

# **SIBLEY ISLAND FLOOD CONTROL ALIGNMENT REVISION AND OPC UPDATE**

**To:** Rodney Beck, Manager, Burleigh County Water Resource District  
**From:** Michael H. Gunsch, PE, CFM, Senior Project Manager  
**Subject:** Sibley Island Alternative Alignment and Township Roadway Costs  
**Date:** February 4, 2019  
**Project:** HEI No. 6025-0014

## **PUBLIC INFORMATIONAL MEETING**

The Burleigh County Water Resource District (BCWRD) held a Public Informational Meeting on November 27, 2018 regarding the Sibley Island Flood Control Project. This project represents the completion of the southern segment of the *Burleigh County 20-foot Flood Protection Plan (BCFPP)*.

Based on updated information developed during meeting preparation, stakeholder input and comments at the meeting, and after consultation with the Burleigh County Engineer the following determinations were documented, as illustrated on **Figure One** and **Figure Two**:

The Washington Street grade raise south of 48<sup>th</sup> Avenue, and Sibley Island levee system represent the western segment of this flood control project to be constructed by the BCWRD.

- The Sibley Park Levee Alignment was revised based on utilizing the higher ground through Sibley Park along the existing paved roadway system and includes the following:
  - Roadway grade raise and new pavement from Washington Street east to the high ground connection within Sibley Park. The public roadway portion on Washington Street is to be paid for via Lincoln Township (a.k.a. Burleigh County) but is included with the Sibley Island Levee Segment of the project.
  - Utilizing the high ground and existing park system roadway, from the west to the high ground on the east, then extending to the southeast using an earthen levee to the west side of the Missouri River oxbow. The extension beyond the existing roadway will be constructed as a roadway with a maintenance turnaround west of what is known as the Breise Dam located on the old Missouri River oxbow.
  - Raising of the eastern end of the park roadway will require modifications to the existing camper pads and may allow for several additional pads to be installed.
  - Removal and reconstruction of the Breise Dam to levee specifications, with a control structure and culvert system for flood control purposes, as well as to enhance natural flows for mitigation within and through the oxbow under normal runoff conditions.
  - Construct a new earthen levee east from Breise Dam to the southeast, and then east to connect to the township grade raise 12<sup>th</sup> Street SE.
  - The typical sections for these roadway/levee features are shown on **Figure One**. A geotechnical review will be completed along the levee design alignment. A twenty to thirty-foot easement will be secured along the park roadway, including the high ground segment, that will be available for future O&M and flood control purposes. This easement to allow for the placement of additional protection measures, should projected flood levels require.
  - Easements on all levee segments will be commensurate in width as required for construction and integrity of the levee system along with future O&M requirements.

- This levee and related facilities within the Sibley Island Park will require US Army Corps of Engineers (USACE) approval and easements as they are the property owner, and Bismarck Park District at they are the leaseholder.
- Easements on private properties will be secured either through donation or purchase based on individual circumstances. Use of eminent domain is a last resort measure.

Realignment of the Sibley Island levee through the park materially reduces project costs by avoiding significant new levee construction and new paving. Realignment of the levee segment east of Breise Dam to 12<sup>th</sup> Street SE is recommended, in part, to avoid landowners who expressed opposition to the levee being placed on their property. This opposition was generally associated with their belief regarding potential adverse impacts and lack of benefits to their property.

The Lincoln Township grade raises represent the eastern segment of this project, see **Figure Two**.

- Lincoln Township (a.k.a. Burleigh County) is positioned to design, fund and construct under a separate project the following roadway grade raises as part of the flood control plan:
  - 12<sup>th</sup> Street SE - From the Sibley Island levee south to Oahe Bend
  - Oahe Bend - East to Sibley Drive, then east to Apple Creek Drive then north

### SIBLEY ISLAND SEGEMENT – BCWRD SPECIAL ASSESSMENT PROJECT

**Table One** presents updated Opinions of Probable Costs (OPC) based on the recommended realignments of the Sibley Island Flood Control Project with construction in 2020-2021. Landowners have gathered over fifty percent of the signatures on a petition from the 103 parcel owners within the preliminary special assessment district boundary, see **Figure Three**. The BCWRD’s next step is to validate these signatures and establish the project under NDCC Section 61-16.1. They would then proceed with completing a preliminary engineering report, creating the special assessment district and conducting a vote of the benefited properties.

