

Floodplains

Contact

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Purpose

To avoid long and short term adverse impacts associated with the occupancy and modifications of Floodplains, and to preserve the natural and beneficial values served by Floodplains.

Threshold Criteria

If the project crosses or lies adjacent to any floodplain area an impact may exist. Crossing Floodplains may result in either (or both) transverse and longitudinal encroachment.

Flood plain maps may be purchased through the FEMA Map Service Center Web site.

If the project involves a floodplain, see

[How to Prepare a Floodplain Assessment](#) in the appendix.

Prepared Statements

"The project does not involve encroachment into a designated floodplain area."

Relationship To The HPDP

Class I (EIS Projects)

Scoping Documents (SD) & Scoping Decision Document (SDD)

Potential for floodplain encroachments should be identified. **Draft**

Environmental Impact Statement (DEIS)

If scoping process uncovers potential floodplain encroachments on various alternatives, follow the floodplain assessment procedures (Appendix reference

1) to assess significance. This could lead to the need for a Floodplain Finding if a "significant encroachment" is found.

Public Hearing

Note any possible significant encroachments.

Final Environmental Impact Statement (FEIS)

The mitigation commitments (if any) should be included as well as responses to floodplain related comments. Include "Floodplain Finding" if applicable.

For Class II Actions: (Categorical Exclusions)**Project Memo**

Do floodplains assessment following procedures noted in Appendix, or indicate there are no encroachments. Include mitigation measures when appropriate and hydraulics memo if available.

For Class III Actions: (EA Projects)**Environmental Assessment (EA)**

Same as for Project Memo and Project Path Report. Must establish if there are encroachments, and are they significant in a floodplain sense and/or in a NEPA sense. There may be a significant encroachment in a floodplain management sense but this does not necessarily mean it is significant enough to require an EIS in the broader NEPA sense. One must examine the context and intensity before making that judgment.

Only Practicable Alternative Finding (Floodplain Finding)

Is required when a significant encroachment will exist and there is no practicable way to avoid it. (Federal Aid Policy Guide, 23 CFR 650 Subpart A, "Location and Hydraulic Design of Encroachments on Floodplains"; Section 650.113, "Only Practicable Alternative Finding"). 0

Agencies Involved

Agency(s)	When they are involved and why
Minnesota Department of Natural Resources (DNR)	Environmental Document Review and Permits
FHWA	Environmental Document Approval
United States Army Corps of Engineers (COE)	Environmental Document Review and Permits
Federal Emergency Management Agency (FEMA)	Environmental Document Review
United States Coast Guard	Environmental Document Review and Navigational Permits

Permits and Approvals

Permit/Approval	Agency with Oversight
Public Waters Work Permit	Minnesota Department of Natural Resources
Section 404/10 Permit	United States Army Corps of Engineers
Section 10 Permit (Navigable Waters)	United States Army Corps of Engineers
Section 9 Permit (Bridge, Causeway, Overhead Pipeline)	United States Coast Guard
Section 401 Water Quality Certification	Minnesota Pollution Control Agency
Wetland Conservation Act	MnDOT

Legal Basis

Description	Code
“Floodplain Management”	Executive Order 11988
“The Floodplain Management Law”	Minnesota Statute 103F.101 – 103F.155

Guidelines/Regulations

Creator (Agency/Author)	Subject of guideline/regulation
Mn/DNR	Excerpt from Minnesota Rules, Public Water Resources 6115.0230 Bridges and culverts, intakes and outfalls 6115.0231 Specific standards 6115.0232 Relationship to standards and criteria for other activities involving changes in course, current, or cross-section 6115.0240 Application for protected waters permits
	Federal Aid Policy Guide, 23 CFR 650 Subpart A, "Location and Hydraulic Design of Encroachments on Floodplains".
FHWA	FHWA Technical Advisory T6640.8A (pages 29-30)
USDOT	DOT Order 5650.2

Helpful Links

MnDNR

[Floodplain Management Section](#)

Federal Emergency Management Agency (FEMA)

National Flood Insurance Program (NFIP) Community Status Book

- 1) [National Flood Insurance Program](#)
- 2) [The National Flood Insurance Program Community Status Book](#)

Glossary

Base Flood – the area covered by a flood having a 1 % chance of occurring in any given year (also known as the 100 year flood).

