _____ | |
| 8. _____ | _____ | _____ | _____ | |
| 9. _____ | _____ | _____ | _____ | |
| 10. _____ | _____ | _____ | _____ | |
| <u>30</u> | | | = Total Cover | |
| Woody Vine Stratum (Plot Size: _____) | | | | |
| 1. _____ | _____ | _____ | _____ | |
| 2. _____ | _____ | _____ | _____ | |
| _____ | | | = Total Cover | |
| % Bare Ground in Herb Stratum <u>70</u> | | | | |
| Hydrophytic Vegetation Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> | | | | |
| Remarks: | | | | |

SOIL

Sampling Point: blpw13

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

| Depth (inches) | Matrix | | Redox Features | | | | Texture | Remarks |
|-------------------|---------------|-----|----------------|----|-------------------|------------------|---------|---------|
| | Color (moist) | % | Color (Moist) | % | Type ¹ | Loc ² | | |
| 0-5 | 10YR 2/1 | 100 | | | | | sicl | |
| 5-10 | 10YR 3/1 | 95 | 7.5YR 5/6 | 5 | c | m | sicl | |
| 10-16+ | 2.5Y 4/2 | 80 | 7.5YR 5/6 | 10 | c | m | sicl | |
| — | — | — | — | — | — | — | — | — |
| — | — | — | — | — | — | — | — | — |
| — | — | — | — | — | — | — | — | — |
| — | — | — | — | — | — | — | — | — |

¹Type: C= Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. ²Location: PL=Pore Lining, M=Matrix

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- Histosol (A1)
- Histic Epipedon (A2)
- Black Histic (A3)
- Hydrogen Sulfide (A4)
- Stratified Layers (A5) (LRR F)
- 1 cm Muck (A9) (LRR F, G, H)
- Depleted Below Dark Surface (A11)
- Thick Dark Surface (A12)
- Sandy Mucky Mineral (S1)
- 2.5 CM Mucky Peat or Peat (S2)(LRR G, H)
- 5 cm Mucky Peat or Peat (S3) (LRR F)
- Sandy Gleyed Matrix (S4)
- Sandy Redox (S5)
- Stripped Matrix (S6)
- Loamy Mucky Mineral (F1)
- Loamy Gleyed Matrix (F2)
- Depleted Matrix (F3)
- Redox Dark Surface (F6)
- Depleted Dark Surface (F7)
- Redox Depressions (F8)
- High Plains Depressions (F16)

Indicators for Problematic Hydric Soils³:

- 1 cm Muck (A9) (LRR I, J)
- Coast Prairie Redox (A16) (LRR F, G, H)
- Dark Surface (S7) (LRR G)
- High Plains Depressions (F16)
- (LRR H outside of MLRA 72 & 73)**
- Reduced Vertic (F18)
- Red Parent Material (TF2)
- Very Shallow Dark Surface (TF 12)
- Other (Explain in Remarks)

³Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type: _____

Depth (Inches): _____

Hydric Soils Present? Yes No

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

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

Secondary Indicators (2 or more required)

- | | | |
|--|---|---|
| <ul style="list-style-type: none"> <input checked="" type="checkbox"/> Surface Water (A1) <input checked="" type="checkbox"/> High Water Table (A2) <input checked="" type="checkbox"/> Saturation (A3) <input type="checkbox"/> Water Marks (B1) <input type="checkbox"/> Sediment Deposits (B2) <input type="checkbox"/> Drift Deposits (B3) <input type="checkbox"/> Algal Mat or Crust (B4) <input type="checkbox"/> Iron Deposits (B5) <input checked="" type="checkbox"/> Inundation Visible on Aerial Imagery (B7) <input type="checkbox"/> Water-Stained Leaves (B9) | <ul style="list-style-type: none"> <input type="checkbox"/> Salt Crust (B11) <input type="checkbox"/> Aquatic Invertebrates (B13) <input type="checkbox"/> Hydrogen Sulfide Odor (C1) <input type="checkbox"/> Dry Season Water Table (C2) <input type="checkbox"/> Oxidized Rhizospheres along Living Roots (C3) (where not tilled) <input type="checkbox"/> Presence of Reduced Iron (C4) <input type="checkbox"/> Thin Muck Surface (C7) <input type="checkbox"/> Other (Explain in Remarks) | <ul style="list-style-type: none"> <input type="checkbox"/> Surface Soil Cracks (B6) <input type="checkbox"/> Sparsely Vegetated Concave Surface (B8) <input type="checkbox"/> Drainage Patterns (B10) <input type="checkbox"/> Oxidized Rhizospheres along Living Roots (C3) (where tilled) <input type="checkbox"/> Crayfish Burrows (C8) <input checked="" type="checkbox"/> Saturation Visible on Aerial Imagery (C9) <input checked="" type="checkbox"/> Geomorphic Position (D2) <input type="checkbox"/> FAC-Neutral Test (D5) <input type="checkbox"/> Frost-Heave Hummocks (D7) (LRR F) |
|--|---|---|

