

March 1, 2021

Mr. Kris Bakkegard, Director of Engineering Metro Flood Diversion Authority 207 4<sup>th</sup> Street N, Suite A Fargo, ND 58102

RE: Construction Permit Application No. 2638 - FMM I29 Grade Raise

Dear Mr. Bakkegard:

The Office of the State Engineer (OSE) has reviewed your construction permit application for the Fargo Moorhead Metropolitan Area Flood Risk Management Interstate – 29 Grade Raise Project (FMM I29 Grade Raise Project). The State Engineer has approved the application and signed Construction Permit No. 2638.

The permit issued is subject to the conditions listed on the permit. Our office suggests you file the permit with the county recorder's office. Our office also recommends compliance with the North Dakota Department of Environmental Quality's Construction and Environmental Disturbance Requirements (enclosed).

If you have any questions, please feel free to contact me at 701-328-4288 or kahuber@nd.gov.

Sincerely,

Keling Ha

Kelsey Huber Water Resource Engineer

KH:/1928

- Enclosures: Permit to Construct or Modify No. 2638 NDDH Construction and Environmental Disturbance Requirements **Construction Completion Notification SFN 60895**
- cc (electronic): Terry Williams US Army Corps of Engineers St. Paul District Nathan Boerboom - City of Fargo Cass County Joint Water Resource District ND Game and Fish Department ND Department of Environmental Quality Minnesota Department of Natural Resources **Richland County Water Resource District**



## State Engineer

## **CONSTRUCTION PERMIT NO. 2638**

This permit authorizes the permittee to construct or modify a structure, pursuant to North Dakota Century Code § 61-16.1-38, subject to the permit conditions.

Name of Permittee:	Metro Flood Diversion Authority 207 4 <sup>th</sup> Street N, Suite A Fargo, ND 58102
Structure Type:	Dam; Dike
Purpose:	Flood Control

Location and Waterway on which Project will be constructed:

Location:	See Attached Map
Stream:	Red River, Various Drains
Basin:	Upper Red
Project:	Interstate-29, County Road 18, County Road 81 Grade Raises and associated infrastructure

This permit covers the I-29, County Road 18, and County Road 81 grade raises and associated infrastructure that form a portion of the Fargo-Moorhead Metropolitan Area Flood Risk Management Project (FMM Project) and tie into the FMM Project Southern Embankment (Dam) and Oxbow-Hickson-Bakke Ring Levee (Dike).

Location Map: See Attached Map

#### CONSTRUCTION PERMIT NO. 2638 (CONTINUED)

#### CONDITIONS TO PERMIT

- 1. The Permittee, Project owner, Project sponsor, landowner, and any associated parties may be liable for all activity conducted and all effects caused by the construction, modification, and operation of the dam, dike, or other device as described in the application and this permit. Consequently, the receipt of this permit does not relieve the Permittee, Project owner, Project sponsor, landowner, or any associated parties from liability resulting from the construction, modification, operation, or maintenance of the dam, dike, or other device, as approved under this permit.
- 2. In accordance with North Dakota Century Code chapter 61-03, section 61-04-11, and section 61-16.1-38, this permit and the Project approved under this permit are subject to changes, conditions, or modifications as in the judgement or discretion of the State Engineer may be necessary for safety or the protection of property. Such changes, conditions, or modifications, if required, will be at the expense of the Permittee, Project owner, Project sponsor, or any associated parties.
- 3. Prior to construction, in accordance with North Dakota Century Code section 61-16.1-38, plans and specifications associated with each Project component must be signed by a professional engineer eligible to practice engineering in the state of North Dakota, and reviewed and accepted by the State Engineer.
- 4. In accordance with North Dakota Administrative Code section 89-08-02-07, the Permittee must provide the State Engineer with As-Built plans within six months after the Project's construction.
- 5. Access to the Project for inspection will not be denied to the county water resource district of jurisdiction, State Engineer staff, or State Water Commission staff.
- 6. If prior to or during construction items of substantial archeological value are discovered or a deposit of such items are disturbed, the Permittee must cease construction activities in the affected area. The State Historical Preservation Office and the State Engineer must be promptly notified of the discovery, and construction will not resume until the State Engineer gives written permission.
- 7. The permit applies to the specific Project and Project location described in the permit application.
- 8. Any activity below the Ordinary High Water Mark of the Red River may not be conducted until an approved sovereign lands permit is obtained from the Office of the State Engineer.
- Construction for works authorized under this permit are to be completed within a total of 4 years under North Dakota Administrative Code sections 89-08-02-03.1 and 89-08-02-03.2, including extensions, from the approval date. Construction expected beyond 4 years will require the permit to be reauthorized.
- 10. In accordance with North Dakota Administrative Code chapter 89-08-03, a registered and licensed professional engineer must be in charge of and responsible for inspections during construction.

