

APPENDIX G ALTERNATIVE WETLAND CONSTRAINTS DESKTOP ANALYSIS

**ENVIRONMENTAL CONSTRAINTS ANALYSIS FOR THE
ALTERNATIVE ROUTE ASSESSMENT OF THE BLUEWATER
SPM PROJECT IN ARANSAS, NUECES, AND SAN PATRICIO
COUNTIES, TEXAS**

Prepared for

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SWCA Project No. 53739

April 2019

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1. INTRODUCTION

Lloyd Engineering (Lloyd) considered this alternative route assessment in which to construct approximately 48.62 miles of pipeline infrastructure as well as a booster station (Project) within the state of Texas that continues into the Gulf of Mexico comprising three pipeline segments: “Offshore,” “Inshore,” and “Onshore” (**Figures 1 & 2, Appendix A**):

- Offshore components associated with the proposed Project are defined as those components located seaward of the mean high tide (MHT) line located at the interface of Mustang Island and the Gulf of Mexico (GOM). The Offshore Project components include approximately 17.07 miles of two (2) new 30-inch-diameter crude oil pipelines extending to two (2) SPM buoy systems.
- Inshore components associated with the proposed Project are defined as those components located between the northern Corpus Christi Bay MHT line and the MHT line located at the interface of Mustang Island and the GOM. Inshore Project components includes approximately 8.45 miles of two (2) new 30-inch-diameter crude oil pipelines, and an approximate 19-acre booster station located on Mustang Island.
- Onshore Project components includes approximately 23.10 miles of two (2) new 30-inch-diameter crude oil pipelines extending from the landward side approximately 2.5 miles north of Nueces Bay to the MHT line of the Corpus Christi Bay located south of Ingleside in San Patricio County, Texas.

SWCA Environmental Consultants (SWCA) conducted an Environmental Constraints Analysis to provide Lloyd with a summary of the relevant environmental resources (focusing on waterbodies, wetlands and floodplains) and their anticipated constraints for the Project within a 0.5-mile-radius (review corridor) of the alignment provided by Lloyd. This document also includes a description of necessary environmental surveys, anticipated permits needed for the Project, and an estimated schedule for achieving State and Federal environmental clearances.

2. NATURAL RESOURCES

2.1. Waterbodies

SWCA Environmental Consultants (SWCA) assessed waterbody crossings of the Project using the U.S. Geological Survey (USGS) National Hydrography Dataset (NHD) and U.S. Fish and Wildlife Service (USFWS) National Wetland Inventory (NWI) data. The NHD is a nationwide source for waterbody information, but it is not always accurate and may not include all potential waterbody crossings. According to the NHD and NWI, there are 128 streams and waterbodies within the review corridor (**Figure 3, Appendix A**). Assuming a 120-foot-wide right-of-way (ROW) centered on the segment alignments, the Project is estimated to cross a total of 14 streams and other waterbodies (estuarine and marine deepwater, riverine, and fresh-water pond features). **Table 1** summarizes the estimated waterbody crossings by Project segment. Due to the inaccuracy of the NHD and NWI, it is anticipated that more stream crossings would be encountered. All stream crossings would be delineated during eventual field surveys.

Table 1. NHD and NWI Waterbody Summary

Waterbody Type	Within Review Corridor		Within an assumed 120-foot-wide ROW	
	Number of Crossings	Feet/Acreage	Number of Crossings	Feet/Acreage
Offshore				
Other Waterbodies (Ponds/Lakes)	3	2,382 Acres	1	26 Acres
Inshore				
Other Waterbodies (Ponds/Lakes)	58	4,556 Acres	4	50 Acres
Onshore				
Perennial	2	5,901 Feet	1	122 Feet
Canal/Ditch	9	42,168 Feet	3	2672 Feet
Other Waterbodies (Ponds/Lakes)	56	316 Acres	5	1 Acres
<i>Subtotal Offshore</i>	<i>3</i>	<i>2,382 Acres</i>	<i>1</i>	<i>26 Acres</i>
<i>Subtotal Inshore</i>	<i>58</i>	<i>4,556 Acres</i>	<i>4</i>	<i>50 Acres</i>
<i>Subtotal Onshore</i>	<i>67</i>	<i>48,069 Feet 316 Acres</i>	<i>9</i>	<i>2,794 Feet 1 Acres</i>
Totals	128	48,069 Feet 7,254 Acres	14	2,794 Feet 77 Acres

Construction of the Project in or under waterbodies subject to Section 10 of the Rivers and Harbors Act of 1899 (navigable waters) requires a Section 10 permit from the U.S. Army Corps of Engineers (USACE). Some USACE Districts only confirm navigable waters on a case by case basis, however, based on SWCA’s experience there are an estimated 3 waterbody crossings along the Project likely to be considered navigable waters (**Figure 3, Appendix A**). **Table 2** lists the anticipated navigable waters crossings by USACE District and Project segment.

Table 2. Estimated Section 10 (Navigable Waters) Waterbody Crossings by Project Segment

Offshore	Inshore	Onshore
USACE Galveston District	USACE Galveston District	USACE Galveston District
• Gulf of Mexico	• Corpus Christi Bay	• Kinney Bayou

2.2. Wetlands

SWCA reviewed U.S. Fish and Wildlife Service (USFWS) National Wetland Inventory (NWI) data to develop a preliminary assessment of the extent of potential wetlands along the Project. According to NWI data, there are approximately 221 acres of wetlands within the review corridor and 6.5 acres of wetlands within a hypothetical 120-foot-wide ROW centered on the segment alignments (**Figure 3, Appendix A**). The NWI wetlands are primarily located within gulf coastal prairie rangelands, floodplain crossings, and the Mustang Island crossing. In general, NWI wetlands within the project area fall into four categories: estuarine intermittently exposed intertidal flats (E2US), estuarine intertidal emergent wetlands (E2EM),

palustrine scrub/shrub (PSS) wetlands, and palustrine emergent (PEM) wetlands. The NWI data also indicates some riverine and fresh water pond features which are included in the waterbodies section. The Project may require reroutes or avoidance via horizontal directional drill (HDD) to avoid permanent wetland impacts, minimize wetland mitigation costs, and/or keep the Project within USACE Nationwide Permitting (NWP) limits.

Table 3 summarizes the estimated wetland crossings by Project segment. Due to the potential inaccuracy of the NWI data, it is anticipated that the actual number of wetland crossings would differ. All wetland crossings would be delineated during field surveys.

Table 3. NWI Wetland Summary

Wetland Type	Within Review Corridor		Within an assumed 120-foot-wide ROW	
	Number of Crossings	Acreage	Number of Crossings	Acreage
Offshore				
E2US	0	0	0	0
E2EM	0	0	0	0
PSS	0	0	0	0
PEM	0	0	0	0
Inshore				
E2US	19	84.286	3	0.356
E2EM	26	120.337	0	0
PSS	0	0	0	0
PEM	15	171.451	2	3.177
Onshore				
E2US	2	41.569	0	0
E2EM	0	0	0	0
PSS	3	3.624	1	0.762
PEM	616	199.609	25	2.531
<i>Subtotal Offshore</i>	<i>0</i>	<i>0</i>	<i>0</i>	<i>0</i>
<i>Subtotal Inshore</i>	<i>60</i>	<i>376.074</i>	<i>5</i>	<i>3.533</i>
<i>Subtotal Onshore</i>	<i>621</i>	<i>244.802</i>	<i>26</i>	<i>3.293</i>
Totals	681	620.876	31	6.826

2.3. Compensatory Wetland Mitigation

Should permanent wetland impacts be unavoidable, mitigation may be required. Based on a review of RIBITS, there are no wetland mitigation banks with service areas covering portions of the Project. Therefore, should mitigation be necessary, permittee-responsible mitigation (PRM) would possibly be necessary for PSS wetland impacts. PRM is a highly technical, complicated, expensive, and time-consuming process, so it is recommended to avoid all wetland impacts that might create a need for such

mitigation. **Table 4** summarizes NWI data crossed by the proposed project by Hydrologic Unit Code (HUC) to provide an estimate of the potential mitigation requirements of the proposed project.

Table 4. Estimated Wetland Mitigation within 120-foot Workspace by HUC

Hydrologic Unit Code	Impacts (acres)			Wetland Mitigation Banks with Service Areas in Hydrologic Unit Code	USACE District of Wetland Mitigation Bank
	PEM	PSS	E2US		
12110201	2.531	0.762	0	-	Galveston
12110202	3.177	0	0.356	-	Galveston

2.4 Floodplain

2.4.1 County Floodplain Requirements

Floodplain development permitting is commonly required at a county level, when construction is expected to cross or impact a known floodplain. Based on our research and experience, it is known that Aransas, Nueces, and San Patricio Counties have formalized floodplain development permit applications.

Aransas County requires that any development within applicable jurisdiction first require a permit from the Floodplain Administrator. County regulations require that no alteration, diversion, or encroachment shall be made to any water feature without specific written authorization from the County Floodplain Administrator (Aransas County 2016).