Field Observations:

Surface Water Present? Yes No Depth (inches): 4
 Water Table Present? Yes No Depth (inches): 0
 Saturation Present? (includes capillary fringe) Yes No Depth (inches): 0

Wetland Hydrology Present? Yes No

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

water depth approximately 12" in center of wetland

WETLAND DETERMINATION DATA FORM – Great Plains Region

Project Site: BLLP 2011 City/County: Ward Sampling Date: 5/19/2011
 Applicant/Owner: McGain State: ND Sampling Point: bllpu13
 Investigator(s): GWM / CET Section, Township, Range: 24, 156, 87
 Landform (hillslope, terrace, etc.): toeslope Local relief (concave, convex, none): concave Slope (%): 1
 Subregion (LRR): E Lat: 48.323512 N Long: -101.801821 W Datum: NAD 83
 Soil Map Unit Name: WIA Williams loam, level NWI classification: none

Are climatic / hydrologic conditions on the site typical for this time of year? Yes No (If no, explain in Remarks.)
 Are Vegetation , Soil , or Hydrology , significantly disturbed? Are "Normal Circumstances" present? Yes No
 Are Vegetation , Soil , or Hydrology , naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

| | | | |
|--|------------------------------|--|--|
| Hydrophytic Vegetation Present? | Yes <input type="checkbox"/> | No <input checked="" type="checkbox"/> | Is the Sampling Area within a Wetland? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> |
| Hydric Soil Present? | Yes <input type="checkbox"/> | No <input checked="" type="checkbox"/> | |
| Wetland Hydrology Present? | Yes <input type="checkbox"/> | No <input checked="" type="checkbox"/> | |
| Remarks: upland comparison point in cultivated field | | | |

VEGETATION – Use scientific names of plants

| Tree Stratum (Plot Size: _____) | Absolute % Cover | Dominant Species? | Indicator Status | Dominance Test Worksheet: |
|--|------------------|-------------------|------------------|--|
| 1. _____ | _____ | _____ | _____ | Number of Dominant Species That Are OBL, FACW, or FAC: _____ (A) Total Number of Dominant Species Across All Strata: _____ (B) Percent of Dominant Species That Are OBL, FACW, or FAC: _____ (A/B) |
| 2. _____ | _____ | _____ | _____ | |
| 3. _____ | _____ | _____ | _____ | |
| 4. _____ | _____ | _____ | _____ | |
| = Total Cover | | | | Prevalence Index worksheet: Total % Cover of: Multiply by: OBL species _____ x1 = _____ FACW species _____ x2 = _____ FAC species _____ x3 = _____ FACU species _____ x4 = _____ UPL species _____ x5 = _____ Column Totals: _____ (A) _____ (B) Prevalence Index = B/A = _____ |
| Sapling/Shrub Stratum (Plot Size: _____) | | | | |
| 1. _____ | _____ | _____ | _____ | |
| 2. _____ | _____ | _____ | _____ | |
| 3. _____ | _____ | _____ | _____ | |
| 4. _____ | _____ | _____ | _____ | |
| 5. _____ | _____ | _____ | _____ | |
| = Total Cover | | | | |
| Herb Stratum (Plot Size: 5') | | | | |
| 1. _____ | _____ | _____ | _____ | |
| 2. _____ | _____ | _____ | _____ | |
| 3. _____ | _____ | _____ | _____ | |
| 4. _____ | _____ | _____ | _____ | |
| 5. _____ | _____ | _____ | _____ | |
| 6. _____ | _____ | _____ | _____ | |
| 7. _____ | _____ | _____ | _____ | |
| 8. _____ | _____ | _____ | _____ | |
| 9. _____ | _____ | _____ | _____ | |
| 10. _____ | _____ | _____ | _____ | |
| 0 = Total Cover | | | | |
| Woody Vine Stratum (Plot Size: _____) | | | | |
| 1. _____ | _____ | _____ | _____ | |
| 2. _____ | _____ | _____ | _____ | |
| = Total Cover | | | | |
| % Bare Ground in Herb Stratum 100 | | | | |
| Hydrophytic Vegetation Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> | | | | |
| Remarks: no vegetation at observation point | | | | |