North Dakota State Water Commission (SWC) funding remains the primary funding option for the levee and roadway grade raises. The North Dakota State Engineer participated in the cost for the original project feasibility evaluation, and the project is eligible under the SWC criteria. **Table One** illustrates the projected total costs and assessment distribution based on the 103 parcels. As noted during the Public Information meeting most of the parcels are rural residential properties, however there are several larger agricultural parcels. The final assessment distribution would be determined as part of the preliminary engineering report and could be lower per residential lot depending on the benefits assigned to the agricultural properties.

<b>Table One</b>			
<b>Sibley Island Levee – BCWRD Construction Project – 103 Parcels</b>			
<b>Reach</b>	<b>Total Construction Cost [1]</b>	<b>Cost Per Parcel</b>	<b>Cost Per Parcel w/SWC Participation [2]</b>
Washington St Grade Raise	\$198,563	[3]	[3]
Sibley Island Levee/Roadway	\$1,474,606	\$6,474	\$6,474
Combined Costs	\$1,673,169	\$6,474	\$6,474
[1] Costs include a two-year inflationary factor for anticipated construction in 2021 [2] SWC funding is based on their current 60% cost share policy as of July 2018 [3] Washington Street Grade Raise is funded by Lincoln Twp; therefore, these costs are included the next section.			

Using the OPC in **Table One** the State Water Commission cost share would fund \$807,839, while the Special Assessment District would fund approximately \$666,676. The SWC cost share would fund \$97,566 of the Washington Street grade raise with the remaining \$75,887 being funded by Lincoln Township. Total SWC Cost share for the *Sibley Island Segment* is \$883,726.

## ROADWAY GRADE RAISE SEGMENT – LINCOLN TOWNSHIP

The second segment of the Sibley Island Flood Control Project consists of a grade raise along several township roadways. The grade raises would start on 12<sup>th</sup> Street SW at the point where the Sibley Island Segment earthen levee connects to the roadway. It then extends south to Oahe Bend; then east to Sibley Drive; then continues east to Apple Creek Drive; then north along Apple Creek Drive to high ground to close off the flood protection from the Missouri River. These grade raises provide the final closure of the BCFPP.

The township grade raise will be to an elevation that provides 0.7 feet of freeboard based on the actual 2011 Missouri River flood elevations. Based on the current DFIRM Base Flood Elevation (BFE) in this area (1633.6) the anticipated freeboard is approximately 0.9 feet. Compliance with FEMA standards is not practical due to the inability to provide three foot of freeboard. Therefore, this project will not eliminate the need for flood insurance behind the levee. It will however provide real and effective protection to the interior benefited properties. This includes rural residential properties and agricultural properties, as well as to southern portions of the City of Bismarck. The total protected area for the Sibley Island Flood Control Project, illustrated on **Figure Four**, contains approximately 1,272 acres. This is a considerable area with benefits provided beyond the proposed special assessment district. The costs benefits outside the assessment district are provided by Lincoln Township, as the County during the 2011 flood utilized 48<sup>th</sup> Avenue as the line of protection. Subsequently, it was determined areas north of 48<sup>th</sup> Avenue would not be included in the special assessment district, which will not include roadway costs.

**Table Two** provides the projected costs for the proposed grade raises and anticipated cost share from the North Dakota State Water Commission based on current policy for flood control projects.

<b>Table Two</b>		
<b>Sibley Island Flood Control – Township Roadway Construction Project</b>		
<b>Reach</b>	<b>Total Construction Cost [1]</b>	<b>Cost w/SWC Participation [2]</b>
12 <sup>th</sup> St and Oahe Bend to Sibley Drive	\$2,021,951	\$1,168,238
Oahe Bend – Sibley Drive to Apple Creek Drive	\$1,155,754	\$ 667,770
<b>Combined Construction Costs</b>	<b>\$3,177,705</b>	<b>\$1,836,008 [3]</b>
<p>[1] The OPC's for the roadway grade raise are based on projected costs provide by the Burleigh County Engineer and adjusted to be consistent with the BCWRD Levee cost criteria. Costs include a two-year inflationary factor for anticipated construction in 2020</p> <p>[2] SWC funding is based on the current 60% cost share policy as of July 2018, based on a roadway constructed to act as a flood control feature and permitted as such.</p> <p>[3] Lincoln Township Participation in the Washington St Grade raise is not included in the Special Assessment District. Therefore, these costs are not shown here.</p>		

Using the OPC in **Table Two** the State Water Commission cost share would fund \$1,836,008 of the grade raises, while the Township would fund approximately \$1,341,690. The SWC cost share for the Washington Street grade raise is noted in the Sibley Island Levee Segment.