Nueces County prohibits the construction of structures and the altering of land within flood hazard areas unless a Floodplain Development Permit has been issued. If a structure is to be constructed in a floodplain an Elevation Certificate will need to be furnished by the owner before the Floodplain Development Permit is issued. The Elevation Certificate is necessary to document the elevation of the lowest flood of all new or improved structures (Nueces County 2019).

San Patricio County requires that an application for a floodplain development permit be presented to the floodplain administrator, which includes construction plans to scale depicting the location, dimensions, and elevation of proposed landscape alterations, existing and proposed structures, and the location of the project in relation to flood hazard areas. Description of the extent to which any watercourse or natural drainage will be altered or relocated as a result of the proposed development should be included as well (San Patricio County Texas 2017).

3. FEDERAL AND STATE PERMITTING AND AGENCY CONSULTATIONS

3.1.Clean Water Act

The Project is located within the USACE Galveston District. Under Section 404 of the Clean Water Act (CWA), the USACE issues either an individual permit or verifies that an action is addressed by a regional general permit or NWP for discharges of dredged or fill material into waters of the U.S. Use of a NWP

can often come through “self-verification,” a process in which a Project proponent determines that they comply with specific and general conditions of the NWP, and that they do not meet any of the criteria for a pre-construction notification (PCN). PCN criteria include, but are not limited to:

- activities involving mechanized land clearing in a forested wetland;
- Section 10 (navigable-in-fact) required permit;
- crossing any wetland (through surface disturbing methods) over 500 feet in length;
- placing a utility line in a jurisdictional area that runs parallel to a stream bed within that jurisdictional area;
- discharges resulting in the loss of greater than 0.1 acre of waters of the U.S.;
- permanent access roads constructed in waters of the U.S. for greater than 500 feet; and
- permanent access roads constructed in waters of the U.S. with impervious materials.
- any listed species or designated critical habitat might be affected or is in the vicinity of the activity, or if the activity is located in designated critical habitat (General Condition 18).
- activities having the potential to cause effects to any historic properties listed on, determined to be eligible for listing on, or potentially eligible for listing on the National Register of Historic Places, including previously unidentified properties (General Condition 20).

With the most recent revision of the NWP in 2017, additional regional conditions apply to NWPs. In Galveston District, all activities requiring the mechanized land clearing of PSS or PFO wetlands will require a PCN.

A preliminary review suggests that the Project segment will likely qualify for use of NWP 12 (Utility Line Activities). Preparation of a PCN can likely be accomplished within 2 months of completing field surveys. PCN evaluations for completeness by USACE can take up to 45 days if no significant changes to the permit application are made. Receipt of authorization from each USACE District will depend on need for ESA section 7 consultations and/or other USACE requirements (e.g., Section 408 reviews).

Though unlikely, if the Project does not qualify for the use of a regional general permit or NWP 12, an individual permit may be necessary, and can take more than a year to obtain approval.

Under Section 401 of the CWA, the Texas Commission on Environmental Quality (TCEQ) regulates and issues water quality certifications for impacts to waters of the U.S. in Texas. If the project qualifies for NWP 12, in accordance with Section 404 of the CWA, it will also qualify for the use of a blanket Section 401 water quality certification from the Railroad Commission of Texas (RRC). The timeline for this is immediate once NWP 12 authorization is confirmed from the USACE.

3.2. Texas Commission on Environmental Quality Water Use

The TCEQ requires a permit be obtained to temporarily withdraw surplus state surface water for uses such as hydrostatic testing or completing HDDs. Water use permits of less than 10 acre-feet of water and over a duration of one or less calendar year typically take 30 days to process. Water use permits of more than 10 acre-feet of water and/or over a duration of more than one calendar year but not longer than three calendar years typically take six months to process.

3.3. Environmental Permit and Agency Coordination Summary

Table 5 summarizes the potential environmental permits and estimated processing timeframe for the project.

Table 5. Anticipated Environmental Permits and Agency Coordination

Agency	Permits/Coordination	Estimated Processing Timeframe
Federal		
U.S. Army Corps of Engineers	Clean Water Act (Section 404) Nationwide Permit 12; or Regional General Permit	3–6 months if no ESA Section 7 consultations and/or Section 408
U.S. Army Corps of Engineers	Section 408 Review/Permit	12+ months
State		
Texas Commission on Environmental Quality	Clean Water Act (Section 401) State Water Quality Certification	Automatic with NWP 12
	Temporary Use of State Waters Permit	Min 30 days per waterbody

4. SCHEDULE

Field surveys can be one of the most time-consuming items associated with obtaining environmental clearances. They are highly dependent upon factors such as weather, property access, and occurrence of Project re-routes, all of which can result in survey delays. The number of survey crews can be increased or decreased to match the rate of centerline staking and right of entry acquisition. In SWCA's experience, field surveys would require 1 – 2 months to complete for a Project of this magnitude plus time associated with any surveys that have specific seasonal requirements.

Once field surveys and a final Project workspace is complete and impacts to waters of the U.S. are known, the respective PCN can be prepared and submitted to the USACE Galveston District. A PCN package can take up to a month to complete following the conclusion of field surveys but is largely dependent upon finalization of the project route and associated workspace.

Non-USACE regulatory clearances and agency consultations (e.g., ESA Section 7 consultations, USACE 408 Reviews/Permits) are likely to involve variable and lengthy processing timelines (9-12 or more months).

Local construction permits should be applied for based on anticipated construction schedule.

5. REFERENCES

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- U. S. Army Corps of Engineers (USACE). 2019. RIBITS Regulatory In-lieu Fee and Bank Information Tracking System. Available at: https://ribits.usace.army.mil/ribits_apex/f?p=107:201:14473907315644::NO::. Accessed April 2019.

