



METRIC 18 SCOUR AND NDDOT POAs

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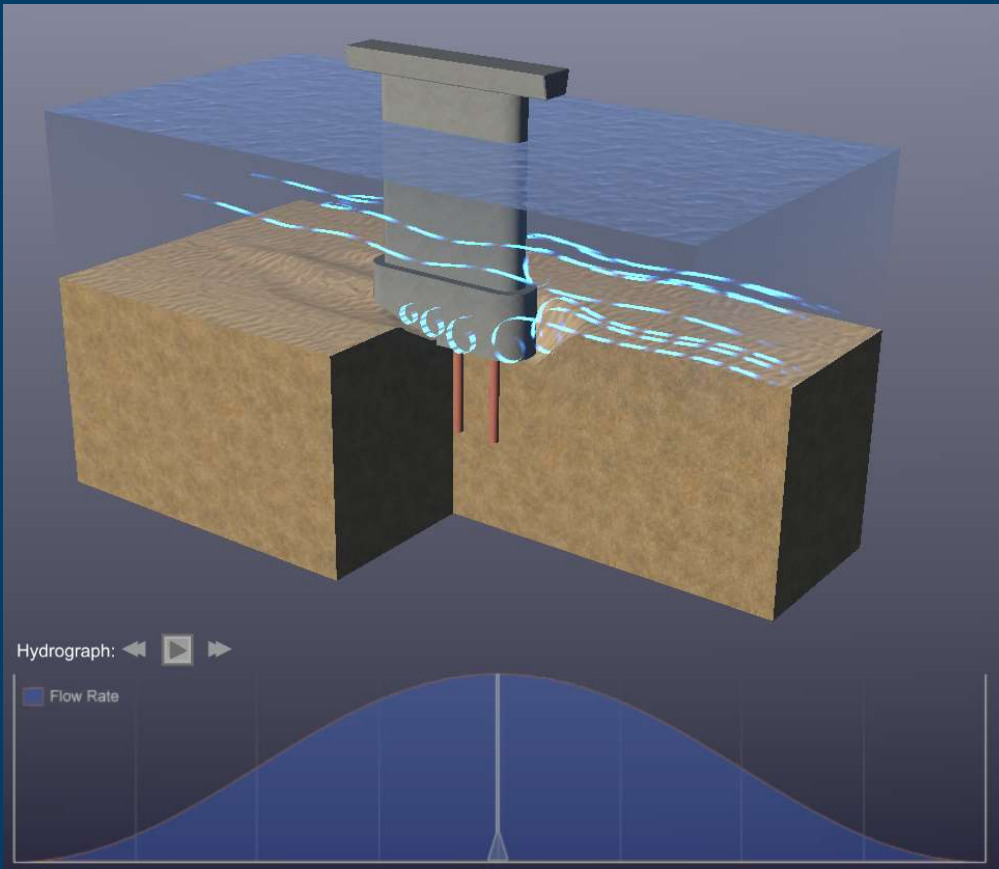


LEARNING OUTCOMES

1. Define scour and explain how it occurs and signs of it in the field
2. Explain why POA implementation is necessary for Metric 18 compliance and FHWA requirements
3. Understand the three Plan of Action categories in North Dakota for locally owned bridges
4. Explain the requirements of the Bridge Owners to ensure compliance with Metric 18

SCOUR

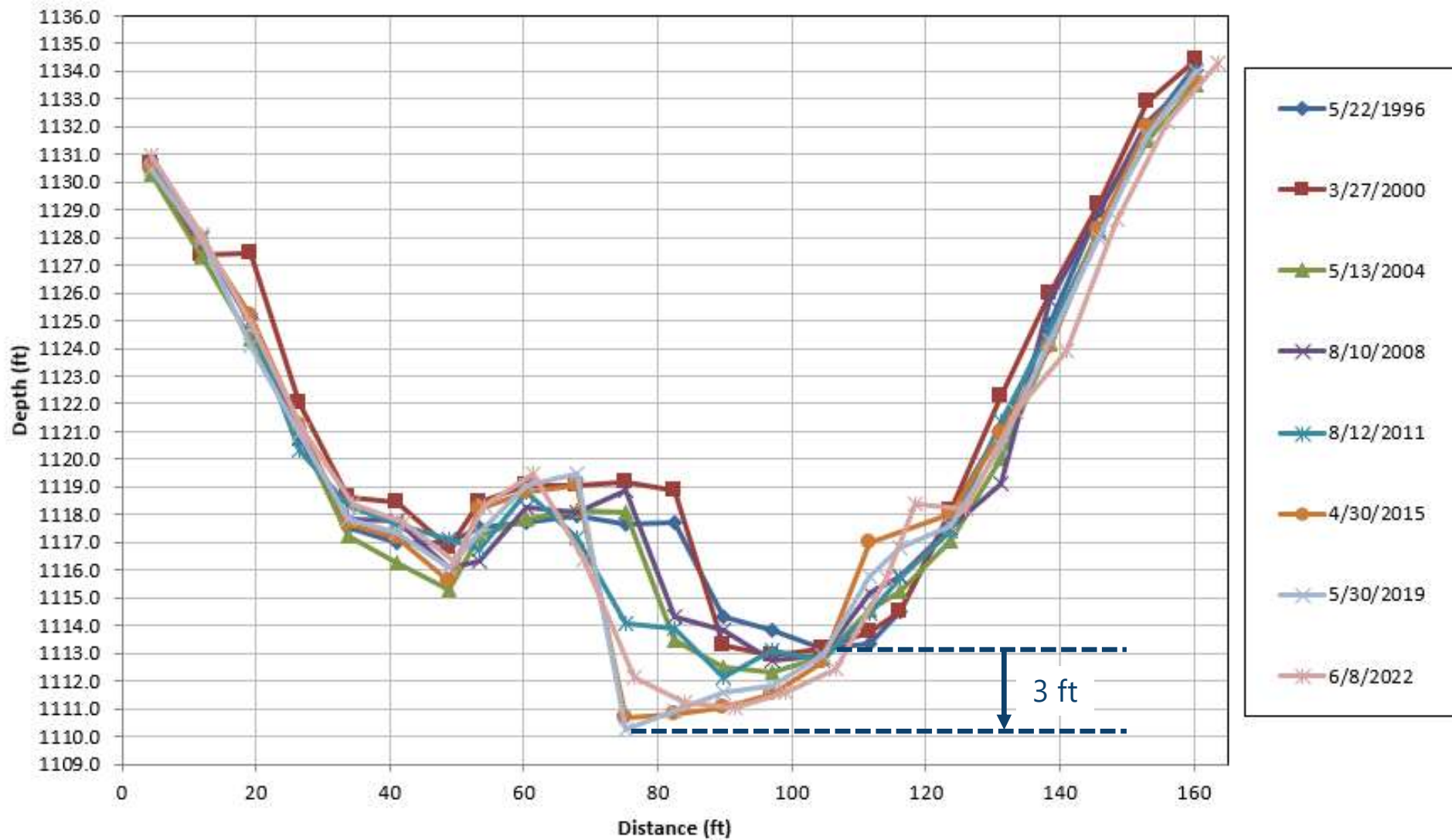
- Erosion of stream bed or bank material due to flowing water
- Is time dependent
- Types
 - Long Term Degradation
 - Contraction Scour
 - Local Scour
 - Lateral Migration





LONG-TERM DEGRADATION

- Reach wide
- Results from changes to flow, sediment supply, or base level elevation
- Things to look for:
 - Changes to cross sections
 - Exposed utilities
 - Headcuts



CONTRACTION SCOUR



- Local Reach Scale
- Results from constriction in flow area forced through bridge opening
- Things to look for:
 - Pressure flow
 - Significant overbank flow
 - Downstream deposition

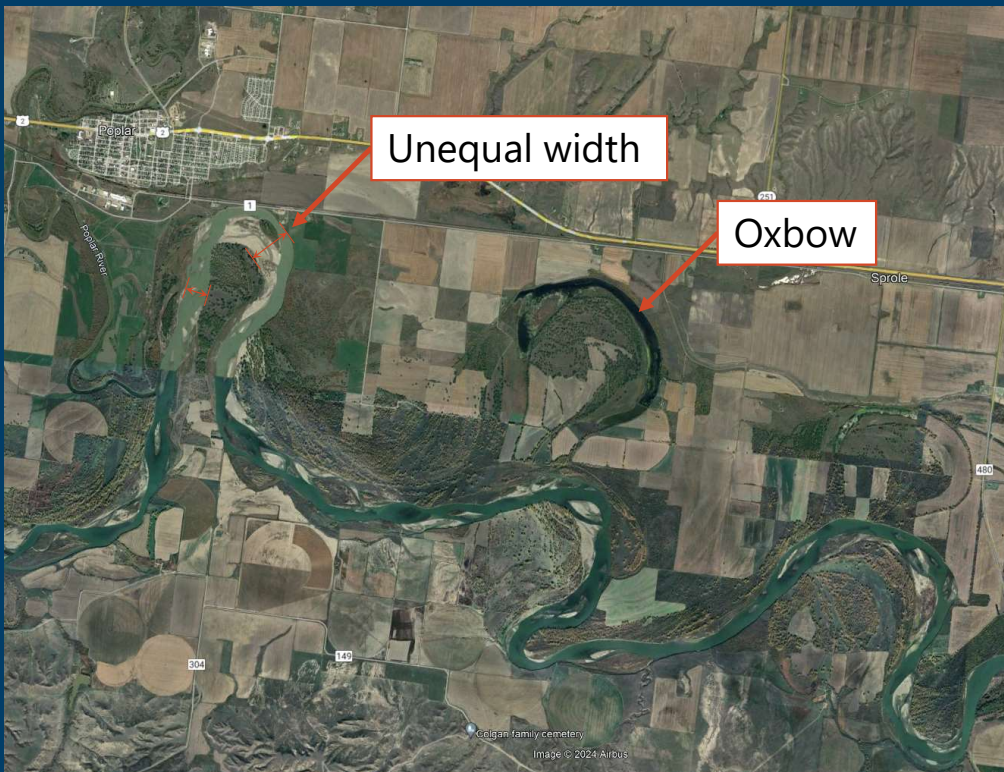
LOCAL SCOUR – PIER AND ABUTMENTS

- Local scale
- Results from an obstruction to flow
- Things to look for:
 - Downstream deposition
 - Debris
 - Angle of attack