Encroachment -- an action within the limits of the floodplain.

Longitudinal encroachment – 30 degree or less crossing of floodplain. Example: lengths of roadway running along or beside streams, rivers, lakes, etc.

Transverse encroachment - 30 to 90 degree crossing of floodplain. Example: perpendicular bridge crossing of river or stream.

Floodplain – the area adjoining a watercourse or water body which has been, or may be, covered by the base flood, 100-year flood, or regional flood. ("Floodplain" as used in the Assessment refers to an area which has been designated on an official floodplain map -e.g. Flood Insurance Rate Map.)

Floodplain Finding – (Only Practicable Alternative Finding): a statement needed for the final environmental document when a proposed project is likely to result in a significant encroachment to a floodplain and there is no practicable way to avoid the encroachment. The finding includes:

- a. the reasons why the proposed action must be located in the floodplain;
- b. the alternatives considered and why they were not practicable, and;
- c. a statement indicating whether the action conforms to applicable State or local flood protection standards.

Floodway – the channel of a watercourse, the bed of a water basin, and those portions of the adjoining Floodplains that are reasonably required to carry and discharge floodwater and provide water storage during a regional flood. Encroachments into the floodway are generally discouraged.

Regional Flood – same as base flood or 100-year flood.

Risk – the consequences associated with the probability of flooding attributable to an encroachment. It shall include the potential for property loss and hazard to life.

Significant Encroachment –any encroachment into the floodplain which results in:

- (1) a significant potential for interruption or termination of a transportation facility which is needed for emergency vehicles or provides a community's only evacuation route;
- (2) a significant risk, or;
- (3) a significant adverse impact on natural and beneficial flood-plain values.

APPENDIX

How to Prepare a Floodplain Assessment

Why prepare a floodplain assessment?

Based on law; Presidential Executive Order 11988 - Floodplain Management.

Executive order applies to all federal agencies for actions involving:

Federal undertaken, financed or assisted construction and improvements (Bridges, Highways).

MnDOT receives federal money via Federal Highway Administration. Therefore, we at MnDOT must follow federal regulations.

MnDOT has adopted policy for **State Funded** jobs to follow federal criteria.

Do documentation **once** and be finished.

Floodplain - means the areas adjoining a watercourse which has been or may be covered by the "regional flood".

Regional Flood - means the flood which can be expected to occur on average once every 100 years. It has a 1% chance of occurring in any year.

Encroachment - is an action within the limits of the floodplain.

FEDERAL FLOODPLAIN REQUIREMENTS

Step 1 - Check project limits to determine if any 100 year floodplains lie within the project area.

Look for: **Transverse** encroachments - 30 to 90 degree crossings of streams, rivers, lakes, etc.

Look for: **Longitudinal** encroachments - less than 30 degree crossings. Lengths of roadway running along or beside streams, rivers, lakes, etc.

Check the following maps to determine encroachments:

1. Flood Insurance Study Maps**
2. Watershed District Maps**
3. Flood Hazard Boundary Maps**
4. Others Maps (U.S.G.S., Corps of Engineers, Special Studies)

** These maps can usually be obtained from the Minnesota Department of Natural Resources

Area Hydrologist. If you have trouble locating a map or determining encroachment, call MnDOT Hydrologist or Central Office Hydraulics for assistance.

Supporting References - U.S.G.S. quadrangle maps, aerial photos, roadway plan and profile, existing hydraulic structures, maintenance records - Any overtopping??

Step 2 - Writing the assessment

The following procedure should work for 90% of floodplain assessments.

1st paragraph - Brief description of the project. Be succinct!!

2nd paragraph - Document which floodplain reference was used for the assessment. Flood Insurance Study, Flood Hazard Boundary Map, or Special Study, etc.

3rd paragraph - Describe nature of encroachment. Recommend use of a table.