There will be no vote or special assessment district for the township roadway grade raises. The local non-cost share portion will be funded through Lincoln Township funding sources.

## CONCLUSIONS

The BCWRD authorized this additional evaluation and memorandum including consultation with the Burleigh County Engineer to determine the projected township roadway costs and funding needs as presented. The roadway grade raises on 12<sup>th</sup> Street SE and Oahe Bend by agreement will not be included in the BCWRD special assessment district process; therefore, the Burleigh County Highway Department intends to construct the township roadway segment independently under separate contract.

Subsequently, the OPC's for the levee and grade raises were updated with the understanding of potential state funding contributions, including the following:

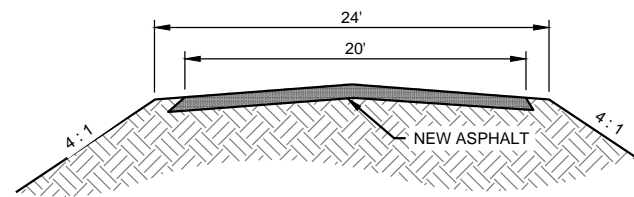
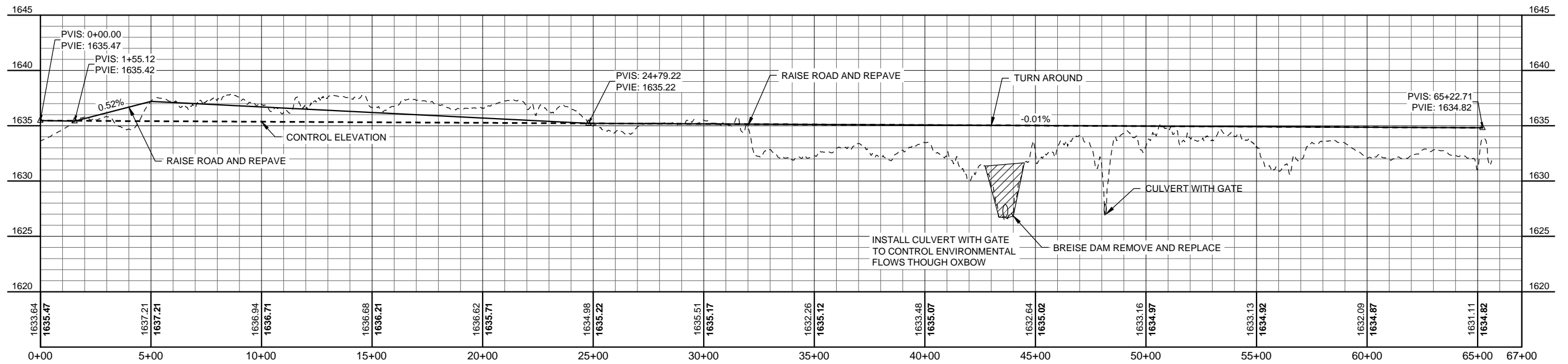
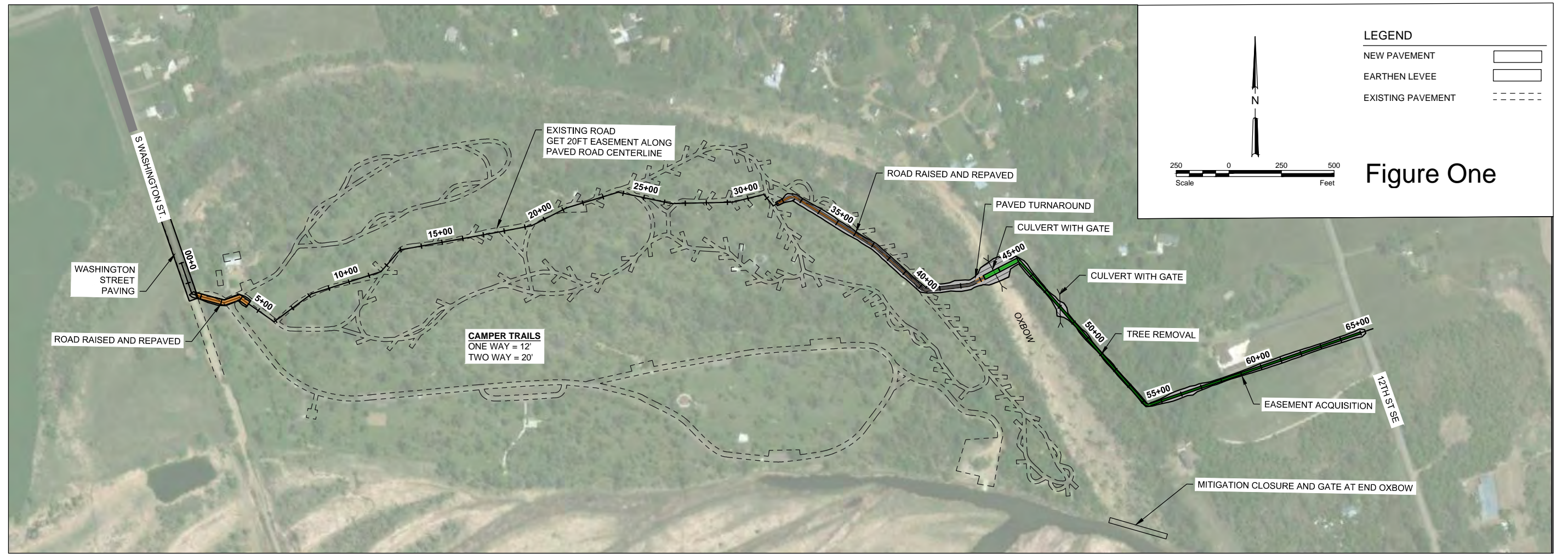
- General inflationary increases from 2019 to 2021 when construction could occur.
  - This is based on a 5% annual increase in construction costs
- Easement acquisition or ROW on properties where the levee is to be constructed and there are no benefits provided to the landowner on whose land the project is located
- Expanded regulatory permit requirements (NDSWC, USACE, NFIP, etc.)
- SWC funding participation is based on current cost share policy. It is projected, if the projects were to proceed, preliminary engineering would occur in the next biennium (2019-2020) with construction to follow in the next (2021-2022).