## CONSTRUCTION PERMIT NO. 2638 (CONTINUED)

- 11. In accordance with North Dakota Administrative Code chapter 89-08-03, inspections during construction must be performed at intervals necessary to ensure conformity with the construction permit as well as the plans and specifications.
- 12. In accordance with North Dakota Administrative Code chapter 89-08-03, the information obtained during an inspection must be documented in a written report. The report will specify any changes necessary under section 89-08-03-03. The inspection reports must be provided to the State Engineer upon request.

## SPECIAL CONDITIONS

- 1. This permit is subject to compliance with the FM Area Diversion Project Property Rights Acquisition and Mitigation Plan. Any modifications to the Project Property Rights Acquisition and Mitigation Plan are subject to approval by the State Engineer. If additional mitigation needs are deemed necessary, the State Engineer reserves the right to require modifications to the approved Property Rights Acquisition and Mitigation Plan.
- 2. An Operation and Maintenance Plan must be submitted, reviewed, and accepted by the State Engineer before the FMM Project is operated.
- 3. Prior to construction, the final Memorandum of Understanding between the Metro Flood Diversion Authority and Southeast Cass Water Resource District must be submitted to the Office of the State Engineer.
- 4. Prior to construction, the permittee must provide certification that the Project component being constructed is in compliance with the FM Area Diversion Project Property Rights Acquisition and Mitigation Plan.
- 5. An Emergency Action Plan must be submitted to and approved by the State Engineer before the FMM Project is operated.
- 6. With regard to any Project component or phase that will impact or require modification of any Southeast Cass County water resource District Facility, the USACE must submit all engineering designs and construction plans to the Southeast Cass County Water Resource District.

## CONSTRUCTION PERMIT NO. 2638 (CONTINUED)

#### RECOMMENDATIONS

The following list of recommendations, though not binding to the approval of this permit, are strongly encouraged:

- 1. Given the high hazard nature of the Project, the State Engineer strongly encourages wise and sound development downstream of the Project to ensure those high-risk areas downstream of the Project are developed in a way that will minimize risk to the public.
- 2. The Permittee is encouraged to coordinate with the Office of the State Engineer regarding Project status updates and the format in which they will be submitted to the Office of the State Engineer.
- 3. The Permittee is responsible for obtaining any other local, state, or federal permits or approvals that may be necessary prior to construction.



! hand. John Paczkowski, F.

Jof/n Paczkowski, F.2. Interim State Engineer

Date: 02/25/2021



State Engineer







## **Construction and Environmental Disturbance Requirements**

These represent the minimum requirements of the North Dakota Department of Health. They ensure that minimal environmental degradation occurs as a result of construction or related work which has the potential to affect the waters of the State of North Dakota. All projects will be designed and implemented to restrict the losses or disturbances of soil, vegetative cover, and pollutants (chemical or biological) from a site.