TABLE 1

Floodplain	Type of Encroachment	Length
Minnesota River	Transverse	400'
Hawk Creek	Transverse	150'

TABLE 2

Floodplain	Type of Encroachment	Length
St. Croix River	Transverse	1000'
Browns Creek	Longitudinal	1500'

If transverse encroachment; continue on to Step 3.

If project has longitudinal encroachment discuss the following:

1. Can longitudinal encroachment be practicably avoided? If answer is yes, revise project to avoid longitudinal encroachment.
2. If longitudinal encroachment cannot be practicably avoided; document reasons why not.

Step 3 - Adequately address the following four areas:

Area 1: No significant potential for interruption of a transportation facility which is needed for emergency vehicles or provides a community's only evacuation route.

Discuss - Is the roadway grade above the 100 year flood elevation?

If yes, document roadway elevation(s) versus 100 year flood elevation.

If no, state reason(s) why roadway grade will not be raised and state frequency of overtopping.

If 100 year flood elevation is not known?

Check with MnDOT maintenance; ask if roadway has a history of overtopping?

If no overtopping, document reference and length of record.

If yes overtopping, talk to District Preliminary Design Engineer about correcting deficiency.

Also, talk to District Hydraulics Engineer, Central Office Hydraulics, MnDOT Hydrologist for guidance.

Area 2: No significant impact on natural and beneficial floodplain values.

Discuss - Both beneficial and adverse impacts on the following:

Fisheries, wetlands, plants, public access (boat and/or canoe), channel changes, boat passage, threatened and/or endangered species, water quality, etc.

Erosion control, riprap on banks, delaying stream work until after spawning, slope steepening, hay bales, silt fences, etc.

Include any appropriate U.S.F. & W. and/or DNR letters or comments in appendix documenting environmental impacts (if any).

If a significant adverse impact exists, contact Project Manager and MnDOT Environmental Stewardship for guidance.

Area 3: No significant increased risk of flooding will result.

Discuss - Does the project result in any headwater or tailwater elevations that would endanger life or property?

Headwater (H.W.) - Defined as the depth of water upstream generated by a hydraulic structure. Measured from flowline.

Tailwater (T.W.) - Defined as the unobstructed depth of water upstream of a hydraulic structure. Measured from flowline.

State Increase (S.I.) - Is the difference between the Headwater and Tailwater depth upstream of a hydraulic structure. (S.I. = H.W. - T.W.)

Best Reference - Include a copy of Hydraulics memo.

Discuss - Are there any special hydraulic features? What is their purpose?

Possible Special Features

-
1. Spur dikes
 2. Gaging stations
 3. Dam structures
 4. Rip rap for abutment and pier protection
 5. Low roadway sag elevation

Note: Any alternative chosen for the _____ will cross numerous small drainage-ways. During design, these drainage-ways will be examined for any localized flooding problems and corrected to the extent practicable.

If a significant increase in flooding will result contact MnDOT Hydraulics Office and/or MnDOT Hydrologist for guidance.

Area 4: Will the project support and/or result in incompatible floodplain development?

If no, state reason(s) why project will not cause incompatible floodplain development.

Possible reasons:

1. Modernization of an existing structure/facility, therefore no new access is being provided to a floodplain area.
2. City/County has zoning regulations that control floodplain development.

If yes, the project will cause incompatible floodplain development, contact MnDOT Environmental Stewardship for guidance.

CONCLUDING STATEMENT

Based on the above assessment, no significant floodplain impacts are expected.

SUMMARY

In summary, each floodplain assessment should determine the physical nature of the encroachment, whether transverse or longitudinal. If the project results in a longitudinal encroachment additional information is required. This information must explain whether the longitudinal encroachment can or cannot be practicably avoided.

After the physical nature of the encroachment is determined, the following four points should be addressed and adequately documented.

1. No significant potential for interruption of a transportation facility which is needed for emergency vehicles or provides a community's only evacuation route.
2. No significant impact on natural and beneficial floodplain values will result.
3. No significant increased risk of flooding will result.
4. Will project cause incompatible floodplain development?