The original planning form submitted to the NDSWC was based on the original feasibility study completed in 2012 and updated to 2018 costs. Attached to this memorandum is an updated SWC planning form based on the new project alignment, and the inclusion of the Lincoln Township Roadways. The following is a brief summary

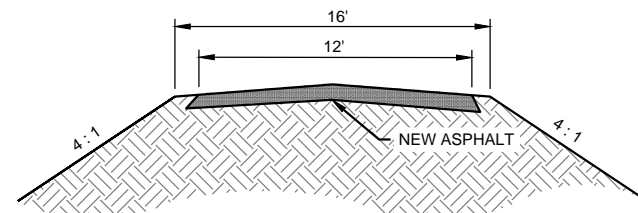
<i>Flood Map Figure FIS – Protection Area</i>		<i>1,272+ Acres</i>	
<i>Total Project Cost</i>	=	<i>\$4,850,876</i>	
<i>Combined SWC Cost Share</i>	=	<i>\$2,741,403</i>	<i>(~56.5% considers ineligible items)</i>
<i>Local Cost</i>	=	<i>\$2,109,474</i>	

There are several items elements to acknowledge that must be evaluated during preliminary and final design. They include potential influences of the Apple Creek floodplain on the eastern project boundary, an economic evaluation likely required by the NDSWC as part of their cost share funding process and the geotechnical review along the grade raise alignments.

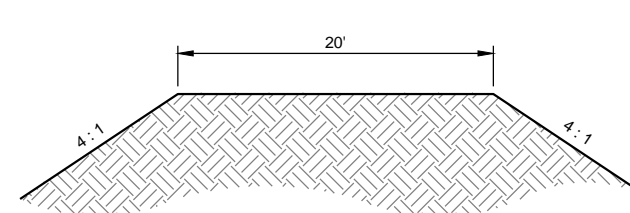




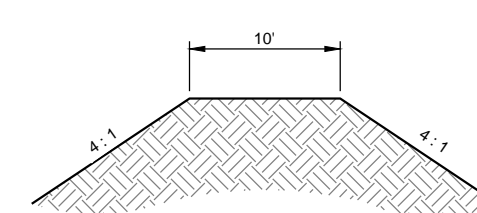
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SIBLEY ISLAND FLOOD CONTROL PROJECT  
BURLEIGH COUNTY  
BISMARCK NORTH DAKOTA

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MG  
DATE  
1/7/19  
PROJECT NUMBER  
6025-0014