## Soils

Prevent the erosion of exposed soil surfaces and trapping sediments being transported. Examples include, but are not restricted to, sediment dams or berms, diversion dikes, hay bales as erosion checks, riprap, mesh or burlap blankets to hold soil during construction, and immediately establishing vegetative cover on disturbed areas after construction is completed. Fragile and sensitive areas such as wetlands, riparian zones, delicate flora, or land resources will be protected against compaction, vegetation loss, and unnecessary damage.

## Surface Waters

All construction which directly or indirectly impacts aquatic systems will be managed to minimize impacts. All attempts will be made to prevent the contamination of water at construction sites from fuel spillage, lubricants, and chemicals, by following safe storage and handling procedures. Stream bank and stream bed disturbances will be controlled to minimize and/or prevent silt movement, nutrient upsurges, plant dislocation, and any physical, chemical, or biological disruption. The use of pesticides or herbicides in or near these systems is forbidden without approval from this Department.

## Fill Material

Any fill material placed below the high water mark must be free of top soils, decomposable materials, and persistent synthetic organic compounds (in toxic concentrations). This includes, but is not limited to, asphalt, tires, treated lumber, and construction debris. The Department may require testing of fill materials. All temporary fills must be removed. Debris and solid wastes will be removed from the site and the impacted areas restored as nearly as possible to the original condition.

Division of Municipal Facilities 701.328.5211 Division of Water Quality 701.328.5210

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## CONSTRUCTION COMPLETION NOTIFICATION

NORTH DAKOTA STATE WATER COMMISSION REGULATORY DIVISION SFN 60895 (10/2018)

Mail To: Office of the State Engineer 900 East Boulevard Ave Bismarck, ND 58505-0850

Contact Info: (P) (701) 328-2750 (F) (701) 328-3696 www.swc.nd.gov OFFICE OF THE STATE ENGINEER USE ONLY

For structures that require a construction permit from the State Engineer, this form is to be submitted to the State Engineer upon completion of the structure in accordance with North Dakota Administrative Code **<u>89-08-02-03.1</u>**. As built plans of the structure must be submitted with this form in accordance with North Dakota Administrative Code **<u>89-08-02-07</u>**. For structures that do not require a construction permit, the State Engineer requests that the owner of the structure complete applicable sections of this form for the State Engineer's records. As built plans are not required for structures not requiring a construction permit.

**89-08-02-03.1:** Construction must be completed and the State Engineer must be notified of completion in writing within two years from the date of final approval or the permit is void. The two-year period does not begin until any appeal is complete.

**89-08-02-07:** As a condition on all construction permits, the owner of the dam, dike, or other device will provide the state engineer with "as built" plans within six months after the dam, dike, or other device has been constructed to provide details of the modifications that occurred during construction.

3. Ownership And Maintenance (complete all)						
A. Owner Of The Property On Which The Structure Is Located						
Name Or Agency						
Agency Contact Person (if applicable)						
Mailing Address	City	State	ZIP Code			
Email Address	Home Telephone Number					
Work Telephone Number	Cell Telephone Number					
B. Agency Or Individual Responsible For Operation And Maintena	nce Of The Structure					
Land Owner Listed Above Other (if other, please complete information below)						
Name Or Agency						
Agency Contact Person (if applicable)						
Mailing Address	City	State	ZIP Code			
Email Address	Home Telephone Number					
Work Telephone Number	Cell Telephone Number					
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(Signature Of Owner or Agency Representative)	(Print Name)	(Date)
	1	



# TECHNICAL MEMORANDUM

## DATE: February 24, 2021

TO: *TP* John Paczkowski, P.E., Interim State Engineer

FROM: Aaron Carranza, P.E., Director, Regulatory Division Matt Lindsay, P.E., Manager, Engineering and Permitting Section //# Kelsey Huber, E.I.T., Water Resource Engineer