APPENDIX A
MAPPING

Figure 1. Vicinity Map

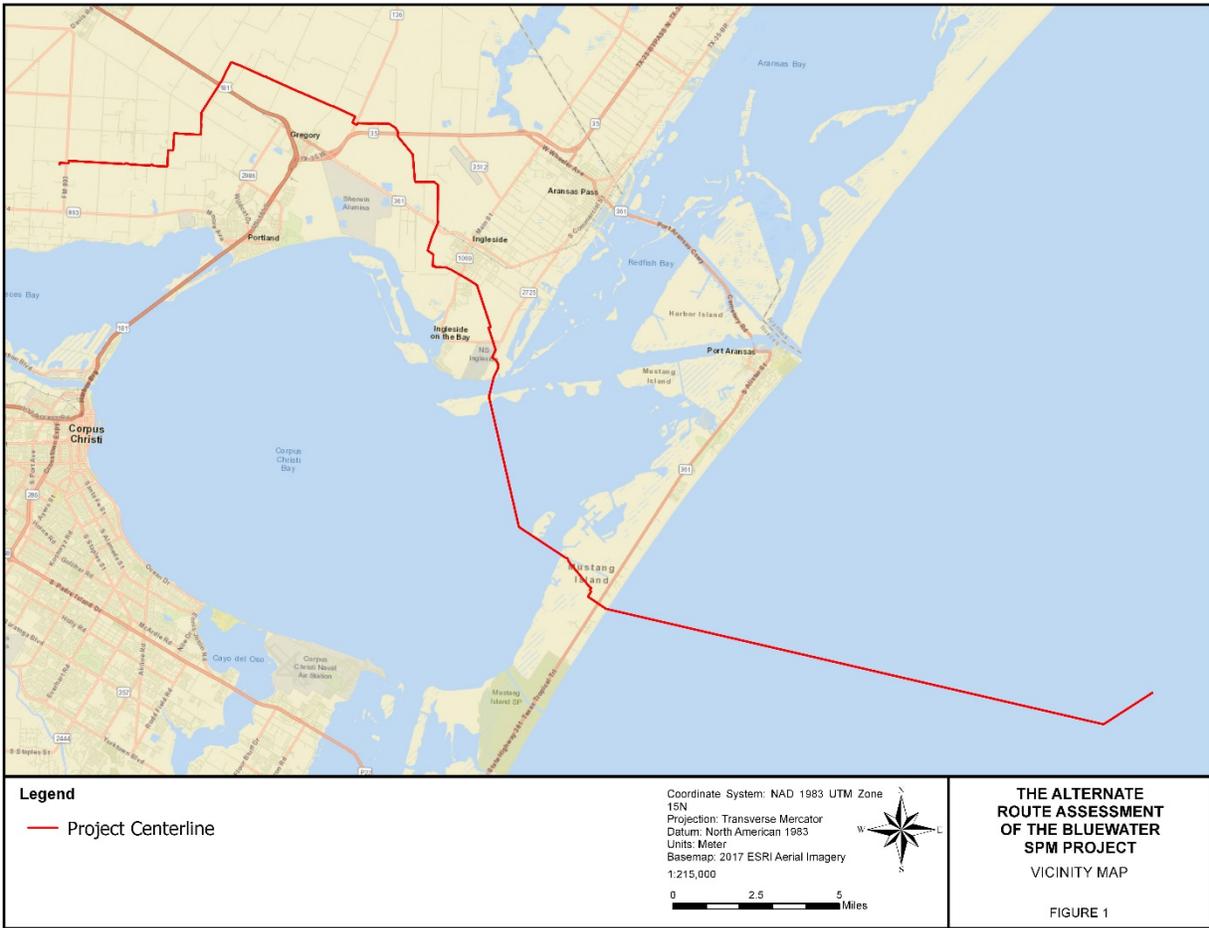
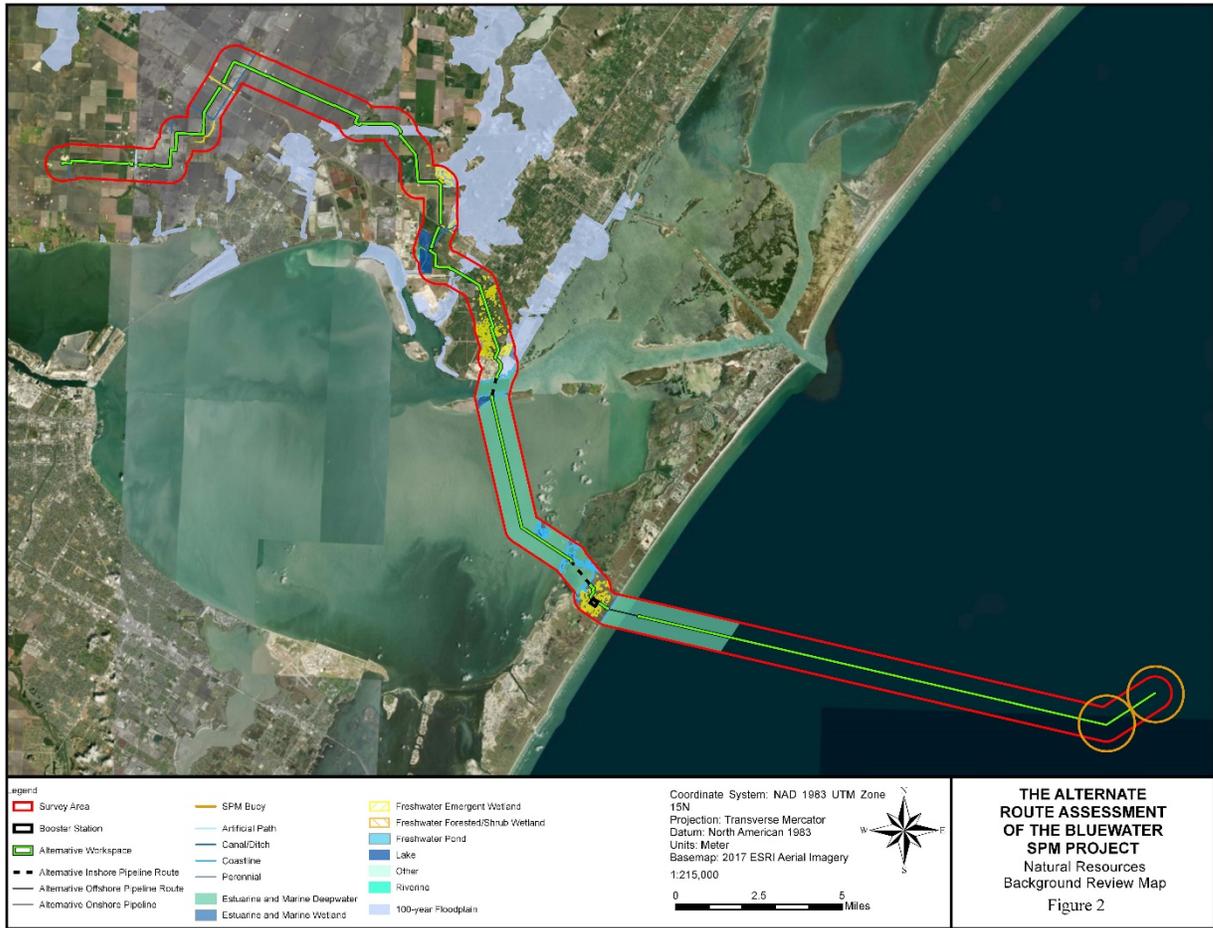


Figure 2. Background Review Map

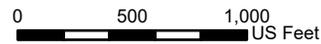
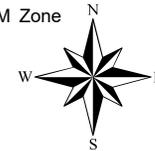




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| Project Centerline | Estuarine and Marine Deepwater | Artificial Path |
| Survey Area | Estuarine and Marine Wetland | Canal/Ditch |
| 100-year Floodplain | Freshwater Emergent Wetland | Coastline |
| SPM Buoy | Freshwater Forested/Shrub Wetland | Perennial |
| Booster Station | Freshwater Pond | |
| Alternative Workspace | Lake | |
| | Other | |
| | Riverine | |

Coordinate System: NAD 1983 UTM Zone 15N
 Projection: Transverse Mercator
 Datum: North American 1983
 Units: Meter
 Basemap: 2017 ESRI Aerial Imagery
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**THE ALTERNATE
 ROUTE ASSESSMENT
 OF THE BLUEWATER
 SPM PROJECT**

Detailed Constraints Map

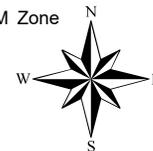
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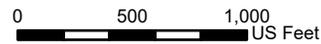
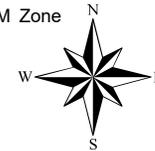
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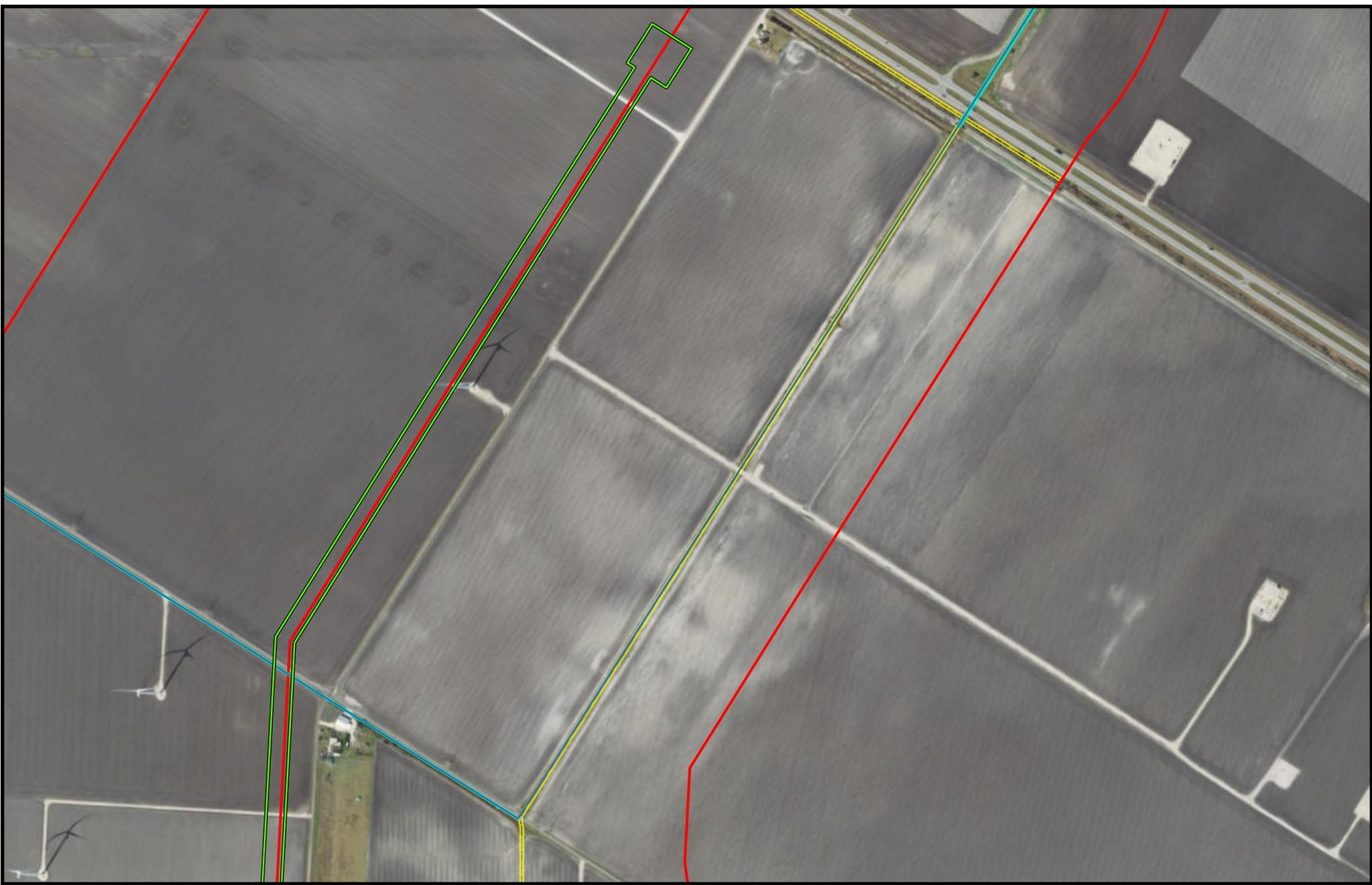
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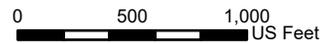
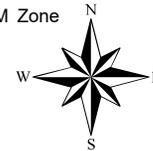
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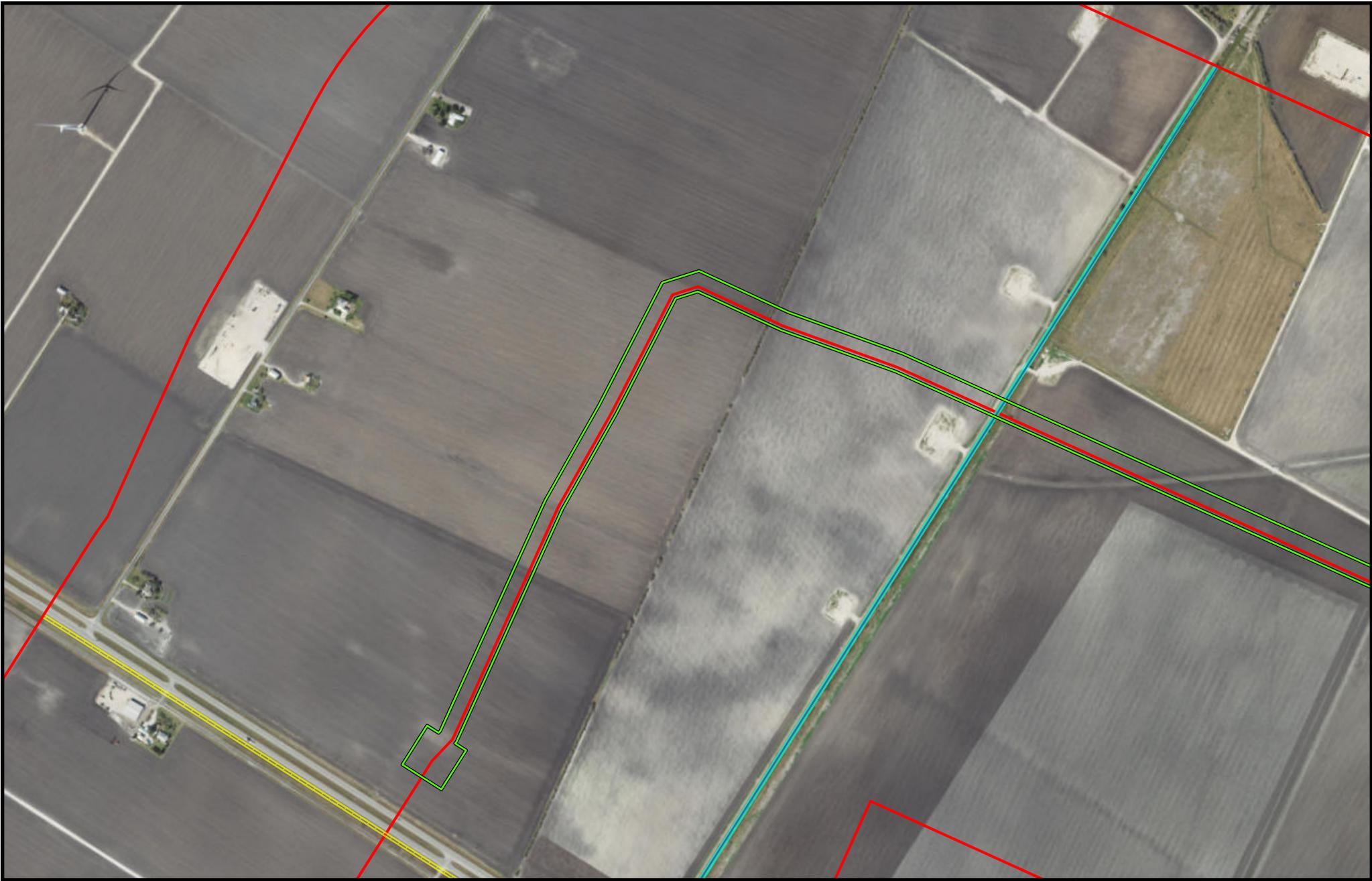