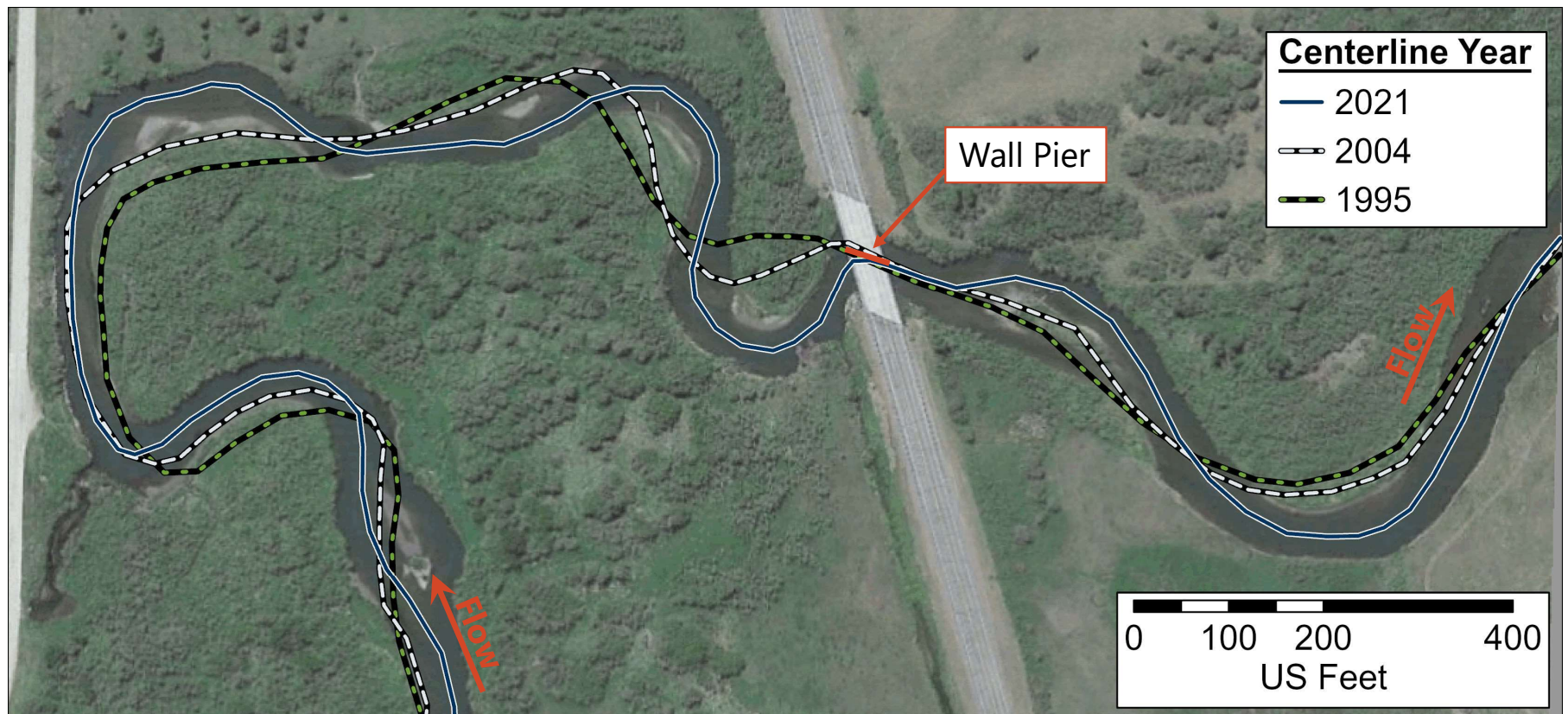


LATERAL MIGRATION

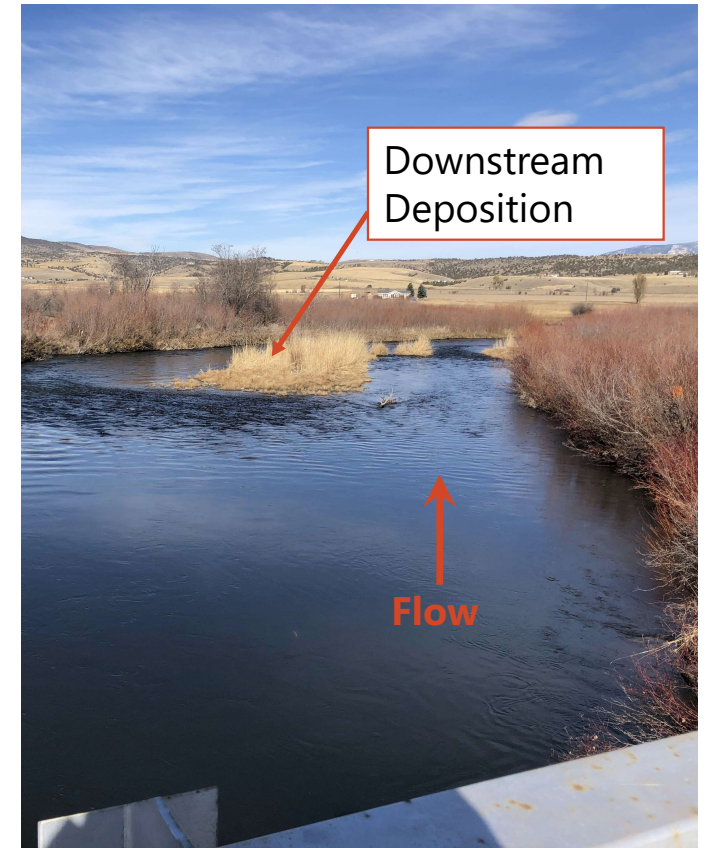
- Rivers are dynamic!
- Things to look for:
 - Bank erosion
 - Large woody material
 - Changes to cross sections
 - From aerial imagery:
 - Unequal width
 - Oxbows



PIER SCOUR INFLUENCED BY LATERAL MIGRATION EXAMPLE



PIER SCOUR INFLUENCED BY LATERAL MIGRATION EXAMPLE



unrestricted legal loads or State routine permit loads exceed that allowed under the operating rating, legal load rating, or permit load analysis.

(2) Develop and document procedures for timely load posting based upon the load capacity and characteristics such as annual average daily traffic, annual average daily truck traffic, and loading conditions. Posting shall be made as soon as possible but not later than 30 days after a load rating determines a need for such posting. Implement load posting in accordance with these procedures.

(3) Missing or illegible posting signs shall be corrected as soon as possible but not later than 30 days after inspection or other notification determines a need.

(m) *Closed bridges.* Develop and document criteria for closing a bridge which considers condition and load carrying capacity for each legal vehicle. Bridges that meet the criteria must be closed immediately. Bridges must be closed when the gross live load capacity is less than 3 tons.

(n) *Bridge files.* Prepare and maintain bridge files in accordance with Section 2.2, AASHTO Manual (incorporated by reference, see § 650.317).

(o) *Scour.* (1) Perform a scour appraisal for all bridges over water, and document the process and results in the bridge file. Re-appraise when necessary to reflect changing scour conditions. Scour appraisal procedures should be consistent with the Hydraulic Engineering Circular No. 18, "Guidance for Scour Assessment."

(2) For bridges which are determined to be scour critical or have unknown foundations, prepare and document a scour POA for deployment of scour countermeasures for known and potential deficiencies, and to address safety concerns. The plan must address a schedule for repairing or installing physical and/or hydraulic scour countermeasures, and/or the use of monitoring as a scour countermeasure. Scour plans of actions should be consistent with HEC 18 and 23.

(3) Execute action in accordance with the plan.

Quality control and quality assurance. (1) Assure system

including scour appraisal and load ratings. QC and QA reviews are to be performed by personnel other than the individual who completed the original report or calculations.

(3) Perform QC and QA reviews and document the results of the QC and QA process, including the tracking and completion of actions identified in the procedures.

(4) Address the findings of the QC and QA reviews.

(q) *Critical findings.* (1) Document procedures to address critical findings in a timely manner. Procedures must:

(i) Define critical findings considering the location and the redundancy of the member affected and the extent and consequence of a deficiency. Deficiencies include, but are not limited to scour, damage, corrosion, section loss, settlement, cracking, deflection, distortion, delamination, loss of bearing, and any condition posing an imminent threat to public safety. At a minimum, include findings which warrant the following:

(A) Full or partial closure of any bridge;

(B) An NSTM to be rated in serious or worse condition, as defined in the NBI (see § 650.315) by the NSTM Inspection item, coded three (3) or less;

(C) A deck, superstructure, substructure, or culvert component to be rated in critical or worse condition, as defined in the NBI (see § 650.315) by the Deck, Superstructure, or Substructure Condition Rating items, or the Culvert Condition Rating item, coded two (2) or less;

(D) The channel condition or scour condition to be rated in critical or worse condition as defined in the NBI (see § 650.315) by the Channel Condition Rating or Scour Condition Rating items, coded critical (2) or less; or

(E) Immediate load restriction or shoring, or immediate repair work to a bridge, including shoring, in order to maintain an open

channel. Develop and document timeframes to address critical findings identified in paragraph (q)(1)(i) of this section.

(2) State transportation departments, Federal agencies, and Tribal governments must inform FHWA of all critical findings and actions taken, including any shoring, or planned to resolve critical findings as follows:

(i) Notify FHWA within 24 hours of the occurrence of each critical finding on the National Highway System (NHS) as defined in paragraphs (q)(1)(i)(A) and (B);

(ii) Notify FHWA as requested, in writing, for each critical finding as defined in paragraph

(q)(1)(i) of this section until resolved. The report must contain:

(A) Owner;

(B) NBI Structure Number;

(C) Date of finding;

(D) Description and photos (if available) of critical finding;

(E) Description of completed, temporary and/or planned corrective actions to address critical finding;

(F) Status of corrective actions: Active/Completed;

(G) Estimated date of completion if corrective actions are active; and

(H) Date of completion if corrective actions are completed.

(r) *Review of compliance.* Provide information annually or as required in cooperation with any FHWA review of compliance with this subpart.

§ 650.315 Inventory.

(a) Each State transportation department, Federal agency, or Tribal government must prepare and maintain an inventory of all bridges subject to this subpart. Inventory data, as defined in § 650.305, must be collected, updated, and retained by the responsible State transportation department, Federal agency, or Tribal government and submitted to FHWA on an annual basis or whenever requested. For temporary bridges open to traffic greater than 24 months, inventory data must be collected and submitted per this section. Inventory data must include element level bridge inspection data for bridges on the NHS collected in accordance with the "Manual for Bridge Element Inspection" (incorporated by reference, see § 650.317). Specifications for collecting and reporting this data are contained in the "Specifications for the National Bridge Inventory" (incorporated by reference, see § 650.317).

(b) For all inspection types, enter changes to the inventory data into the State transportation department, Federal agency, or Tribal government inventory within 3 months after the month when the field portion of the inspection is completed.

(c) For modifications to existing bridges that alter previously recorded inventory data and for newly constructed bridges, enter the inventory data into the State transportation department, Federal agency, or Tribal government inventory within 3 months after the month of opening to traffic.

(d) For changes in load restriction or closure status, enter the revised inventory data into the State transportation department, Federal agency, or Tribal government inventory within 3 months after the month the change in load restriction or closure status of the bridge is implemented.