REMEMBER - VERY IMPORTANT!! - PROVIDE SUPPORTING EVIDENCE/DOCUMENTATION IN THE FLOODPLAIN ASSESSMENT.

STATE FLOODPLAIN REQUIREMENTS

State floodplain requirements based on Minnesota Statute 104 - Floodplain Management.

MnDOT responsible to meet both federal and state requirements.

The MnDNR exercises control over **Protected Waters** through the permitting process.

Protected Waters - Means those waters of the state identified as public waters or wetlands under Minnesota Statute, sections 105.37, subdivisions 14 and 15 and 105.391, subdivision 1.

When MnDOT has a project involving a **Protected Water**, MnDOT will need to obtain a permit from the MnDNR.

To obtain the permit; certain requirements must be met.

See attached requirements.

**EXAMPLE
FLOODPLAIN ASSESSMENT
FOR TH 169**

Federal Insurance Administration Flood Boundary and Floodway maps for Itasca County (Dated November 1, 1978, panel numbers 270200 0775A and 0800A) have been examined for this project. (See Figure 1, Floodplain map)

The project consists of constructing a four lane divided expressway with controlled access from Grand Rapids to Pengilly. The existing T.H. 169 two lane roadway will be upgraded to four lanes on existing alignment except around the City of Bovey. The entire four lane roadway will be on new alignment around the City of Bovey. Bridges are proposed for the crossings of the Mississippi River and Prairie River.

This project will encroach on the following floodplains:

FLOODPLAIN	TYPE OF ENCROACHMENT	LENGTH
Mississippi River	Transverse	500'
Prairie River		
Alt. 1A	Transverse	400'
Alt. 1B	Transverse/Longitudinal	400'/3100'
Alt. 1C	Transverse	600'

Note: If transverse encroachment - no further explanation is necessary. If longitudinal encroachment - must explain why there is no practical alternative to avoiding longitudinal encroachment. In the above example Alt. 1B created a longitudinal encroachment. There were practical alternatives 1A & 1C. Therefore, Alt. 1B was eliminated.

Actual Impact Analysis

This project will not result in any significant floodplain impacts for the following reasons:

I. No significant interruption or termination of a transportation facility which is needed for emergency vehicles or provides a community's only evacuation route.

A. All roadway grades will be designed above the 100 year flood elevation. The 100 year flood elevation at the Mississippi River is _____ and the 100 year flood elevation at the Prairie River is _____. There is no recorded evidence of flooding or overtopping of the existing bridge(s) or roadways at the river crossings.

II. No significant adverse impact on natural and beneficial floodplain values should result from this project.

A. No fisheries impacts are anticipated. Construction operations in the river will not occur from April 15 to June 15 to protect fish spawning and migration. (See DNR fisheries letter)

B. The new bridge structures will not increase the flow velocities in the river. Therefore, fish movements should not be affected.

C. The bridges will be designed to accommodate canoe and recreational boat traffic during periods of normal river flows. An existing canoe launch facility at the Mississippi River will be perpetuated.

D. There are no wetlands along the rivers in the vicinity of the proposed bridges and associated fill sections.

E. No threatened or endangered plants or animals have been identified in the floodplains.

F. Appropriate turf establishment and erosion control measures will be used.

III. No significant increased risk of flooding will result.

A. No significant change in headwater or tailwater elevations will result. Hydraulic analysis indicates an expected stage increase of 0.15 feet associated with the new bridge crossing of the Mississippi River. There is no apparent flood damage potential upstream because there is no development in the floodplain. (See attached Hydraulics Memo)

Hydraulic analysis indicates no stage increase for the new bridge crossing of the Prairie River. There are no known flooding problems at the Prairie River crossing.

IV. This project should not result in any incompatible floodplain development.

A. Itasca County has a floodplain ordinance that regulates floodplain development. The Itasca County floodplain ordinance conforms to the Minnesota Department of Natural Resources Floodplain Management guidelines.

Note: Usually a statement "That no new access to a floodplain area is being created" is applicable to most MnDOT projects.

SUMMARY

Based on the above floodplain assessment no significant floodplain impacts are expected