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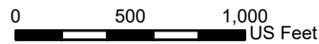
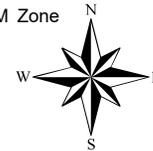
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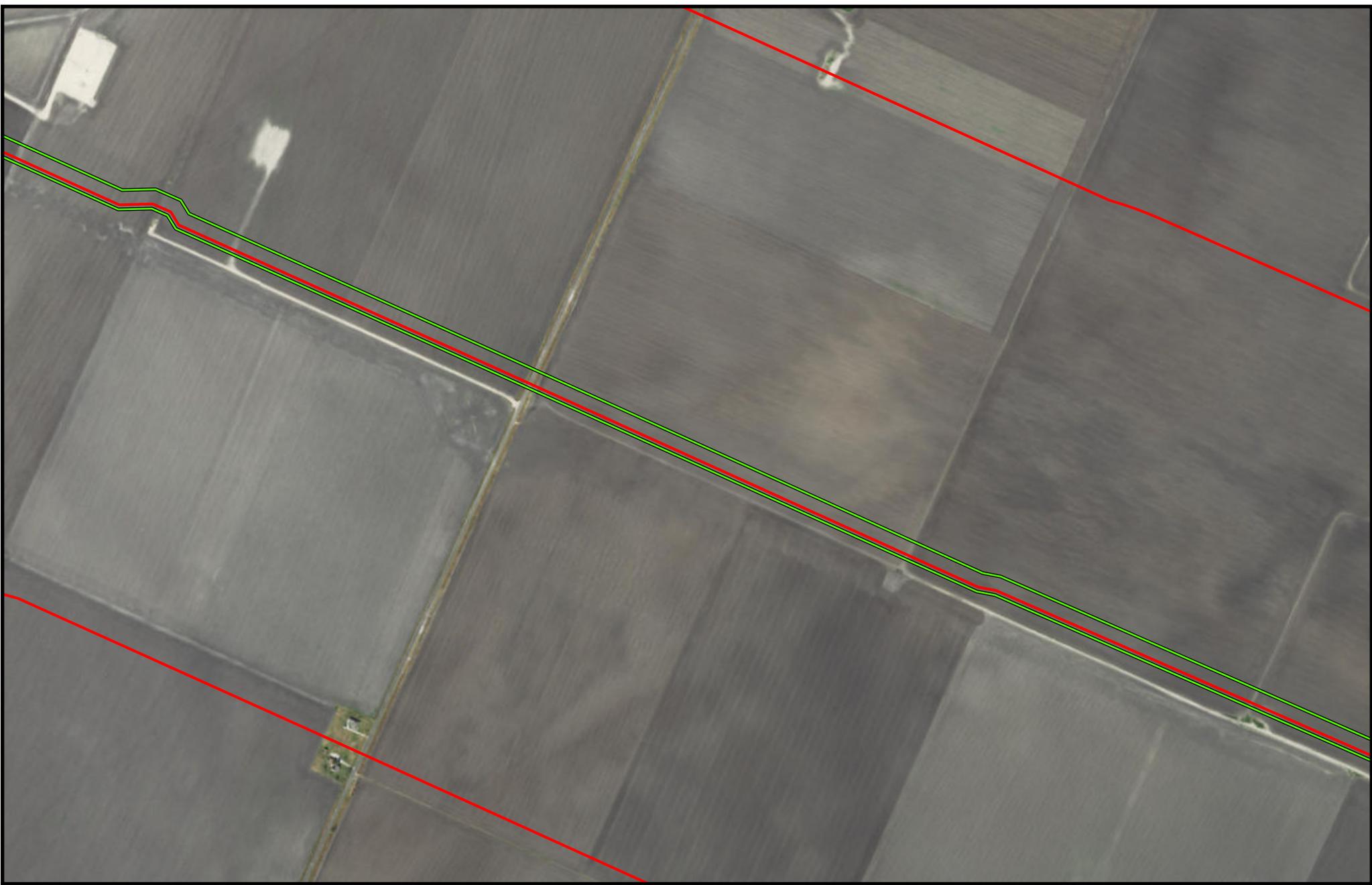
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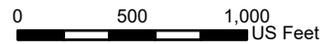
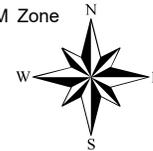
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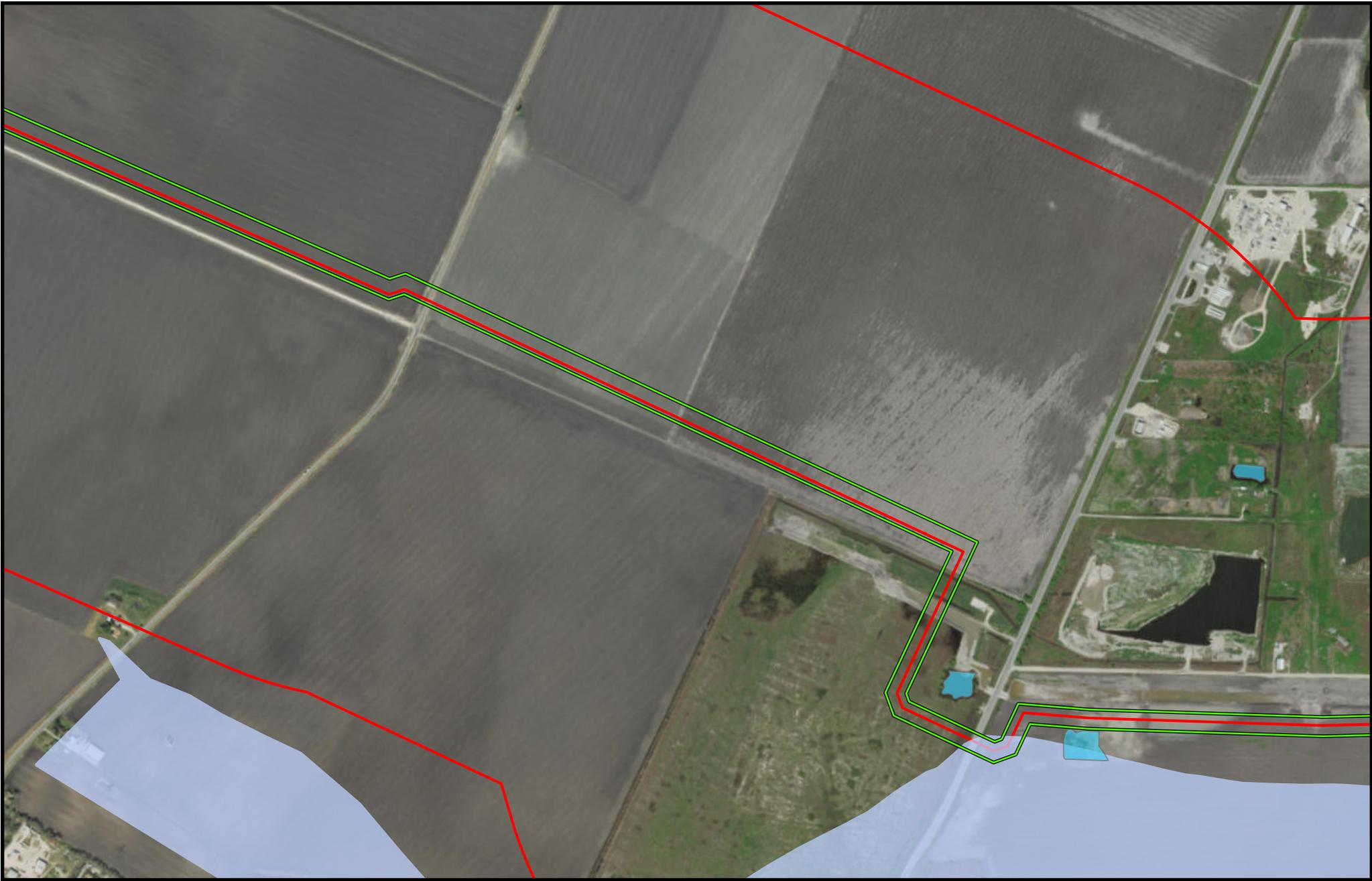
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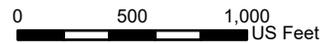
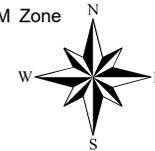
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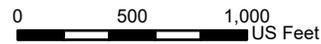
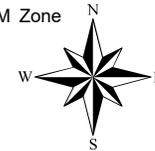
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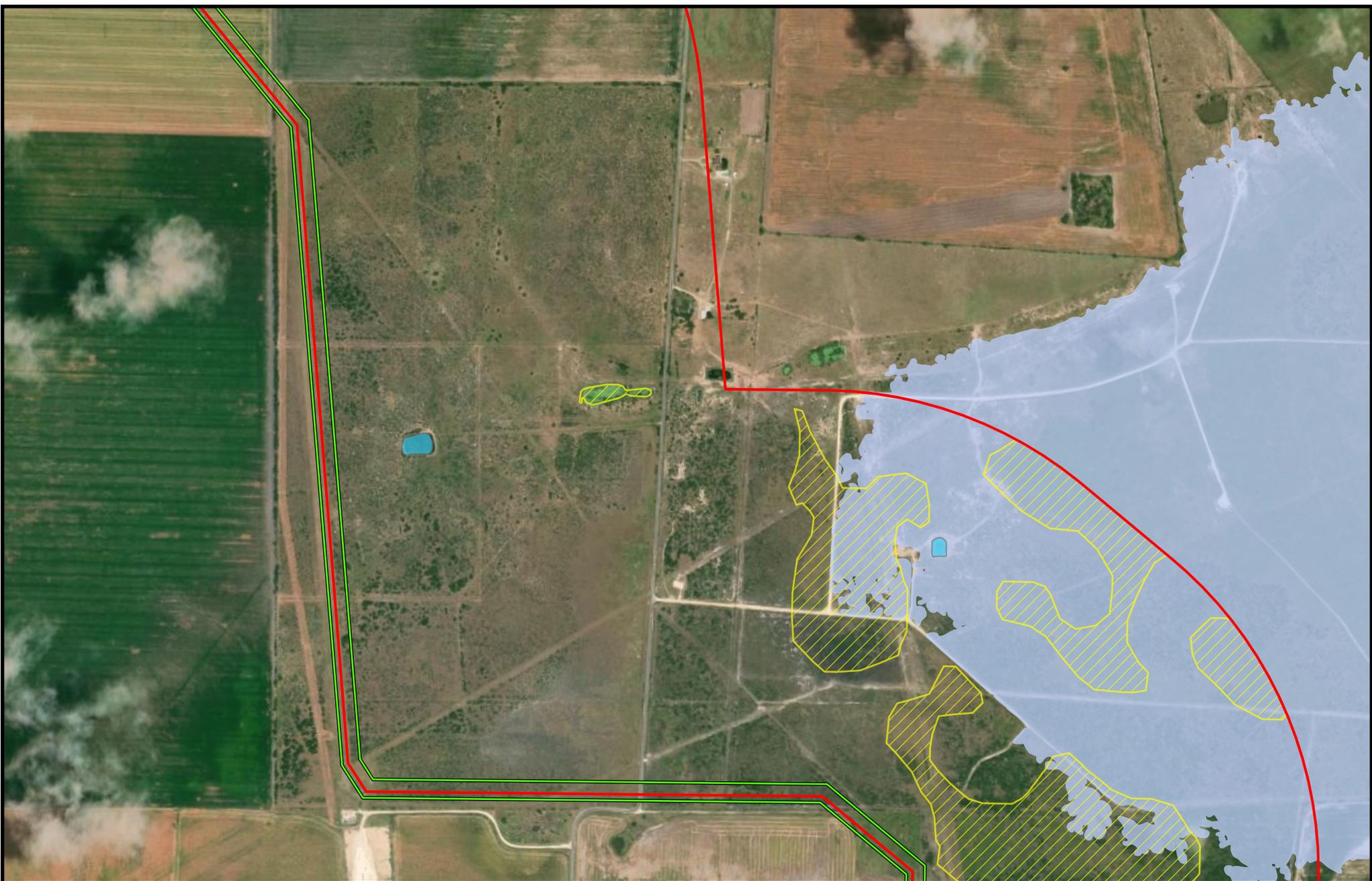
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**THE ALTERNATE
 ROUTE ASSESSMENT
 OF THE BLUEWATER
 SPM PROJECT**