REQUIREMENTS

- NBI Program Metric 18 Compliance
- Code of Federal Regulations 23 CFR Part 650

assessment is located in HEC 20.

(2) For bridges which are determined to be scour critical or have unknown foundations, prepare and document a scour POA for deployment of scour countermeasures for known and potential deficiencies, and to address safety concerns. The plan must address a schedule for repairing or installing physical and/or hydraulic scour countermeasures, and/or the use of monitoring as a scour countermeasure. Scour plans of actions should be consistent with HEC 18 and 23.

(3) Execute action in accordance with the plan.

assurance. (1) Assure systematic QC and QA procedures identified in Section 1.4, AASHTO Manual (incorporated by reference, see § 650.317) are used to maintain a high degree of accuracy and consistency in the inspection program.

(2) Document the extent, interval, and responsible party for the review of inspection teams in the field, inspection reports, NBI data, and computations,

condition to be rated in critical or worse condition as defined in the NBI (see § 650.315) by the Channel Condition Rating or Scour Condition Rating items, coded critical (2) or less; or

(E) Immediate load restriction or posting, or immediate repair work to a bridge, including shoring, in order to remain open.

(ii) Develop and document timeframes to address critical findings identified in paragraph (q)(1)(i) of this section.

(2) State transportation departments, Federal agencies, and Tribal governments must inform FHWA of all critical findings and actions taken, underway, or planned to resolve critical findings as follows:

(i) Notify FHWA within 24 hours of discovery of each critical finding on the National Highway System (NHS) as identified in paragraphs (q)(1)(i)(A) and (B) of this section;

(ii) Provide monthly, or as requested, a written status report for each critical finding as identified in paragraph

contained in the "Specific National Bridge Inventory (incorporated by reference, § 650.317).

(b) For all inspection type changes to the inventory data, State transportation department, agency, or Tribal government within 3 months after the month of the field portion of the inspection is completed.

(c) For modifications to existing bridges that alter previously entered inventory data and for newly constructed bridges, enter the data into the State transportation department, Federal agency, or Tribal government inventory within 3 months after the month of opening.

(d) For changes in load restriction status, enter the revised inventory data into the State transportation department, agency, or Tribal government within 3 months after the month of change in load restriction or status of the bridge is implemented.

PLANS OF ACTION IN NORTH DAKOTA

- **Definition:** Provide guidance for scour critical and unknown foundation bridges before, during, and after flood events
- **Purpose:** Protect structures and the traveling public and meet FHWA requirements
- **Includes:**

General Information

Post Flood Inspections

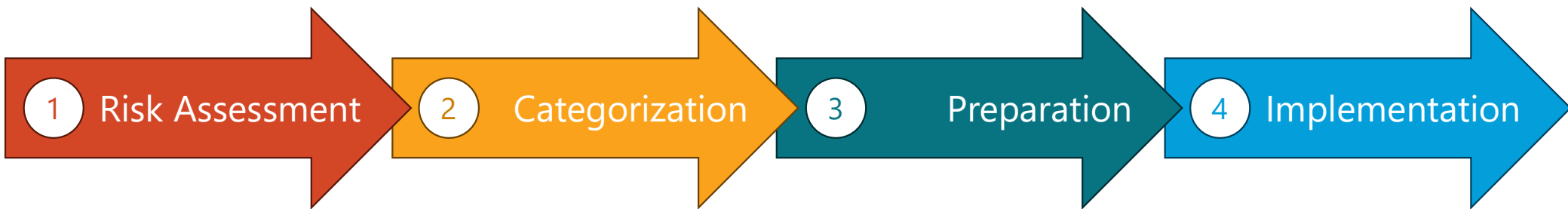
NBI Coding and Scour Vulnerability

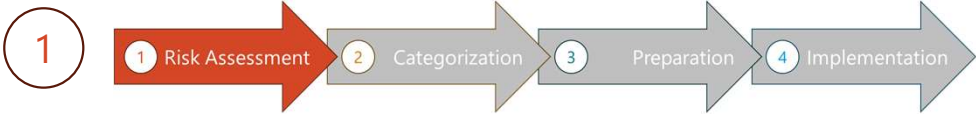
Bridge Closure and Detour Routes

Flood Monitoring

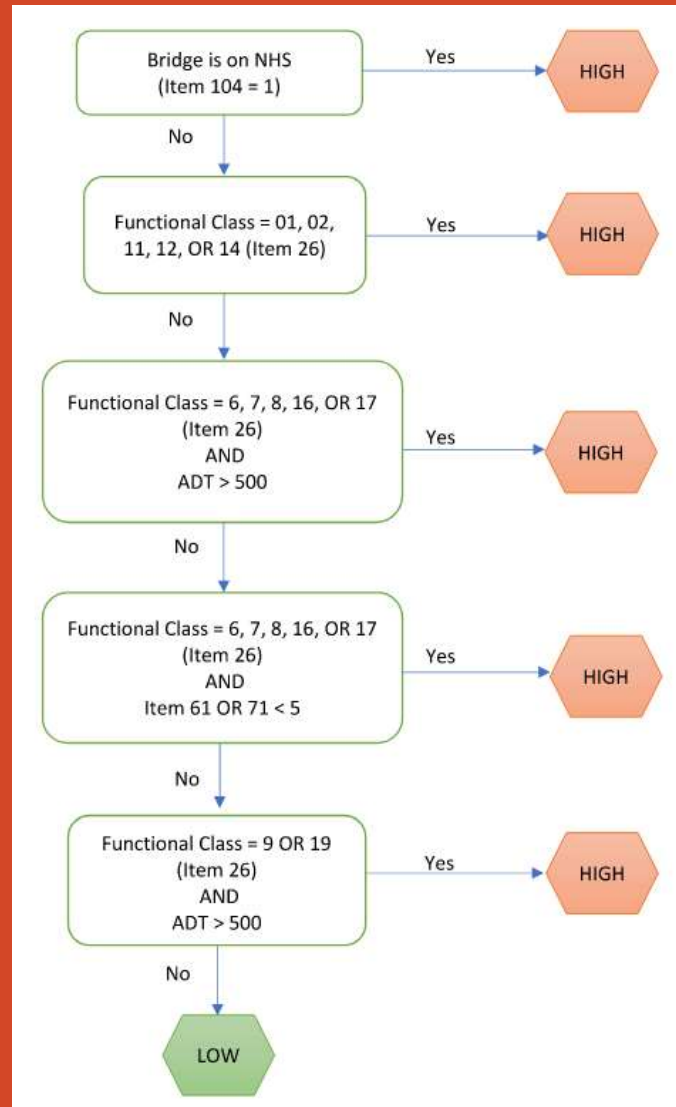
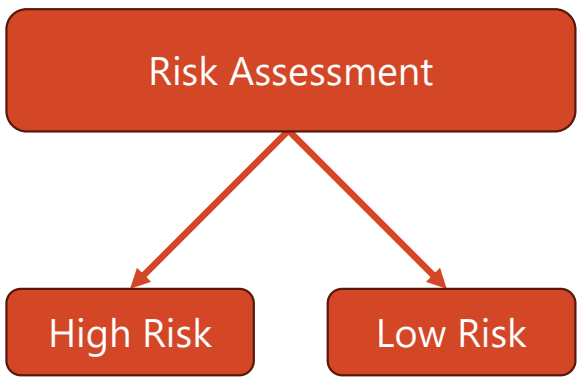
Points of Contact

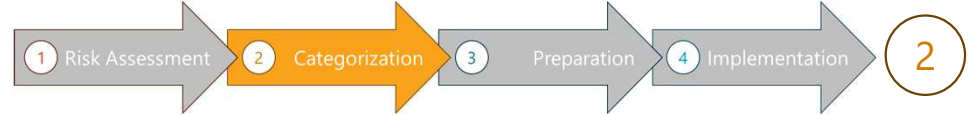
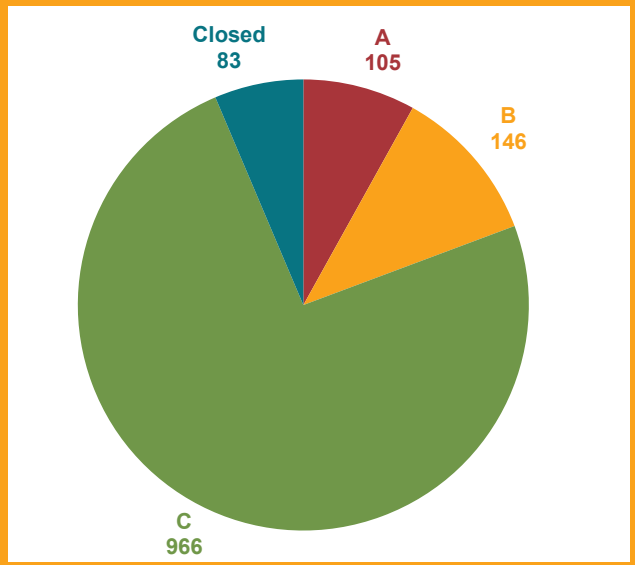
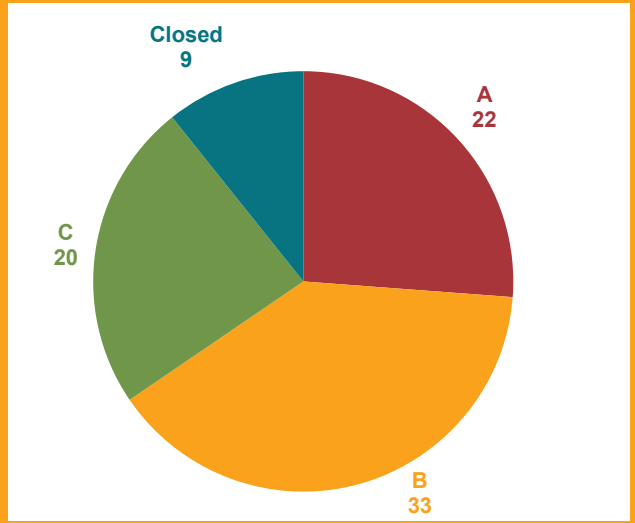
PLANS OF ACTION IN NORTH DAKOTA





NDDOT RISK ASSESSMENT





POA CATEGORIZATION

- Based on risk
- 3 Categories
- Flood Monitoring and Post Flood Inspection plan varies depending on category
- Detour routes for Category A and B only

NDDOT POA CATEGORIZATION

Category A 127 Bridges

- High Risk OR
- Bridges with observed stability issues OR
- Bridges with extensive scour that could lead to imminent failure OR
- Have spread footings or shallow pile embedment with poor channel protection condition