## SUBJECT: Construction Permit Application No. 2638 – I29 Grade Raise

Construction Permit Application No. 2638 (Application) was received by this office on December 16, 2020 from the Metro Flood Diversion Authority (Diversion Authority) for the permitting of an approximately 650 foot long segment of the Southern Embankment and 840 feet of the Oxbow-Hickson-Bakke Ring Dike as part of an Interstate-29 (I29) Grade Raise project referred to as Work Package 31 (WP-31) (Project). The proposed Project forms part of the Fargo-Moorhead Metropolitan Area Flood Risk Management Project (FMM Project), a project that intends to provide federally certifiable flood protection to the cities of Fargo and West Fargo in North Dakota and Moorhead in Minnesota. All elevations are in reference to the North American Vertical Datum of 1988 GEOID 12B.

#### BACKGROUND

The I29 Grade Raise project intends to raise a portion of interstate so that the road surface remains above 0.2-percent AEP (500-year) flood pool, providing access to the FM Metro area. The I29 Grade Raise project is part of the larger FMM Project that includes the Southern Embankment, Diversion, in-town levees and floodwalls, as well as a ring dike around the communities of Oxbow, Hickson, and Bakke (OHB Ring Dike). The federal government, through the United States Army Corps of Engineers (USACE), is responsible for the Southern Embankment and OHB Ring Dike construction, while the non-federal sponsors are responsible for constructing the remaining FMM Project features, including the Diversion.

While the Project is to be constructed by the USACE, the Diversion Authority will be responsible for operation and maintenance.

The Office of the State Engineer (OSE) has permitted portions of the FMM Project:

- Diversion Inlet Structure under Construction Permit No. 2489 on July 8, 2016 and Wild Rice River Structure on August 23, 2019
- Parts of the OHB Ring Dike under Construction Permit Nos. 2427 on August 7, 2017 and 2429 on June 19, 2014
- In-town levees and floodwalls under several Construction Permits
- The Diversion under Construction Permit No. 2626 on November 25, 2020

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On **June 1, 2020**, the OSE approved the Property Rights Acquisition and Mitigation Plan v.5 (Mitigation Plan), a document that outlines how the FMM Project will mitigate impacted properties. Full authorization of the FMM Project is subject to all applicable local, state, and federal rules and requirements.

#### **DAM & DIKE LOCATION AND DESCRIPTION**

The I29 Grade Raise project crosses the Southern Embankment and requires the portion of the Southern Embankment directly beneath and adjacent to the I29 Grade Raise (Dam Segment) to be constructed as part of the I29 Grade Raise project. The Dam Segment to be constructed is located in the S ½ of Section 2, Township 137 North, Range 49 West, Pleasant Township, Cass County. Part of the Dam Segment involves construction of what the USACE terms a borrow ditch. The borrow ditch, located on the upstream (south) side of the Dam Segment, is intended to convey local drainage and stored water on the "wet" side of the Dam towards the Diversion Inlet Structure to the west. Construction of the borrow ditch hydraulically connects the west and east sides of I29 such that its construction may result in the flooding of property not normally inundated under existing conditions. To prevent adverse flooding, a 1,336 foot long temporary levee is to be constructed on the east side of I29, preventing waters west of I29 from traveling east of I29 (see permit map and correspondence dated January 13, 2021).

The I29 Grade Raise project also involves grade raises on County Road 18 and County Road 81, as well as the construction of two dike segments (cumulative length of approximately 840 feet) that form part of the OHB Ring Dike in the SE ¼ of Section 23 and SW ¼ of Section 24, Township 137 North, Range 49 West, Pleasant Township, Cass County. The two dike segments were included in the I29 Grade Raise project due to their close proximity to the County Road 18 and 81 grade raises.

#### **APPLICATION REVIEW**

According to North Dakota Century Code (N.D.C.C.) § 61-16.1-38 and North Dakota Administrative Code (N.D.A.C.) § 89-08-02-01, a permit is required from the OSE for the construction or modification of a structure capable of retaining, obstructing, or diverting more than fifty acre-feet of water. The Project forms a portion of a larger system (FMM Project) that will be capable of retaining or obstructing a volume greater than 50 acre-feet. Therefore, a construction permit is required from the OSE.