Detailed Constraints Map

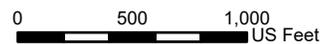
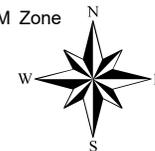
Figure 3
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Legend

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|-----------------------|-----------------------------------|-----------------|
| Project Centerline | Estuarine and Marine Deepwater | Artificial Path |
| Survey Area | Estuarine and Marine Wetland | Canal/Ditch |
| 100-year Floodplain | Freshwater Emergent Wetland | Coastline |
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**THE ALTERNATE
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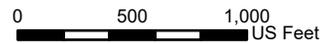
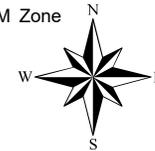
Detailed Constraints Map



Legend

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**THE ALTERNATE
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 OF THE BLUEWATER
 SPM PROJECT**

Detailed Constraints Map

Figure 3

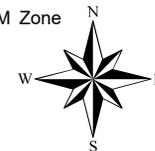
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Legend

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**THE ALTERNATE
 ROUTE ASSESSMENT
 OF THE BLUEWATER
 SPM PROJECT**

Detailed Constraints Map

Figure 3

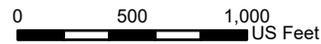
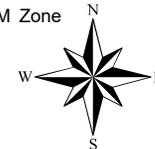
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Legend

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|-----------------------|-----------------------------------|-----------------|
| Project Centerline | Estuarine and Marine Deepwater | Artificial Path |
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**THE ALTERNATE
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 OF THE BLUEWATER
 SPM PROJECT**

Detailed Constraints Map

Figure 3

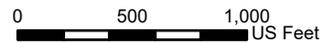
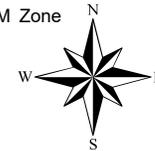
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Legend