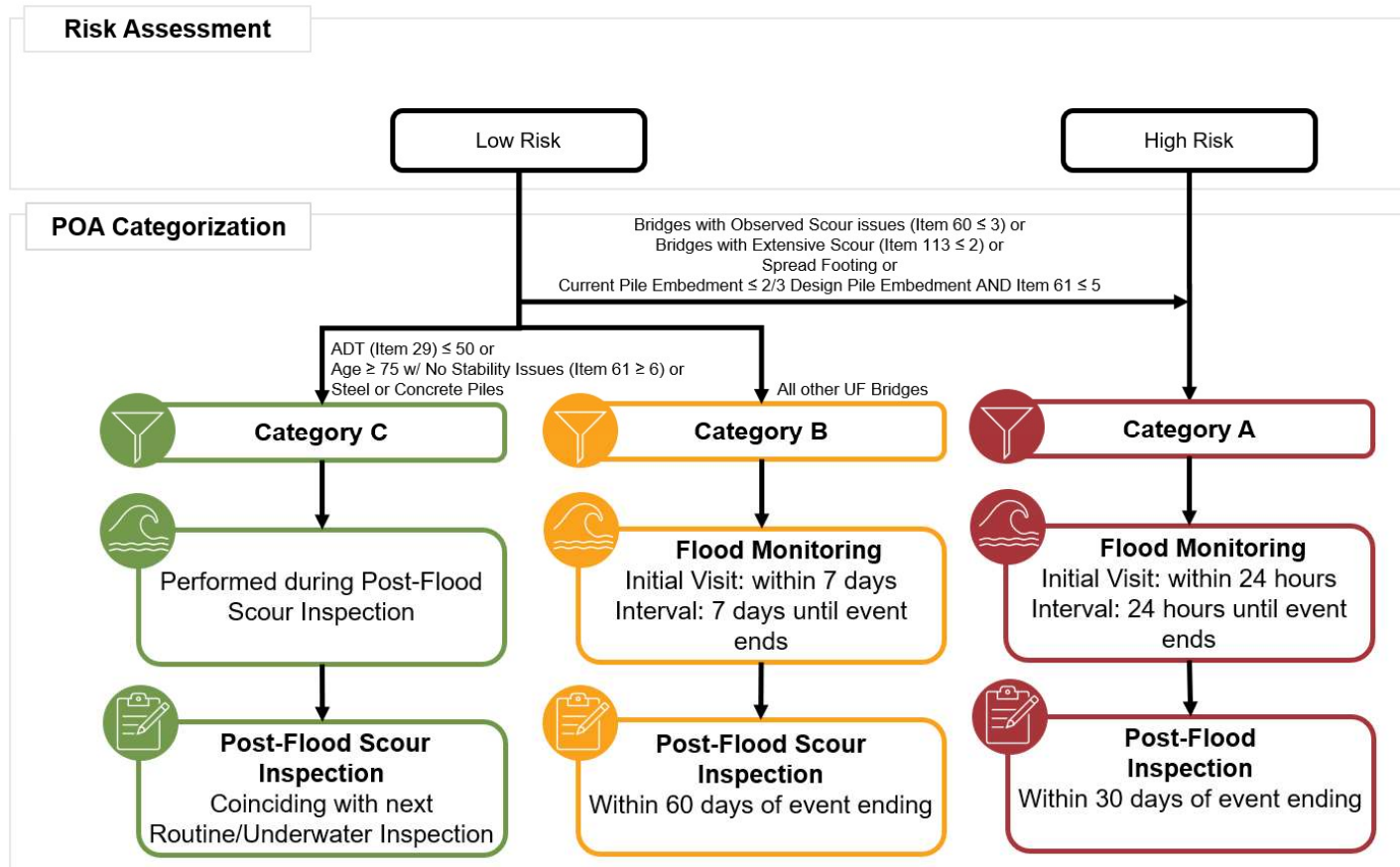
Category B 179 Bridges

- Low Risk AND
- Does not fall into Category A or C

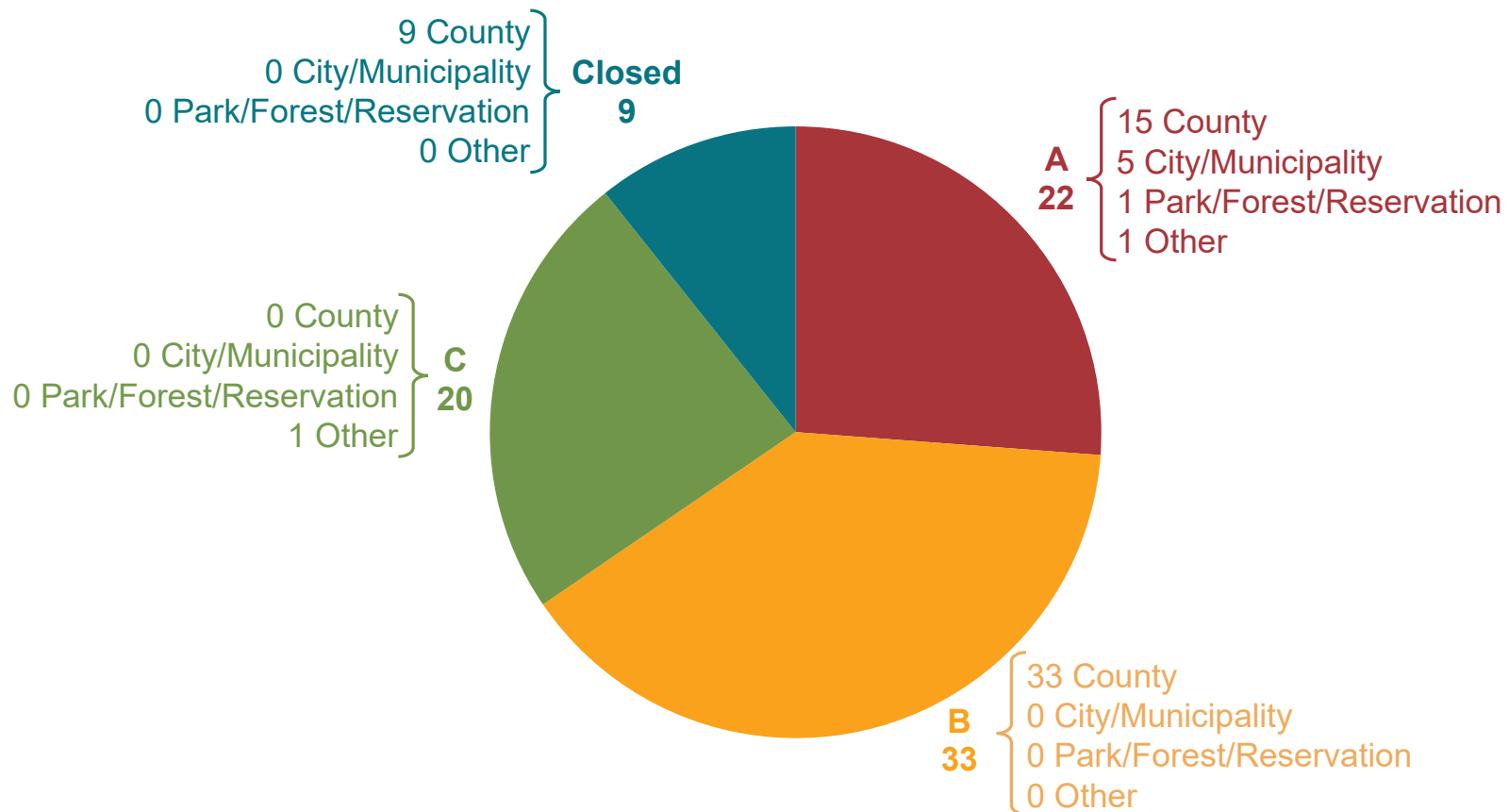
Category C 986 Bridges

- Low Risk with low ADT
- Low Risk and probabilistically survived previous large events with no developing channel stability issues
- Low Risk and has steel or concrete piling