No.	Revision	Date	By





# Sibley Island Flood Control Project

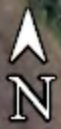
Lincoln Township Grade Raises

## Figure Two

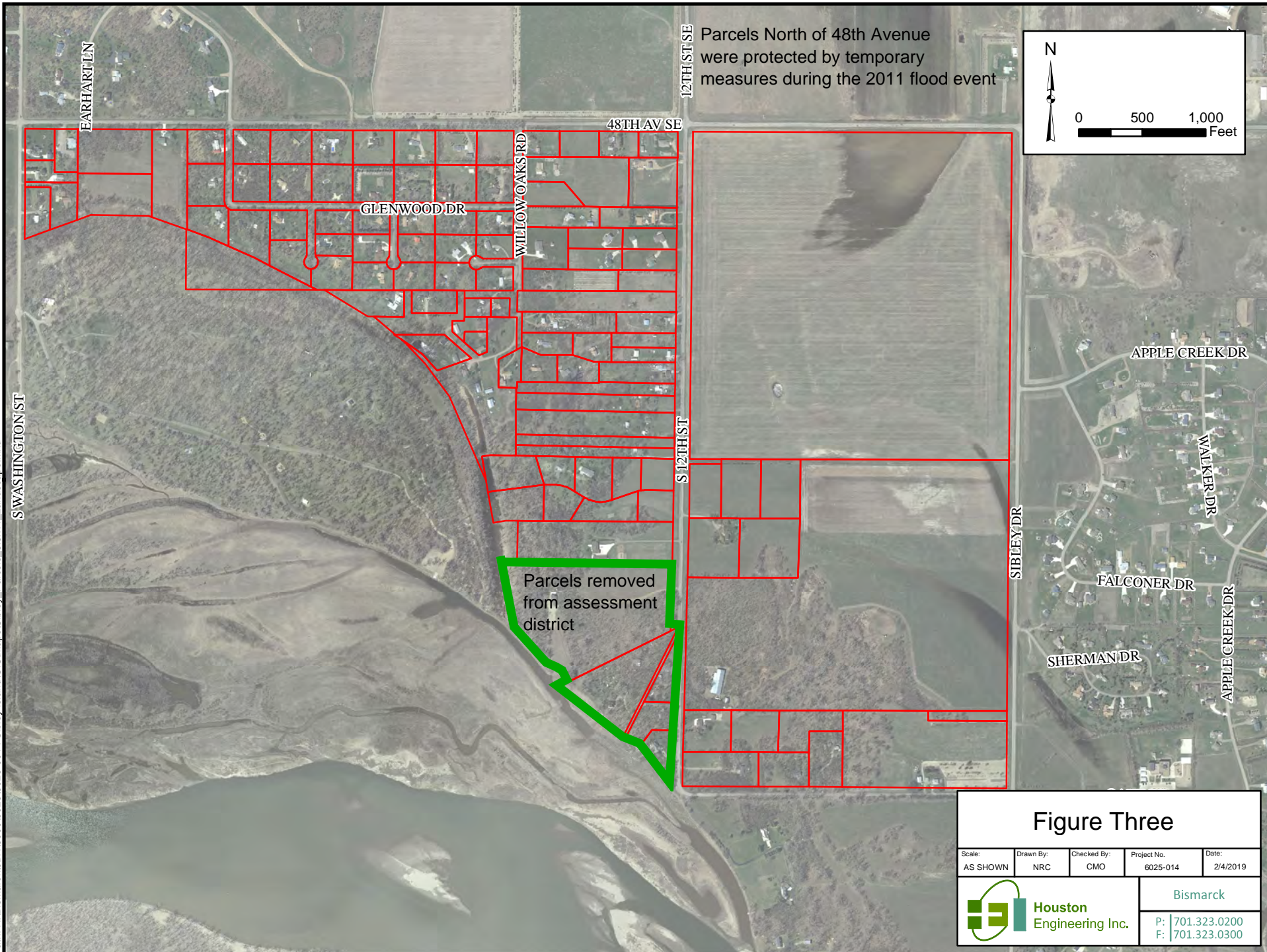
Legend



-  Earthen Levee
-  Twp Roadway Grade Raises







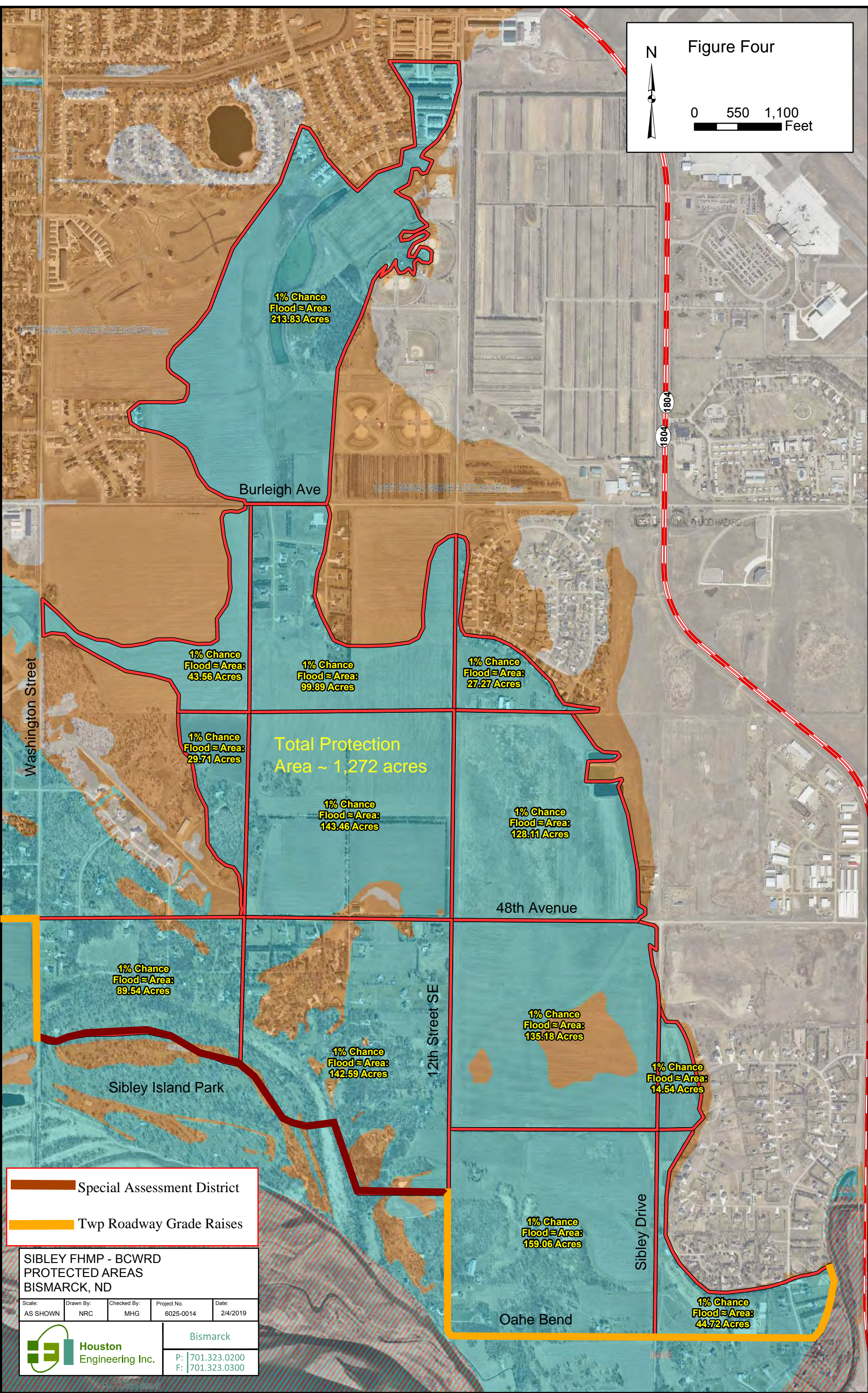
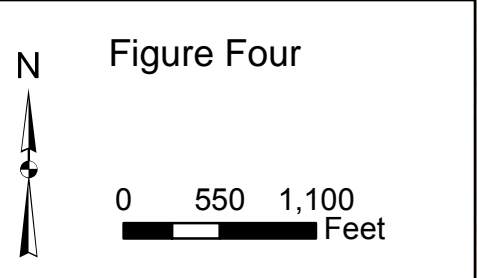
### Figure Three

Scale: AS SHOWN	Drawn By: NRC	Checked By: CMO	Project No. 6025-014	Date: 2/4/2019
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- Special Assessment District
- Twp Roadway Grade Raises

**SIBLEY FHMP - BCWRD  
PROTECTED AREAS  
BISMARCK, ND**

Scale: AS SHOWN	Drawn By: NRC	Checked By: MHG	Project No. 6025-0014	Date: 2/4/2019
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