Given this Project is supervised by the US Army Corps of Engineers (a federal agency), the Project is exempt from drainage permitting according to N.D.C.C. § 61-32-03 and N.D.A.C. § 89-02-01-05.

#### **COMPLETE APPLICATION**

According to N.D.C.C. § 61-16.1-38 and N.D.A.C. § 89-08-02-02, a completed construction permit application must include complete plans and specifications completed by a professional engineer and evidence establishing a property right for the property that will be affected by the construction of the project proposed under the Application.

#### PLANS AND SPECIFICATIONS

The November 2020 USACE Interstate 29 Grade Raise and Borrow Ditch Crossing - Red River of the North River Basin plan set includes individual plan sheets associated with the Project that were signed on November 9, 2020 by Adam M. Ruud (PE-10407), Kevin J. Knott (PE-5679), Ezra

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Ballinger (PE-7328), Yaping Chi (PE-25986), Luke J. Beckermann (PE-10087), or Ryan M. Frolek (PE-28337), each a professional engineer licensed in the state of North Dakota. Project specifications are called out in the plan set as well as referenced from the North Dakota Department of Transportation 2020 Standard Specifications and USACE supplemental specifications dated November 2020.

#### MITIGATION PLAN

The OSE's approval of the Mitigation Plan for the FMM Project was determined to satisfy the requirement for evidence of a property right for property affected by the construction of the Dam and Dike. A special condition was placed on the permit such that it is subject to the Mitigation Plan and any modifications to the Mitigation Plan require State Engineer approval. To ensure the Project component being constructed is in compliance with the Mitigation Plan prior to construction a special condition was placed on the permit such that the Permittee is to provide the OSE certification prior to construction that the Project component being constructed is in compliance with the Mitigation plan.

Based on review of N.D.A.C. § 89-08-02-02, with the submission of an updated Construction Permit Application, the OSE determined the Application complete on December 16, 2020.

#### DAM & DIKE DESIGN

According to the Application and supporting materials, the Project will include the following:

#### **Construction of a Portion of the Southern Embankment (Dam Segment)**

The Project includes construction of a 650 foot long Dam Segment that forms part of the 21 mile Southern Embankment. The Dam Segment is a part of the I29 Grade Raise project and is located where I29 would intersect the Southern Embankment. The Dam Segment is to be constructed with a 15 foot top width (up to 28 feet along roadways), 4:1 side slopes, a maximum height of 20 feet (928.5 feet) and 23 ft (932.5 feet) to top of Interstate, and is to be an earthen embankment with impervious clay fill.

Upstream of the Dam Segment, a portion of a drainage ditch referred to by the USACE as a "borrow ditch" is to be constructed to be 1,050 feet long, 50 feet wide, with 7:1 side slopes. The borrow ditch is intended to direct local drainage and stored waters toward the Diversion Inlet Structure and through the Diversion once the FMM Project is complete. Given the I29 grade raise passes over the borrow ditch, twin bridges are to be constructed to allow passage of water from east to west beneath I29 and towards the Diversion Inlet Structure. The bridges were designed in accordance with North Dakota Administrative Code § 89-14-01 stream crossing standards and were designed to pass a 50-yr event. In addition, the bridges were designed to:

- 1. Cause no significant head loss across the bridges for the 1-percent AEP (100-year), 0.2-percent AEP (500-year), and PMF events
- 2. Maintain a flow velocity at the bridge of less than 5 ft/s
- 3. Minimize bridge dimensions to minimize cost

Given construction of the borrow ditch hydraulically connects the areas west and east of I29, where there previously was no connection (see correspondence dated January 13, 2021), a 1,336-foot long temporary levee is to be constructed across the borrow ditch on the east side of I29. The temporary levee would "ensure the flood risk to property east of I-29 is no greater than existing conditions" (see correspondence dated January 13, 2021). The temporary levee forms a

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backwards "C" shape tying into the constructed portion of the Southern Embankment (Dam Segment) on the north and I29 on the south. The temporary levee is to be constructed with the same impervious fill and compaction requirements as the Southern Embankment and OHB dike segments and is to be removed as one of the final steps in making the FMM Project operational (approximately 2027).