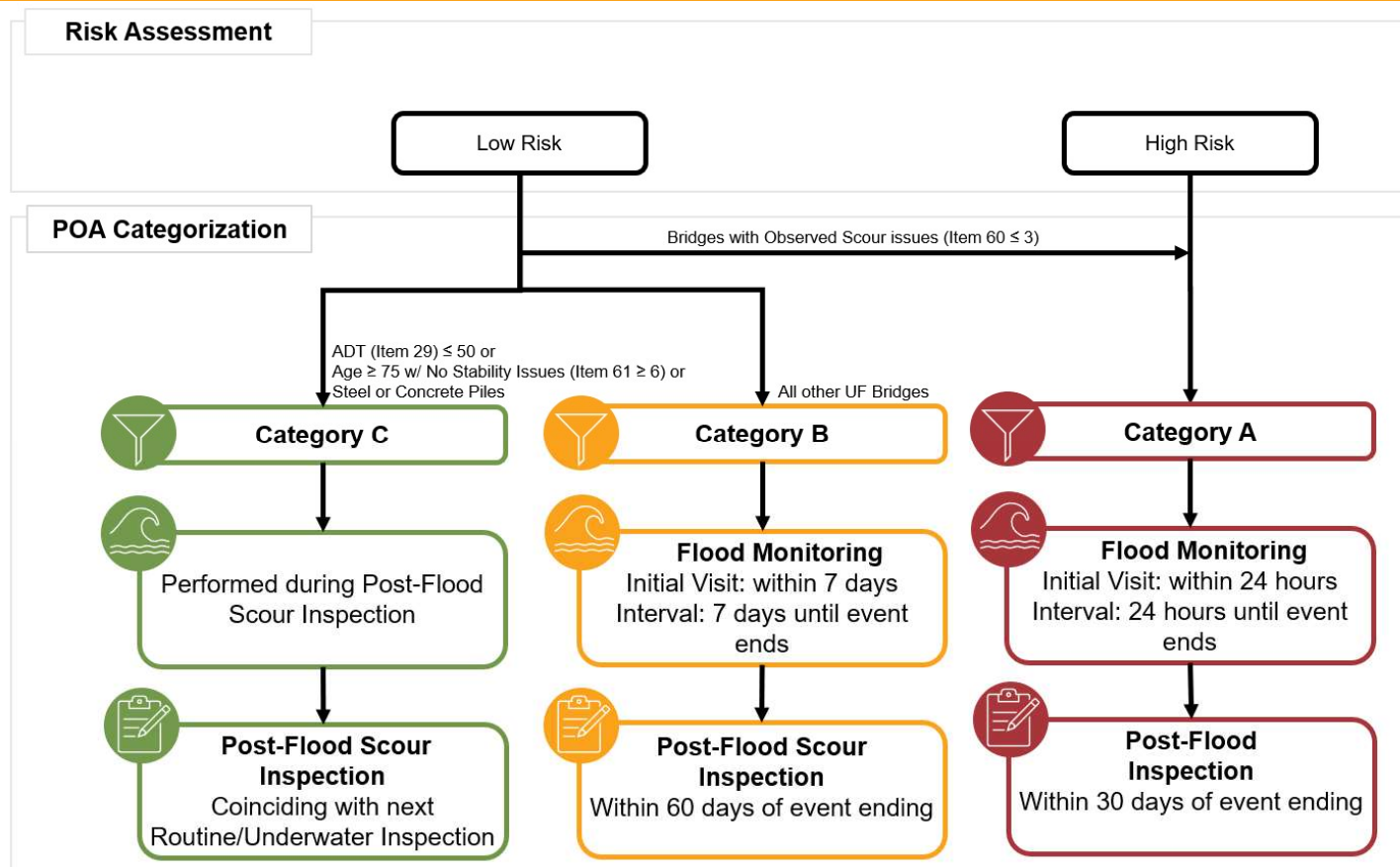
SCOUR CRITICAL CATEGORIZATION



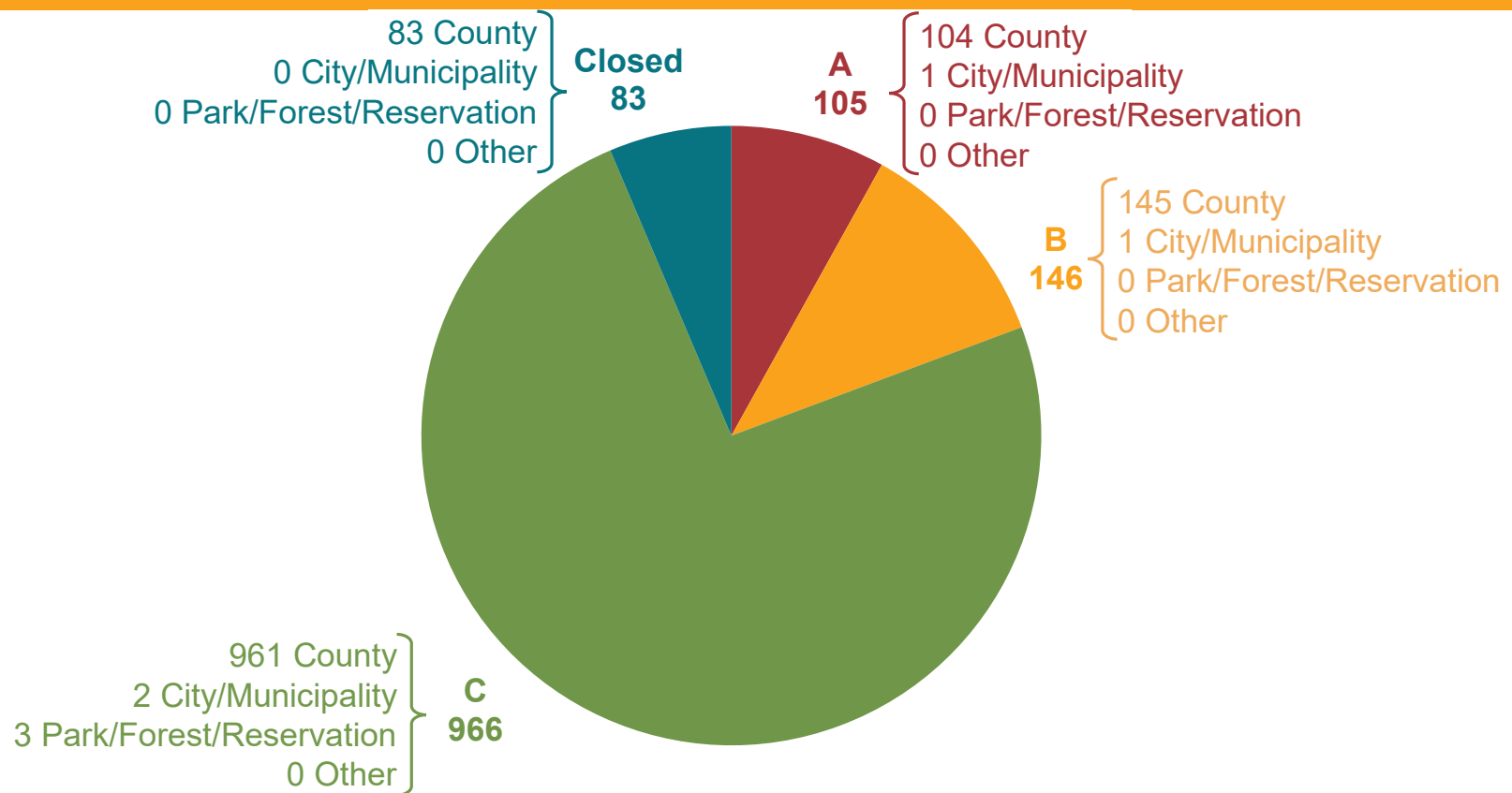
SCOUR CRITICAL



UNKNOWN FOUNDATION CATEGORIZATION



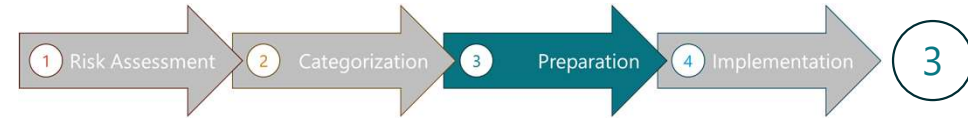
UNKNOWN FOUNDATION



SECTION 1 - GENERAL INFORMATION			
Bridge ID:	04-114-03.0	District:	Dickinson District
County:	Billings	Feature Intersected:	NORTH CREEK
Facility Carried:	UPPER MAGPIE ROAD	Location:	6 NORTH 8 WEST FAIRFIELD
Owner:	County Hwy Agency	Design Main:	Truss - Thru
Material Main:	Steel	ADT:	10
Latitude:	471710.87	Longitude:	1032230.54
Year of ADT:	2018		

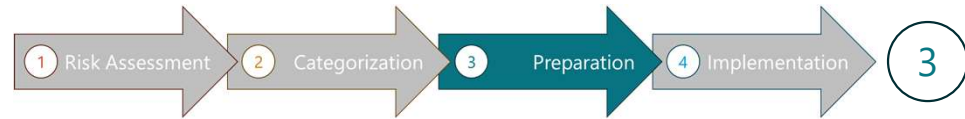
SECTION 2 - NBIS CODING AND SCOUR VULNERABILITY			
Last Inspection Date:	9/13/2023	Overtopping Likelihood:	
Load Posting Status:	P Posted for load	Scour Critical Bridges (NBI 113):	
Substructure Condition:	7 Good	Scour Vulnerability (B.AP.03):	
Culvert Condition:	N N/A (NBI)	Channel Protection Condition Rating:	
Channel Condition:	7 Minor Damage	Scour Condition Rating (B.C.11):	

SECTION 3 - FLOOD MONITORING (BY BRIDGE OWNERS)	
Based on the risk assessment, this bridge flood monitoring = CATEGORY C	
Please see below for the details of this category	
Category A	During Event Flood Monitoring - Initial visit within 24 Hours, recurring every 24 hours if flooding is confirmed. Monitoring continues until the flood has subsided. Complete Monitoring Log for each visit.
Category B	During Event Flood Monitoring - Initial visit within 7 days, recurring every 7 days if flooding is confirmed. Monitoring continues until the flood has subsided. Complete Monitoring Log for each visit.
Category C	No During Event Flood Monitoring is required.
Triggering Event	
National Weather Service (Flood Warning, Flash Flood Warning) NDDOT GIS Map will send out automatic alerts to the bridge owners when the triggering event has occurred.	USGS Gage - Major Flooding Gage No: _____
During Event Flood Monitoring Items to Watch	
• Bank Erosion	• Exposed utilities
• Observed structure movement/settlement	• Pressure Flow - water surface up to or above bridge beams
• Overtopping stream banks, approach road, or structure	• Debris buildup on substructure units
• Damage to channel protection items or substructure units	• Document water surface level (rising/receding)
• Downstream deposition	



POA PREPARATION

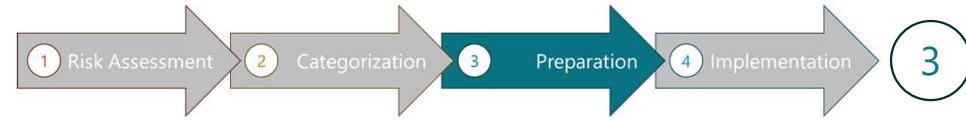
- POA Templates
- Monitoring varies based on category
- Completed By Bridge Owners
 - Used by Bridge Owners



POA PREPARATION

- Bridge Scour POA Form
 - Sent via email after training
 - NDDOT will convert to a pdf form.
- POA Form for each structure
 - Provided in the email
 - Online forms

SECTION 4 - POST FLOOD INSPECTION (BY CERTIFIED BRIDGE INSPECTORS)			
Based on the risk assessment, this bridge flood monitoring = CATEGORY C			
Please see below for the details of this category			
Category A	Post Flood Inspection within 30 days of flood subsiding. Post flood inspections are contracted by NDDOT automatically once Monitoring Log (completed by bridge owner during flood monitoring) identifies flood has subsided.		
Category B	Post Flood Inspection within 60 days of flood subsiding. Post flood inspections are contracted by NDDOT automatically once Monitoring Log (completed by bridge owner during flood monitoring) identifies flood has subsided.		
Category C	Post Flood Inspection completed during next Routine Inspection. Consultant automatically receives notice that the triggering event has occurred and will schedule the flood inspection.		
SECTION 5 - CLOSURE PLAN AND DETOUR ROUTE			
Structure Closure should be considered if any of the below criteria have been observed			
• Pressure Flow	• Overtopping Approach Road or Structure		
• New or Excessive Structure Movement/Settlement	• Visible Damage to Deck, Superstructure, or Substructure		
• Heavy or Excessive Debris Buildup at the Structure Restricting Water Flow Through the Structure	• Other Indications of Severe Scour at the Structure		
Proposed Detour Route			
Description:	DATA FIELD		
SECTION 6 - POINTS OF CONTACT			
Monitoring Contact			
Name:	Agency:	Phone Number:	Email:
Closure Contact List			
In the event a structure is closed, the individuals or agencies listed below should be contacted. (i.e., Emergency Manager, Law Enforcement, EMS, School Official, Press Release, etc.)			
Name:	Agency:	Phone Number:	Email:
POA Prepared By (NDDOT)			
Name:	Agency:	Phone Number:	Email:
POA Prepared By (Bridge Owner)			
Name:	Agency:	Phone Number:	Email:



BRIDGE SCOUR POA FORM

■ Step 1 (Categories A&B)

- Select County:
- Select Structure ID:
 - POA Category will populate after structure is selected

■ Step 2 (Categories A&B)

- Do you agree with the POA Category?
- Describe detour route with brief text (No more than 250 characters)

Bridge Scour POA (Categories A&B)

County: ← **Step 1**

Structure ID: ← **Step 1**

POA Category: A - During event flood monitoring

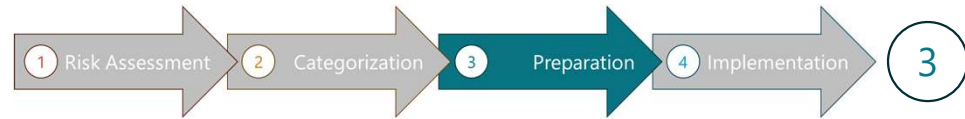
Do you agree with the assigned POA Category? ← **Step 2**

If you disagree with the assigned POA Category, please suggest what you believe the appropriate category should be and provide your justification:

If applicable, enter suggested POA Category. Please note that you cannot lower the POA Category (e.g., change a rating from 'A' to 'B'); you may only increase the rating and the inspection frequency.