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| Project Centerline | Estuarine and Marine Deepwater | Artificial Path |
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**THE ALTERNATE
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 OF THE BLUEWATER
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Detailed Constraints Map

Figure 3

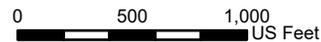
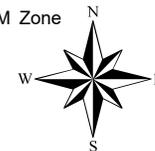
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Legend

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| Project Centerline | Estuarine and Marine Deepwater | Artificial Path |
| Survey Area | Estuarine and Marine Wetland | Canal/Ditch |
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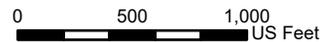
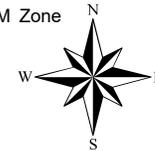
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Legend

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|-----------------------|-----------------------------------|-----------------|
| Project Centerline | Estuarine and Marine Deepwater | Artificial Path |
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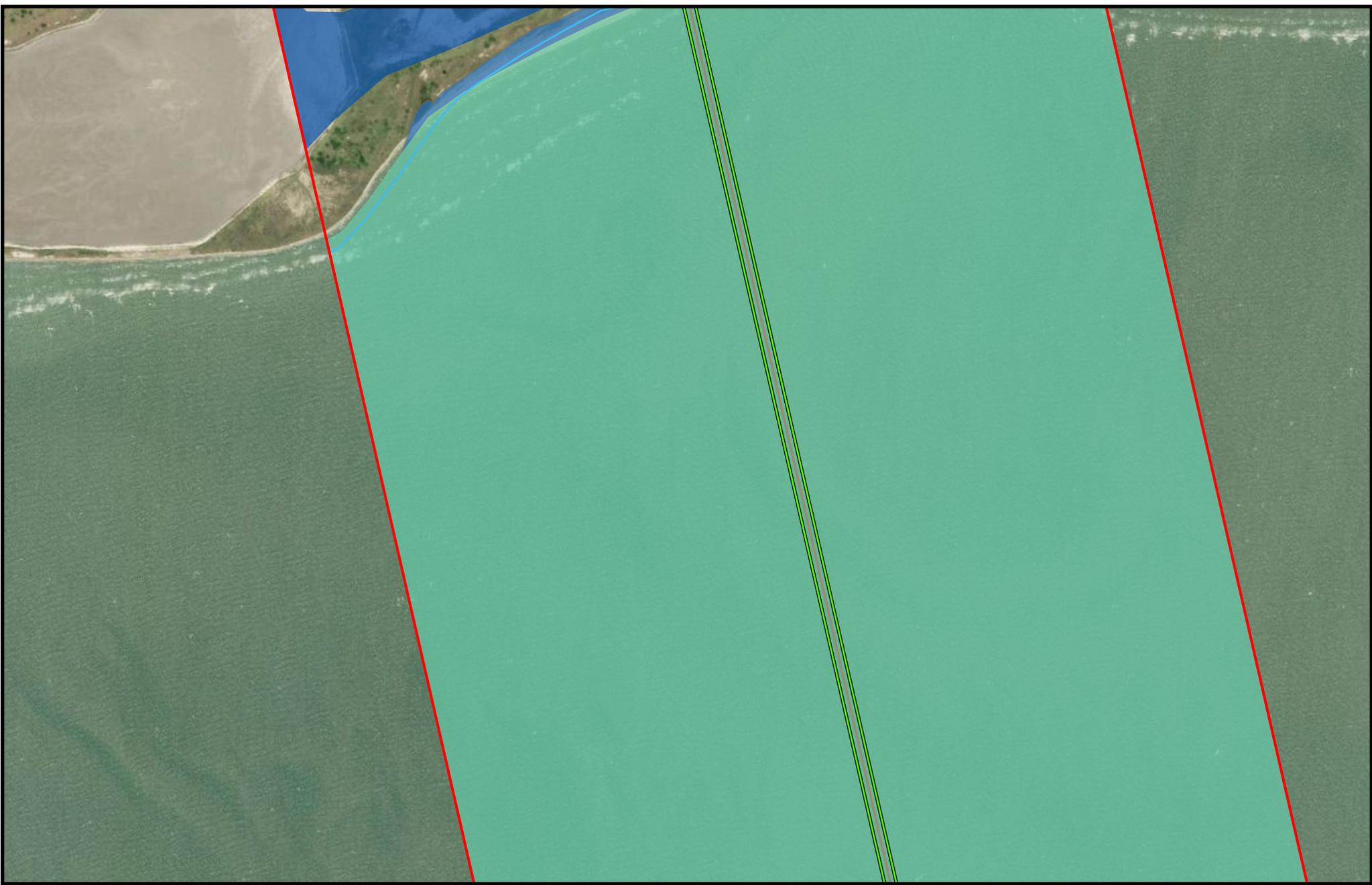


**THE ALTERNATE
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 OF THE BLUEWATER
 SPM PROJECT**

Detailed Constraints Map

Figure 3

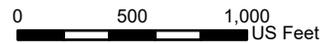
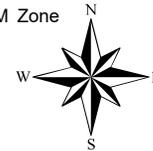
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Legend

- | | | |
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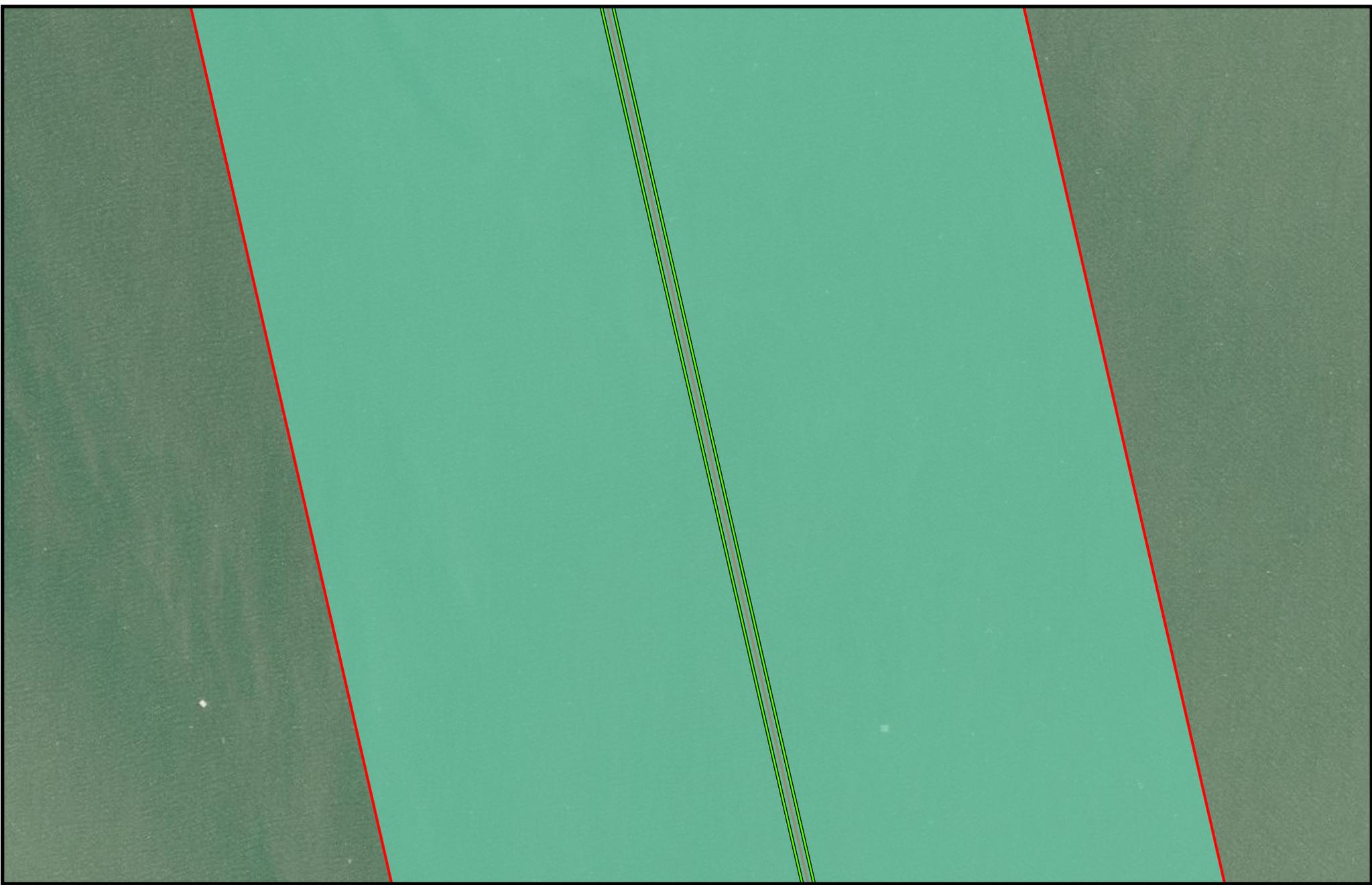