#### Construction of OHB Ring Dike Segments (Dike Segments)

Two dike segments that would form part of the OHB Ring Dike are to be constructed as part of the I29 Grade Raise project.

Segment 1 - 600 feet: ties into the end of the previously constructed WP-43A levee just east of County Road 81, through the County Road 81 Road raise, and ends on the west side of County Road 81

Segment 2 - 240 feet: Constructed across a drainage swale and ties into and closes a gap within the previously constructed WP-43A levee just north of County Road 18.

#### **DAM & DIKE OPERATION & MAINTENANCE**

Even though the USACE is designing and constructing the Project, the responsibility for operation and maintenance rests with the Diversion Authority. A special condition was placed on the permit such that an Operation and Maintenance Plan must be accepted by the State Engineer before the FMM Project is operated.

#### WATER RESOURCE DISTRICT AND OTHER AGENCY COMMENTS

Comment was solicited from the Cass County Joint Water Resource District, North Dakota USACE Regulatory Office, and North Dakota Department of Environmental Quality (DEQ) on January 15, 2021 (see file).

Cass County Joint Water Resource District provided comment on February 12, 2021, stating that "[a]ny issues of concern to the Cass County Water Resource Districts will be addressed in a *Memorandum of Understanding* with the Diversion Authority."

DEQ provided comment prior to the OSE's January 15, 2020 solicitation in their letter dated August 11, 2020, where they granted a clean water certification subject to several conditions (see file). In addition, DEQ responded with a general list of disturbance requirements in an email dated February 5, 2021 (see file).

#### CONCLUSION

Based on the information provided in the Application and supporting materials, I recommend the State Engineer approve Construction Permit Application No. 2638 subject to the standard construction permit conditions and the following special conditions and recommendations:

#### Special Conditions

1. This permit is subject to compliance with the FM Area Diversion Project Property Rights Acquisition and Mitigation Plan. Any modifications to the Project Property Rights Acquisition and Mitigation Plan are subject to approval by the State Engineer. If additional mitigation needs are deemed necessary, the State Engineer reserves the right to require modifications to the approved Property Rights Acquisition and Mitigation Plan.

- 2. An Operation and Maintenance Plan must be submitted, reviewed, and accepted by the State Engineer before the FMM Project is operated.
- 3. Prior to construction, the final Memorandum of Understanding between the Metro Flood Diversion Authority and Southeast Cass Water Resource District must be submitted to the Office of the State Engineer.
- 4. Prior to construction, the permittee must provide certification that the Project component being constructed is in compliance with the FM Area Diversion Project Property Rights Acquisition and Mitigation Plan.
- 5. An Emergency Action Plan must be submitted to and approved by the State Engineer before the FMM Project is operated.
- 6. With regard to any Project component or phase that will impact or require modification of any Southeast Cass County Water Resource District Facility, the USACE must submit all engineering designs and construction plans to the Southeast Cass County Water Resource District.

#### Recommendations

- 1. Given the high hazard nature of the Project, the State Engineer strongly encourages wise and sound development downstream of the Project to ensure those high-risk areas downstream of the Project are developed in a way that will minimize risk to the public.
- 2. The Permittee is encouraged to coordinate with the Office of the State Engineer regarding Project status updates and the format in which they will be submitted to the Office of the State Engineer.
- 3. The Permittee is responsible for obtaining any other local, state, or federal permits or approvals that may be necessary prior to construction.