SOIL

Sampling Point: blpu13

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

| Depth (inches) | Matrix | | Redox Features | | | | Texture | Remarks |
|-------------------|---------------|-------|----------------|-------|-------------------|------------------|---------|---------|
| | Color (moist) | % | Color (Moist) | % | Type ¹ | Loc ² | | |
| 0-13 | 10YR 3/1 | 100 | _____ | _____ | _____ | _____ | sicl | _____ |
| 13-18+ | 10YR 3/2 | 100 | _____ | _____ | _____ | _____ | sicl | _____ |
| _____ | _____ | _____ | _____ | _____ | _____ | _____ | _____ | _____ |
| _____ | _____ | _____ | _____ | _____ | _____ | _____ | _____ | _____ |
| _____ | _____ | _____ | _____ | _____ | _____ | _____ | _____ | _____ |
| _____ | _____ | _____ | _____ | _____ | _____ | _____ | _____ | _____ |
| _____ | _____ | _____ | _____ | _____ | _____ | _____ | _____ | _____ |

¹Type: C= Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. ²Location: PL=Pore Lining, M=Matrix

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- Histosol (A1)
- Histic Epipedon (A2)
- Black Histic (A3)
- Hydrogen Sulfide (A4)
- Stratified Layers (A5) **(LRR F)**
- 1 cm Muck (A9) **(LRR F, G, H)**
- Depleted Below Dark Surface (A11)
- Thick Dark Surface (A12)
- Sandy Mucky Mineral (S1)
- 2.5 CM Mucky Peat or Peat (S2) **(LRR G, H)**
- 5 cm Mucky Peat or Peat (S3) **(LRR F)**
- Sandy Gleyed Matrix (S4)
- Sandy Redox (S5)
- Stripped Matrix (S6)
- Loamy Mucky Mineral (F1)
- Loamy Gleyed Matrix (F2)
- Depleted Matrix (F3)
- Redox Dark Surface (F6)
- Depleted Dark Surface (F7)
- Redox Depressions (F8)
- High Plains Depressions (F16) **(MLRA 72 & 73 of LRR H)**

Indicators for Problematic Hydric Soils³:

- 1 cm Muck (A9) **(LRR I, J)**
- Coast Prairie Redox (A16) **(LRR F, G, H)**
- Dark Surface (S7) **(LRR G)**
- High Plains Depressions (F16) **(LRR H outside of MLRA 72 & 73)**
- Reduced Vertic (F18)
- Red Parent Material (TF2)
- Very Shallow Dark Surface (TF 12)
- Other (Explain in Remarks)

³Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type: _____
Depth (Inches): _____

Hydric Soils Present? Yes No

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

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

- Surface Water (A1)
- High Water Table (A2)
- Saturation (A3)
- Water Marks (B1)
- Sediment Deposits (B2)
- Drift Deposits (B3)
- Algal Mat or Crust (B4)
- Iron Deposits (B5)
- Inundation Visible on Aerial Imagery (B7)
- Water-Stained Leaves (B9)
- Salt Crust (B11)
- Aquatic Invertebrates (B13)
- Hydrogen Sulfide Odor (C1)
- Dry Season Water Table (C2)
- Oxidized Rhizospheres along Living Roots (C3) **(where not tilled)**
- Presence of Reduced Iron (C4)
- Thin Muck Surface (C7)
- Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- Surface Soil Cracks (B6)
- Sparsely Vegetated Concave Surface (B8)
- Drainage Patterns (B10)
- Oxidized Rhizospheres along Living Roots (C3) **(where tilled)**
- Crayfish Burrows (C8)
- Saturation Visible on Aerial Imagery (C9)
- Geomorphic Position (D2)
- FAC-Neutral Test (D5)
- Frost-Heave Hummocks (D7) **(LRR F)**

Field Observations:

Surface Water Present? Yes No Depth (inches): _____
 Water Table Present? Yes No Depth (inches): _____
 Saturation Present? (includes capillary fringe) Yes No Depth (inches): _____

Wetland Hydrology Present? Yes No

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

Appendix C

Representative Photographs



Photograph 1. Photograph of Wetland 1 located in the BLLP additional survey area. Wetland 1 was cultivated in 2010. The photograph was taken facing south. The railroad tracks are visible in back of the wetland.



Photograph 2. Photograph of Wetland 2 located in the BLLP additional survey area. The wetland is a shallow depression and was cultivated in 2010. The photograph was taken facing north towards US Highway 2.



Photograph 3. Photograph of Wetland 4 located in the BLLP additional survey area. The wetland edges were cultivated in 2010. The photograph was taken facing northwest across the wetland.



Photograph 4. Photograph of Wetland 6 located at the edge of a cultivated field in Section 20 and the railroad right-of-way. The depression wetland is vegetated with hydrophytic vegetation. The photograph was taken facing southeast.



Photograph 5. Photograph of Wetland 8 located in the BLLP additional survey area in Section 19. The wetland is flooded beyond its hydric boundary. The photograph was taken facing southwest.



Photograph 6. Photograph of Wetland 10 located in Section 19 in the BLLP additional survey area. The shallow depression wetland was cultivated in 2010. The photograph was taken facing southwest.