Detour Route: ← **Step 2**

Describe roadways to be used as detour.



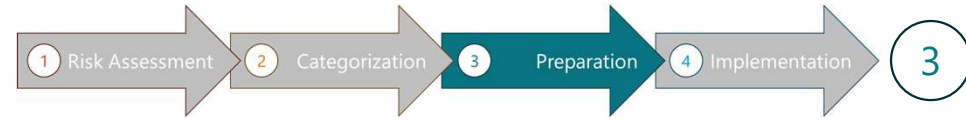
BRIDGE SCOUR POA FORM

- Step 3 (Categories A&B)
 - POA Preparer Contact
 - Who is filling out this form ?
- Step 4 (Categories A&B)
 - Flood Monitoring Contact
 - When a triggering event occurs who is completing the monitoring form ?
- Step 5 (Categories A&B)
 - Closure Contact List
 - Local owner list of who needs to be contacted in the event of a closed structure ?

POA Preparer Contact			
Step 3			
POA Preparer Contact			
Name	Agency	Phone Number	Email
<input type="text" value="Enter name"/>	<input type="text" value="Enter agency"/>	<input type="text" value="Enter phone"/>	<input type="text" value="Enter email"/>

Monitoring Contact			
Step 4			
Monitoring Contact			
Name	Agency	Phone Number	Email
<input type="text" value="Enter name"/>	<input type="text" value="Enter agency"/>	<input type="text" value="Enter phone"/>	<input type="text" value="Enter email"/>

Closure Contact List			
Step 5			
Closure Contact List			
Name	Agency	Phone Number	Email
<input type="text" value="Enter name"/>	<input type="text" value="Enter agency"/>	<input type="text" value="Enter phone"/>	<input type="text" value="Enter email"/>
<input type="text" value="Enter name"/>	<input type="text" value="Enter agency"/>	<input type="text" value="Enter phone"/>	<input type="text" value="Enter email"/>
<input type="text" value="Enter name"/>	<input type="text" value="Enter agency"/>	<input type="text" value="Enter phone"/>	<input type="text" value="Enter email"/>
<input type="text" value="Enter name"/>	<input type="text" value="Enter agency"/>	<input type="text" value="Enter phone"/>	<input type="text" value="Enter email"/>
<input type="text" value="Enter name"/>	<input type="text" value="Enter agency"/>	<input type="text" value="Enter phone"/>	<input type="text" value="Enter email"/>
<input type="button" value="Submit"/>			



BRIDGE SCOUR POA FORM

- **Step 1 (Category C)**
 - Select County & Structure IDs
- **Step 2 (Categories C)**
 - Do you agree with the POA Category?
- **Step 3 (Categories C)**
 - POA Preparer Contact
 - Who is filling out this form ?
- **Step 4 (Categories C)**
 - Flood Monitoring Contact
 - When a triggering event occurs who is completing the monitoring form ?

Scour Critical Bridges - Category C

Choose Structure County:

Step 1

Structure IDs:

- 01-104-01.0
- 01-105-02.0
- 01-116-04.0
- 01-122-09.1
- 01-122-12.0
- 01-123-14.0
- 01-127-10.0
- 01-137-17.0
- 01-148-13.0

- If structures have different contact information for POA and monitoring (as listed below), select the applicable boxes and hit submit. Then, repeat the process for the other structures.

Step 2

Do you agree with the assigned POA Category for the selected bridges?

Yes No

POA Preparer Contact

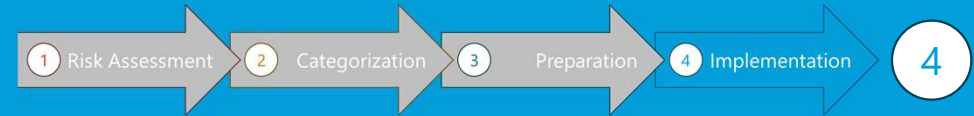
Step 3

Name	Agency	Phone	Email
<input type="text" value="Enter name (Required)"/>	<input type="text" value="Enter agency (Required)"/>	<input type="text" value="Enter phone (Required)"/>	<input type="text" value="Enter email (Required)"/>

Flood Monitoring Contact

Step 4

Name	Agency	Phone	Email
<input type="text" value="Enter name (Required)"/>	<input type="text" value="Enter agency (Required)"/>	<input type="text" value="Enter phone (Required)"/>	<input type="text" value="Enter email (Required)"/>



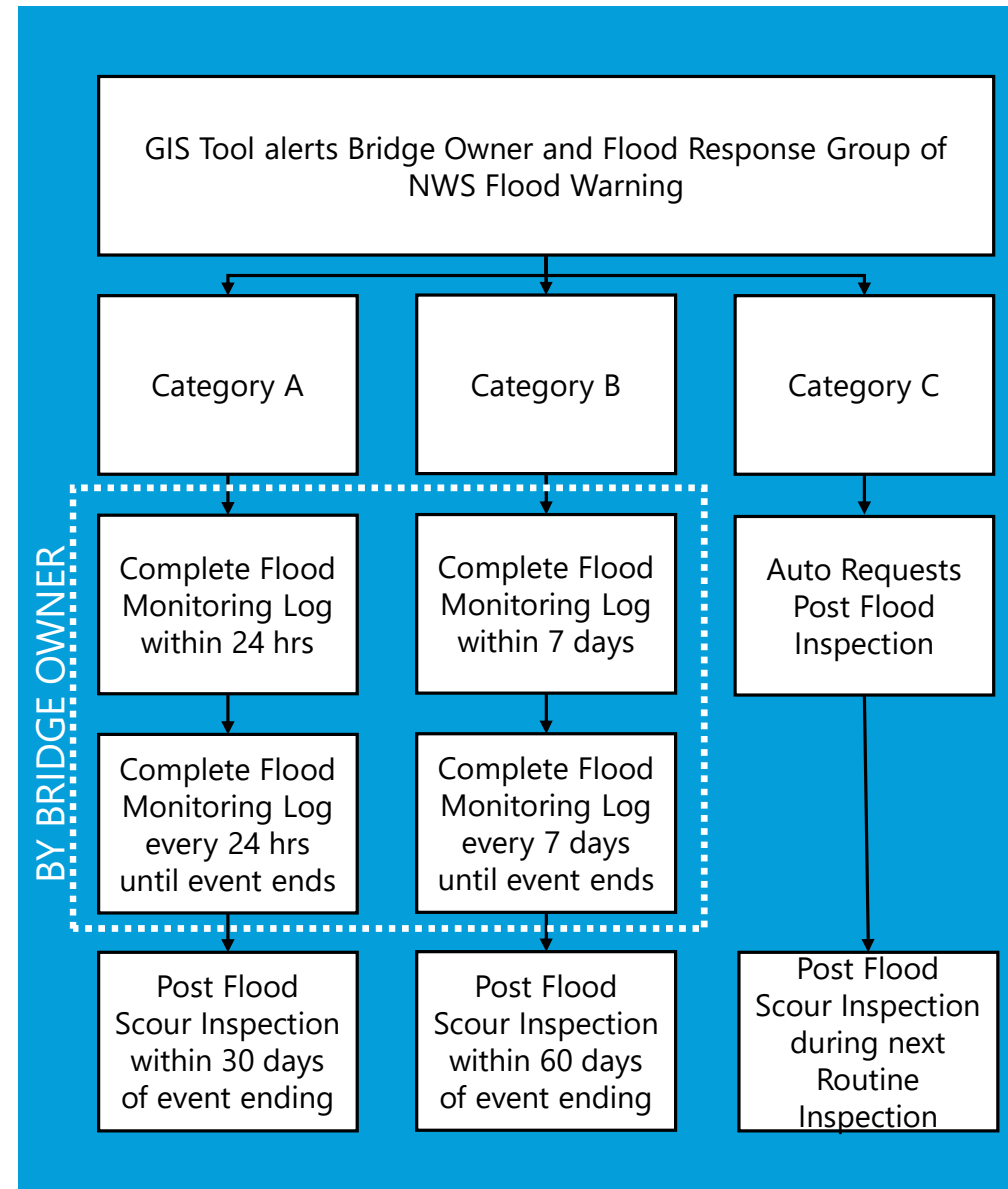
POA IMPLEMENTATION

- Agency awareness of bridges with POAs
 - Who? What? Where? Why? How?
- Manage Resources
 - Staff, equipment, bridge priority
- Perform Flood Monitoring
- Documented POA related activities
 - GIS Tool
 - Monitoring Log

GIS TOOL

1. National Weather Service Flood Warning Alert
2. Bridge locations
3. Rain radar

Link: [Scour GIS tool](#)



NDDOT GIS MAP

All Bridges	Poor Bridges	Posted and Closed	Bridges Built Prior to 1940	Scour Critical Bridges	Bridges By Year	State Bridge Performance	Dashboard	NORTH Dakota Transportation <small>Be Legendary.</small>
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Filter bridges by:

Owner
None

District
None

County
None

POA Category
None

Scour Map

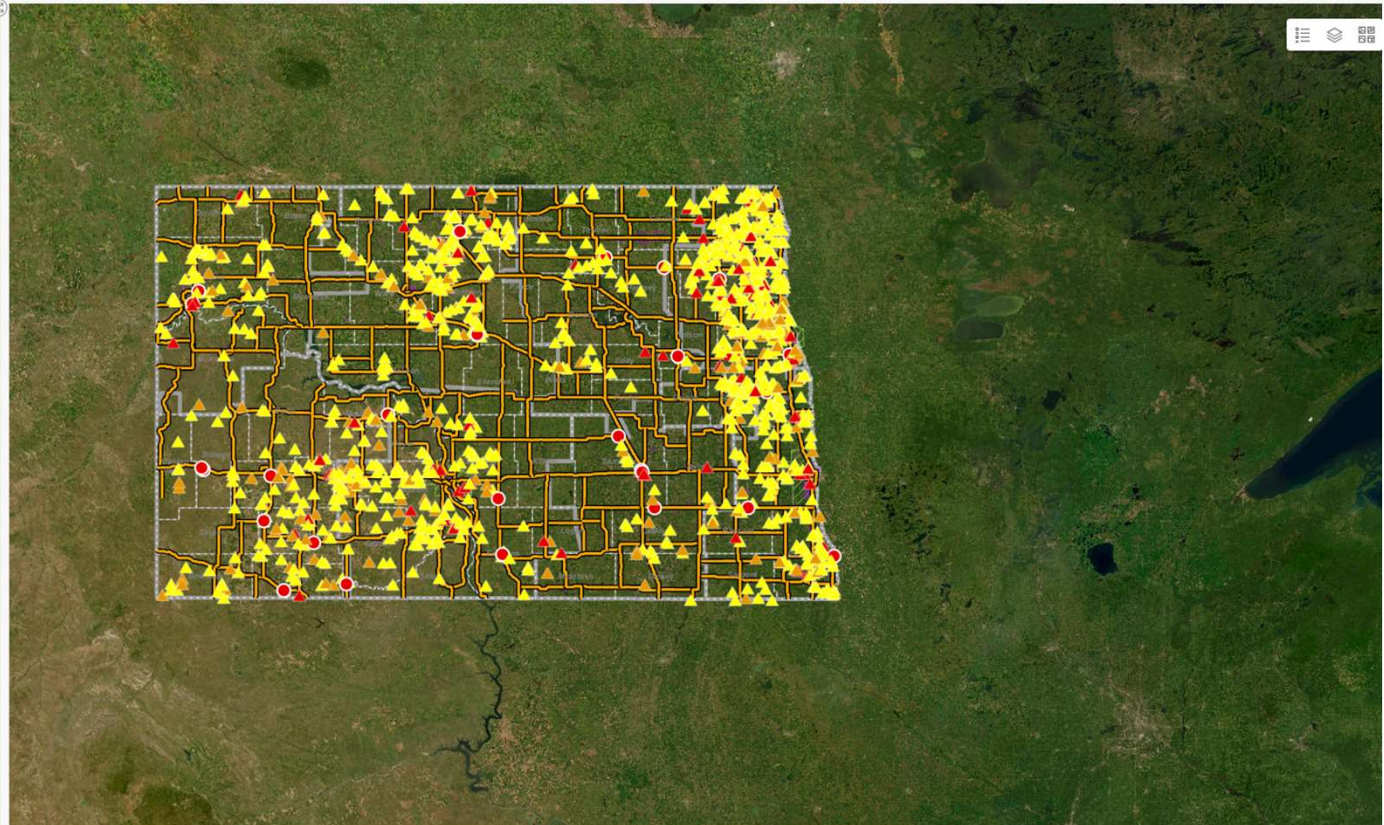
Scour, the natural process of water flow eroding sediment around bridge foundations, poses a significant risk to infrastructure stability. Every bridge must have a scour appraisal completed to determine its vulnerability to scour. Scour critical bridges, shown on the map, are those identified as particularly vulnerable to this phenomenon, requiring specific monitoring and maintenance protocols to ensure public safety and operational continuity. Bridges that lack detailed records of their foundations, such as how deep pile supports go, are referred to as unknown foundations. Without knowing foundation details, it's difficult to assess how vulnerable these bridges are to scour. These bridges are also shown on the map.

The National Bridge Inspection Standards (NBIS), under 23 CFR Part 650, mandate that bridge owners develop and implement a Plan of Action (POA) for scour critical and unknown foundation bridges, focusing on proactive monitoring and response strategies tailored to each bridge's risk profile.

A Plan of Action (POA) is a comprehensive document that outlines strategies and protocols for managing scour critical and unknown foundation bridges. It includes detailed assessments of each bridge's vulnerability to scour, based on factors such as foundation type, water flow dynamics, and channel condition. The POA categorizes bridges into groups (Category A to D) based on their risk levels, with each category dictating specific monitoring and maintenance requirements.

Monitoring Requirements: The monitoring requirements outlined in the POA are crucial for early detection of potential scour problems and prompt intervention to mitigate risks. Monitoring may include:

- **Flood Monitoring:** Immediate visual inspections and/or the use of portable or fixed instrumentation during and after flood events to assess scour conditions.
- **Post-Flood Monitoring:** Special inspections conducted within specified timeframes (e.g., 30, 90 days, or during routine inspections) following flood events to ensure structural integrity.
- **Routine Inspections:** Regular inspections conducted as per the NDDOT Bridge Inspection Manual, which may include underwater assessments and routine visual inspections.



NDDOT GIS MAP

Bridge (14-112-14.0)

Zoom to Pan

DISTRICT	Devils Lake District
COUNTY	Eddy
FACILITY	COUNTY HIGHWAY
LOCATION	2 S 3 E NEW ROCKFORD
MAINTAINED BY	County Hwy Agency
OWNER	County Hwy Agency
YEAR BUILT	1984
FEATURE INTERSECTED	JAMES RIVER
SPAN	1
DESIGN	Box Beam or Girders - Single or Spred
BRIDGE LENGTH	65.00
SCOUR RATING	3
LATITUDE	47.6455160
LONGITUDE	-99.0510920
POA_CATEGORY	C
ADTTOTAL	15

[POA Document - Click](#)

[Monitoring Form - Click](#)

Easy Access to Additional Information about Bridge

- Owner
- Scour Rating
- POA Category
- Link to POA
- Link to Monitoring Log

EMAIL ALERT:

The following Bridges are determined to be scour critical and are experiencing a flood event that requires mandatory monitoring under the National Bridge Inspection Standards. Monitoring is necessary to ensure the safety and reliability of the bridges.

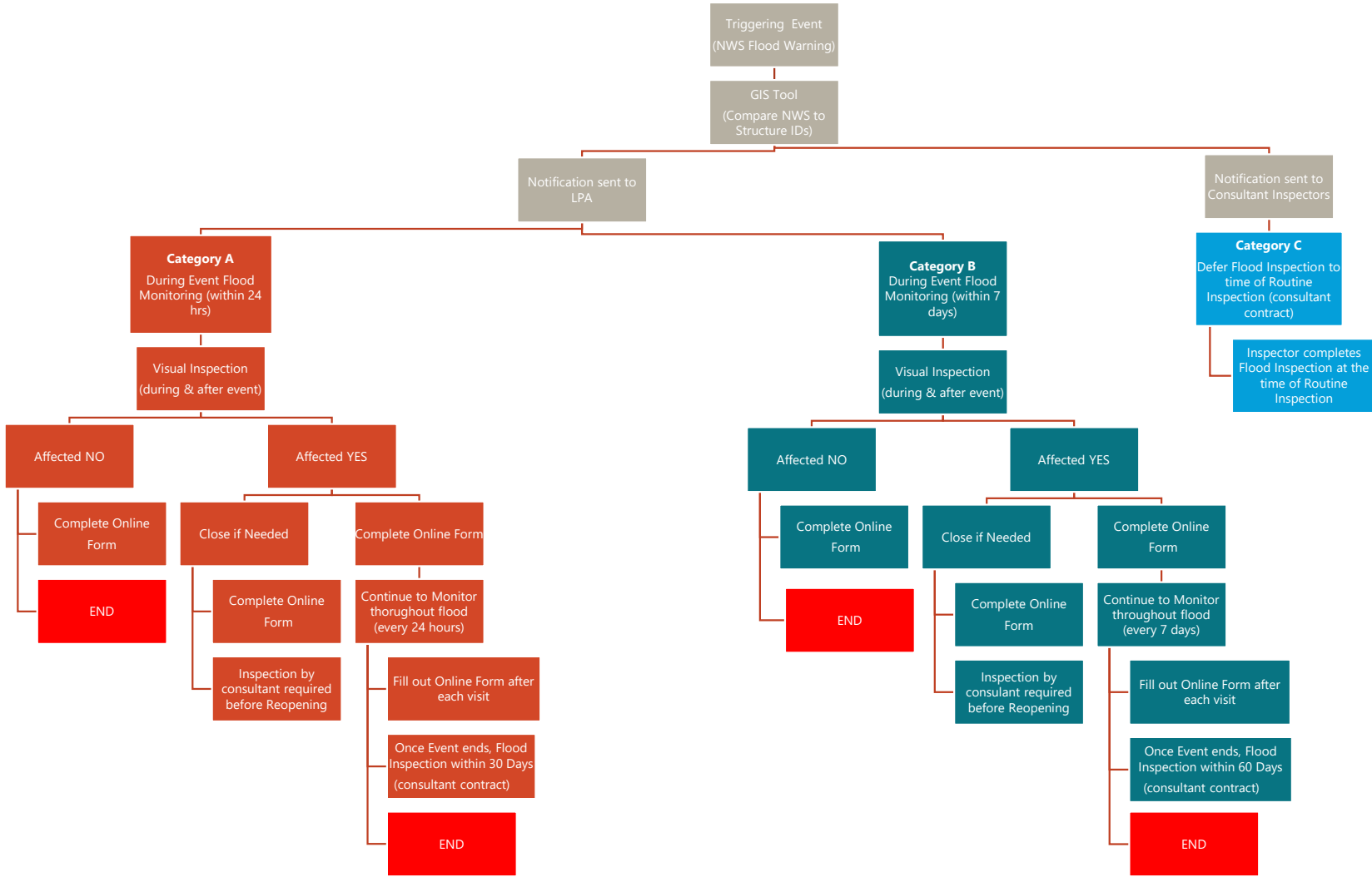
To comply with regulatory requirements, you are required to complete the monitoring form.

Please refer to the Plan of Action for additional details of the required action.