**THE ALTERNATE
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 OF THE BLUEWATER
 SPM PROJECT**

Detailed Constraints Map

Figure 3

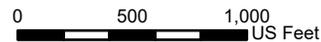
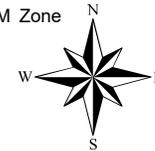
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Legend

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|-----------------------|-----------------------------------|-----------------|
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| Survey Area | Estuarine and Marine Wetland | Canal/Ditch |
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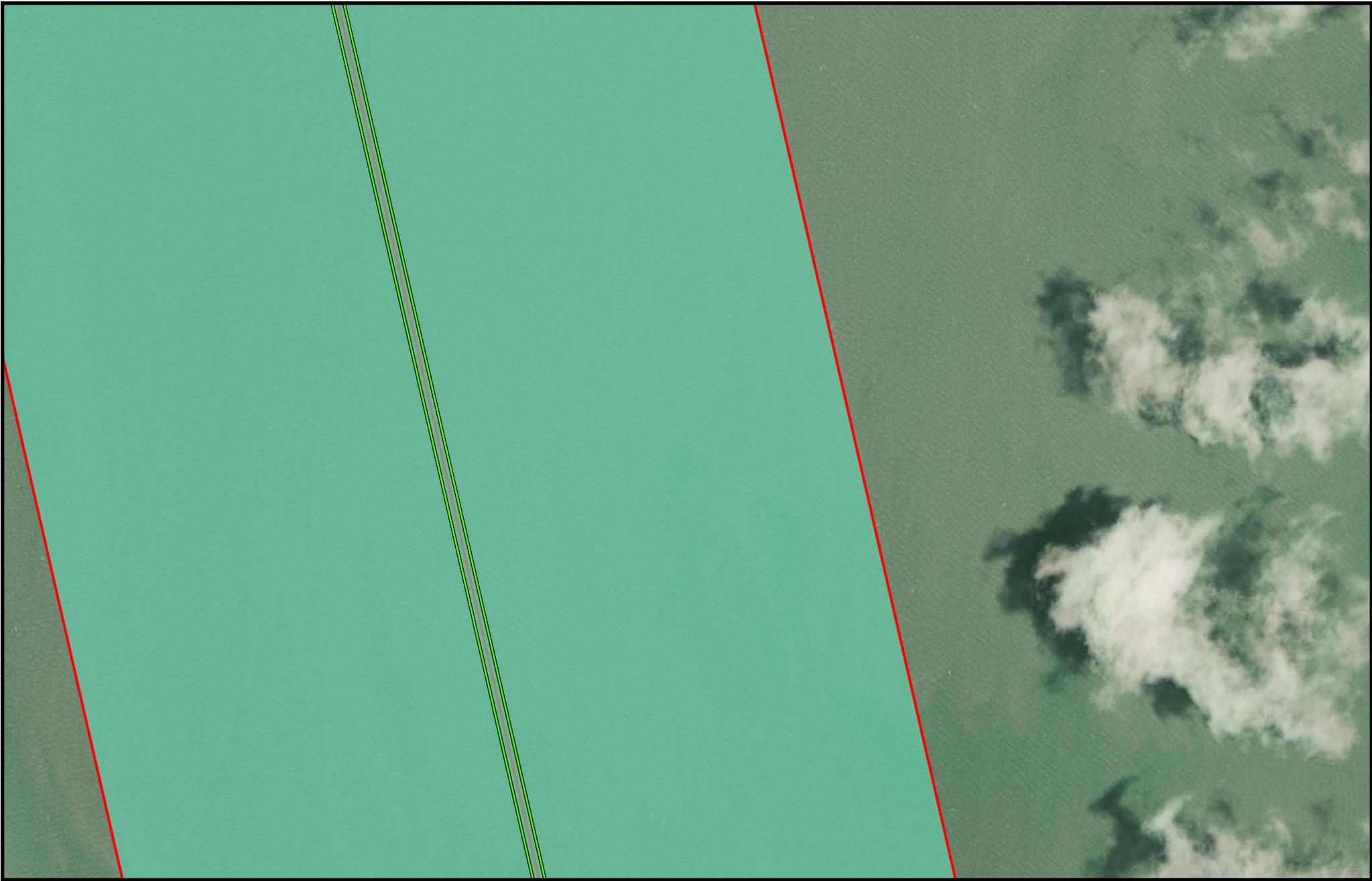


**THE ALTERNATE
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 OF THE BLUEWATER
 SPM PROJECT**

Detailed Constraints Map

Figure 3

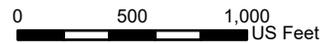
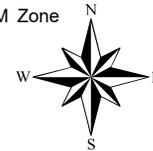
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Legend

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|-----------------------|-----------------------------------|-----------------|
| Project Centerline | Estuarine and Marine Deepwater | Artificial Path |
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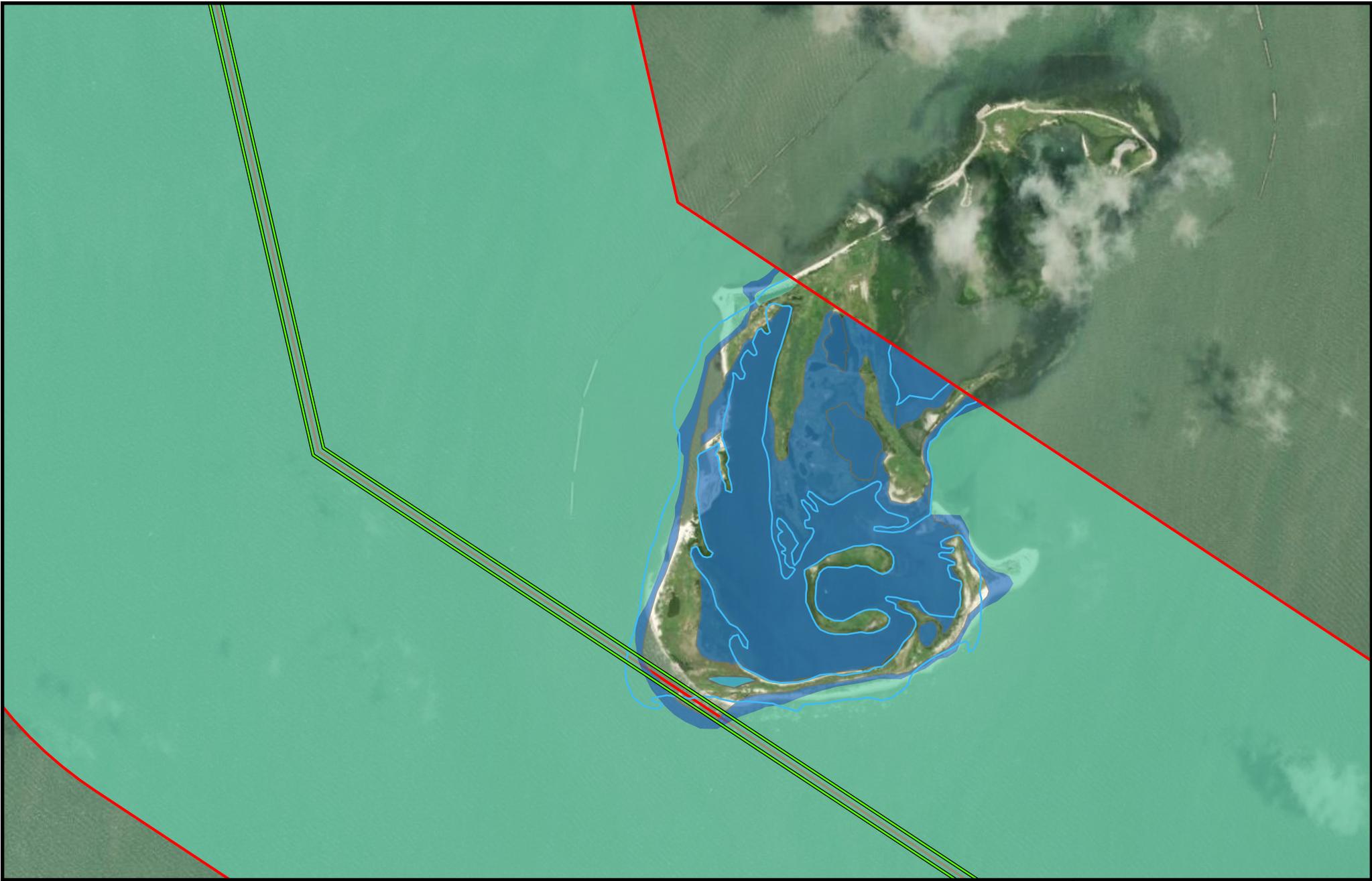


**THE ALTERNATE
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 OF THE BLUEWATER
 SPM PROJECT**

Detailed Constraints Map

Figure 3

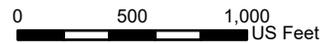
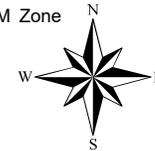
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Legend

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|-----------------------|-----------------------------------|-----------------|
| Project Centerline | Estuarine and Marine Deepwater | Artificial Path |
| Survey Area | Estuarine and Marine Wetland | Canal/Ditch |
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**THE ALTERNATE
 ROUTE ASSESSMENT
 OF THE BLUEWATER
 SPM PROJECT**