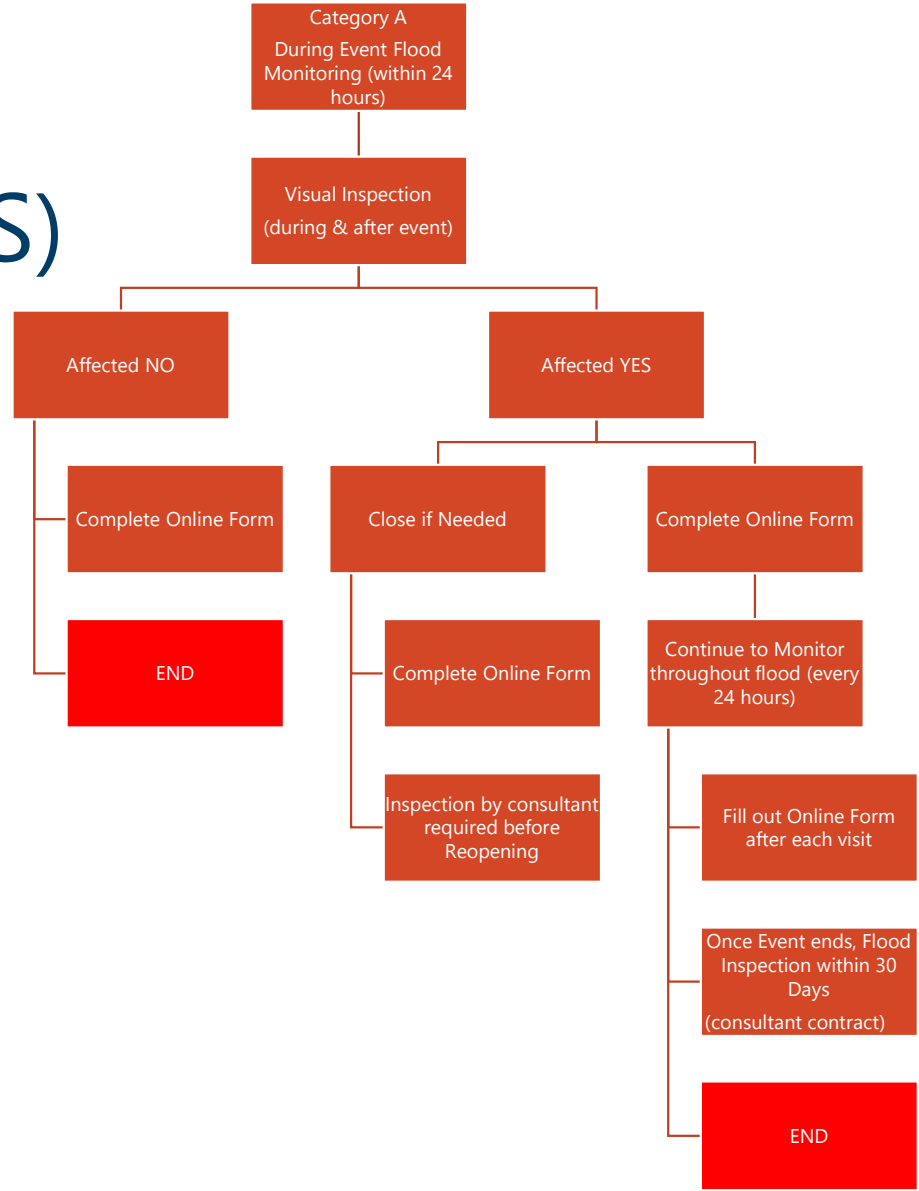
Bridge ID	Location	Feature Intersected	Facility Carried	POA Category	POA Document	Monitoring Form
08-112-39.0	3 SOUTH 3 EAST BISMARCK	APPLE CREEK	LINCOLN ROAD	A	POA Document	Monitoring Form
08-120-05.0	1 WEST 7 NORTH OF REGAN	PAINTED WOODS CREEK	145th St NE	B	POA Document	Monitoring Form
08-121-33.0	2 NORTH OF MENOKEN	APPLE CREEK	158TH ST NE	B	POA Document	Monitoring Form
08-117-05.0	7 EAST 7 NORTH OF WILTON	CREEK	409th Ave NE	A	POA Document	Monitoring Form
08-118-35.0	2 WEST OF MENOKEN	APPLE CREEK	Co Rd 10	A	POA Document	Monitoring Form
08-126-36.0	1 SOUTH MCKENZIE	CREEK	236TH ST NE	B	POA Document	Monitoring Form
08-115-37.0	1 SOUTH 5 EAST BISMARCK	APPLE CREEK	APPLE CREEK RD	A	POA Document	Monitoring Form
08-126-40.0	3 SOUTH OF MCKENZIE	LONG LAKE CREEK	236TH ST SE	B	POA Document	Monitoring Form

Thank you for your prompt attention to this matter. Failure to comply with these monitoring requirements may result in regulatory action. Your cooperation is crucial in maintaining the safety and functionality of the bridge infrastructure.

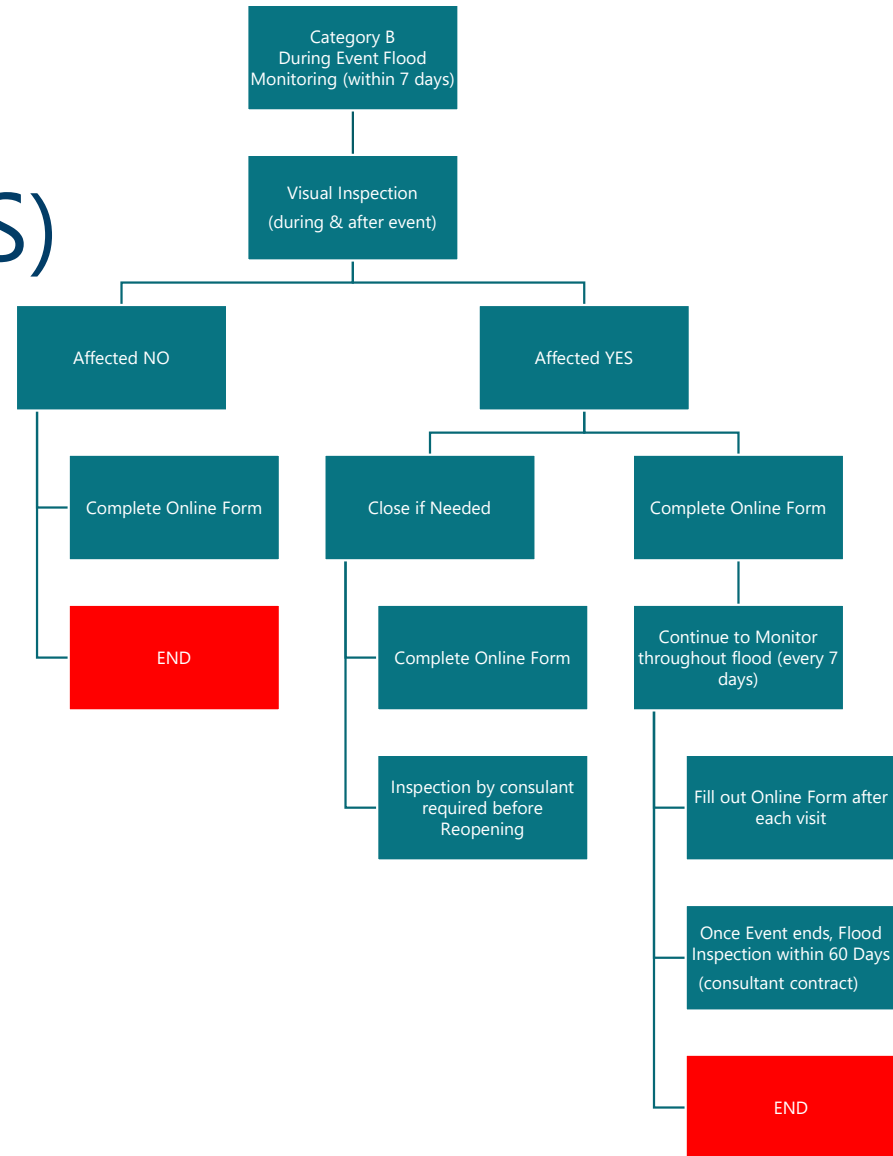
FLOOD MONITORING PROCESS



CATEGORY A (127 BRIDGES)



CATEGORY B (179 BRIDGES)



CATEGORY C (986 BRIDGES)



FLOOD MONITORING

Visual check on the bridge as a result of flooding to:

- Document flood conditions and scour
- Determine if the bridge should be closed
- Comply with Metric 18 and POA

SCOUR CRITICAL BRIDGE - FLOOD MONITORING LOG

North Dakota Department of Transportation, Bridge
SFN 62543 (9-2024)

SAFETY FIRST:

- Do not endanger yourself or others while monitoring bridges.
- Do not enter flood waters.

Bridge ID

Owner

District

County

FLOOD MONITORING LOG

4

Visual check on the bridge as a result of flooding to:

- Document flood conditions and scour
- Determine if the bridge should be closed
- Comply with Metric 18 and POA
- Trigger certified scour inspection

Link: <https://www.forms.nd.gov/241985677401869>

FLOOD MONITORING

- High velocity flow impinging on abutments, piers, or embankments
- Visible damage to the bridge deck, low chord, or substructure
- Observed structure movement/settlement
- Overtopping of road or structure
- Debris accumulation
- If water is rising or receding

MONITORING LOG

SCOUR CRITICAL BRIDGE - FLOOD MONITORING LOG

North Dakota Department of Transportation, Bridge
SFN 62543 (9-2024)

SAFETY FIRST:

- **Do not endanger yourself or others while monitoring bridges.**
- **Do not enter flood waters.**

Bridge ID

08-112-39.0

Owner

02

District

Bismarck District

County

Burleigh

Location

Feature Intersected

APPLE CREEK

Scour Rating

3

POA Category

A

Enter Personnel Monitoring Bridge *

Did the triggered NWS warning correspond to actual flood conditions at the bridge?

*

Yes

No

File Upload



Browse Files

Drag and drop files here

MONITORING LOG CONT.

Did the triggered NWS warning correspond to actual flood conditions at the bridge? *

Yes

No

Enter Date of Monitoring Activity *



Month Day Year

Enter time of monitoring activity *

:

Hour Minutes

Did water touch the bottom of the bridge? *

Yes

No

Is water flowing over the bridge or approach roadway? *

Yes

No

Is there evidence of movement, distress, or settlement of substructures or approach roadway? *

Yes

No

This question is asking if the water has risen to the point where it is touching or has gone higher than the lowest part of the bridge deck and/or beams. If the water has risen to this point, it could potentially be dangerous for the bridge.

Is there evidence of movement, distress, or settlement of substructures or approach roadway? *

Yes

No

Are there any visible signs of erosion or sediment movement around the bridge abutments or pier foundation? *

Yes

No

Is there significant debris accumulating around or under the bridge foundations? *

Yes

No

Has the water flow pattern changed significantly around the bridge? *

Yes

No

Has the flood subsided? *

Yes

No

Additional Notes

POST FLOOD INSPECTION

- Post Flood Inspection by Certified Bridge Inspectors
- Identify flood-related damage
 - Piers, abutments, pilings, scour, approach roadways, & similar elements
- Condition changes directly caused by the flood event
 - Minor defects from natural wear should be excluded
 - Significant or Critical Findings that affect the safety
- Special attention to scour
 - New channel profile, scour assessment, scour condition rating

NDDOT/FHWA INVOLVEMENT

- Need documentation showing POA's are implemented
- Monitoring Log responses will be stored in a database/bridge file
- Post Flood inspections will be stored in InspectX
- Yearly QA reviews conducted by NDDOT to ensure compliance with Metric 18
- FHWA completes metric review to ensure compliance with CFR
- Ensures Owner takes required steps to protect traveling public

NEXT STEPS

- Fill out POA Form (sent via email within the week)
- Review GIS site for impacted bridges
- Watch for Email Alerts (Triggering Event has Occurred)
 - Begin Flood Monitoring (at frequency required)
 - Fill out Monitoring Log after each visit
 - Monitoring until the Flood has subsided



Questions?

NORTH
Dakota | Transportation
Be Legendary.