Detailed Constraints Map

Figure 3

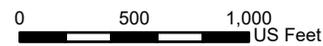
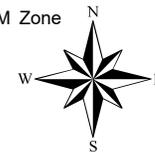
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Legend

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|-----------------------|-----------------------------------|-----------------|
| Project Centerline | Estuarine and Marine Deepwater | Artificial Path |
| Survey Area | Estuarine and Marine Wetland | Canal/Ditch |
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 SPM PROJECT**

Detailed Constraints Map

Figure 3

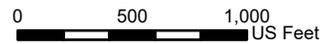
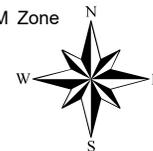
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Legend

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|-----------------------|-----------------------------------|-----------------|
| Project Centerline | Estuarine and Marine Deepwater | Artificial Path |
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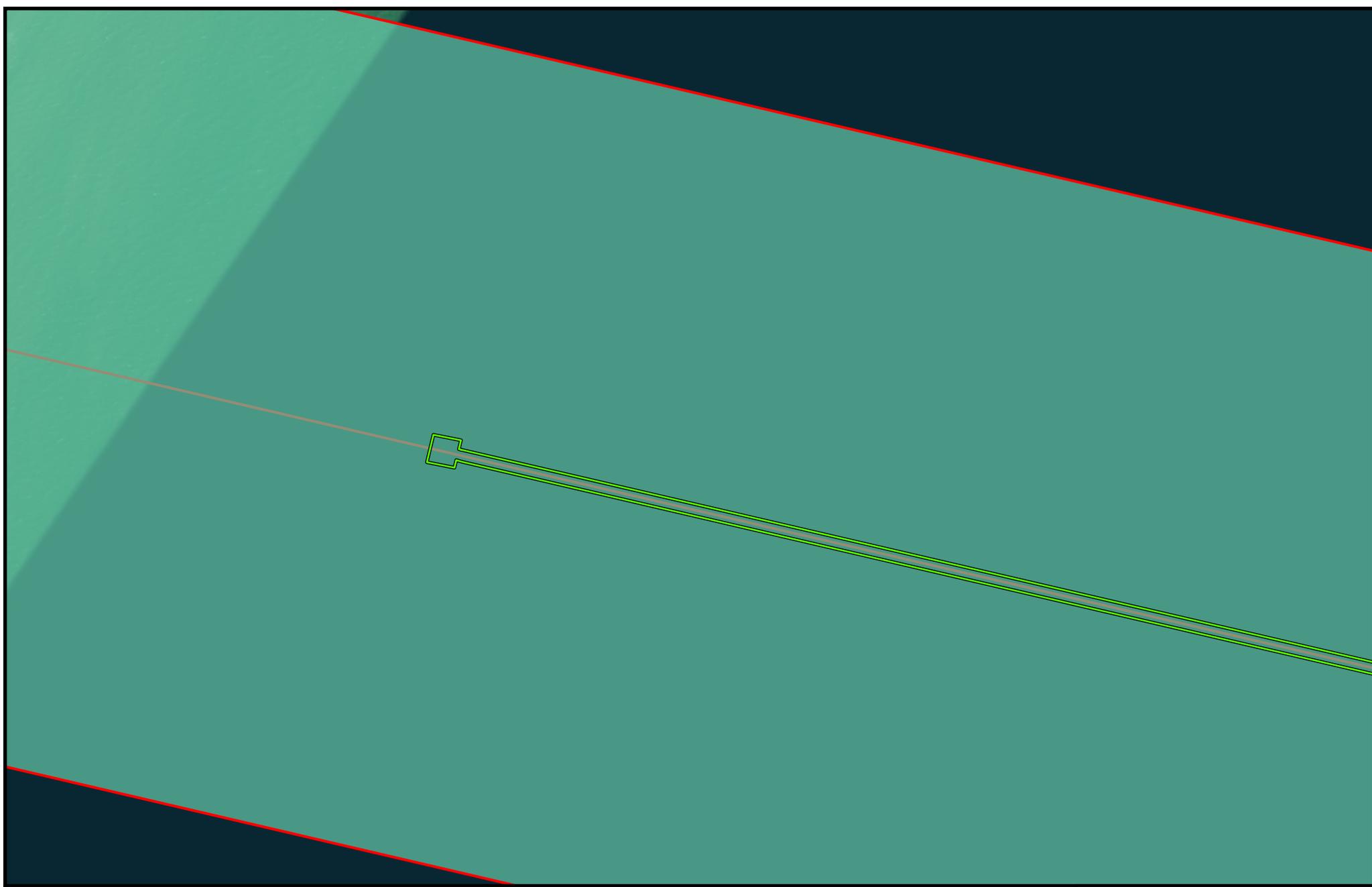


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Detailed Constraints Map

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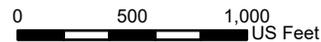
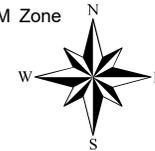
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Legend

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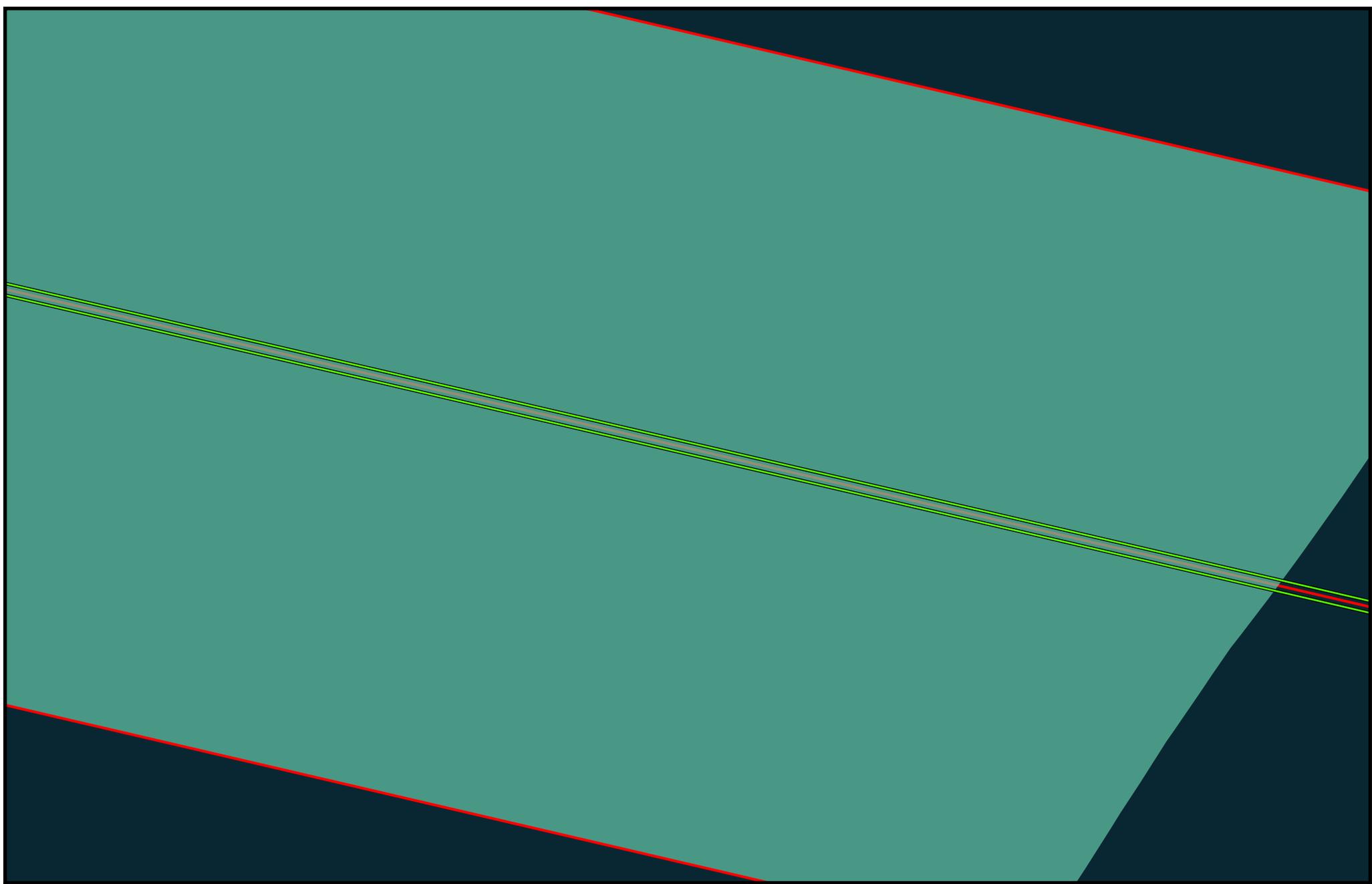


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Detailed Constraints Map

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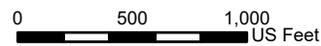
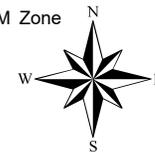
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Legend

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|-----------------------|-----------------------------------|-----------------|
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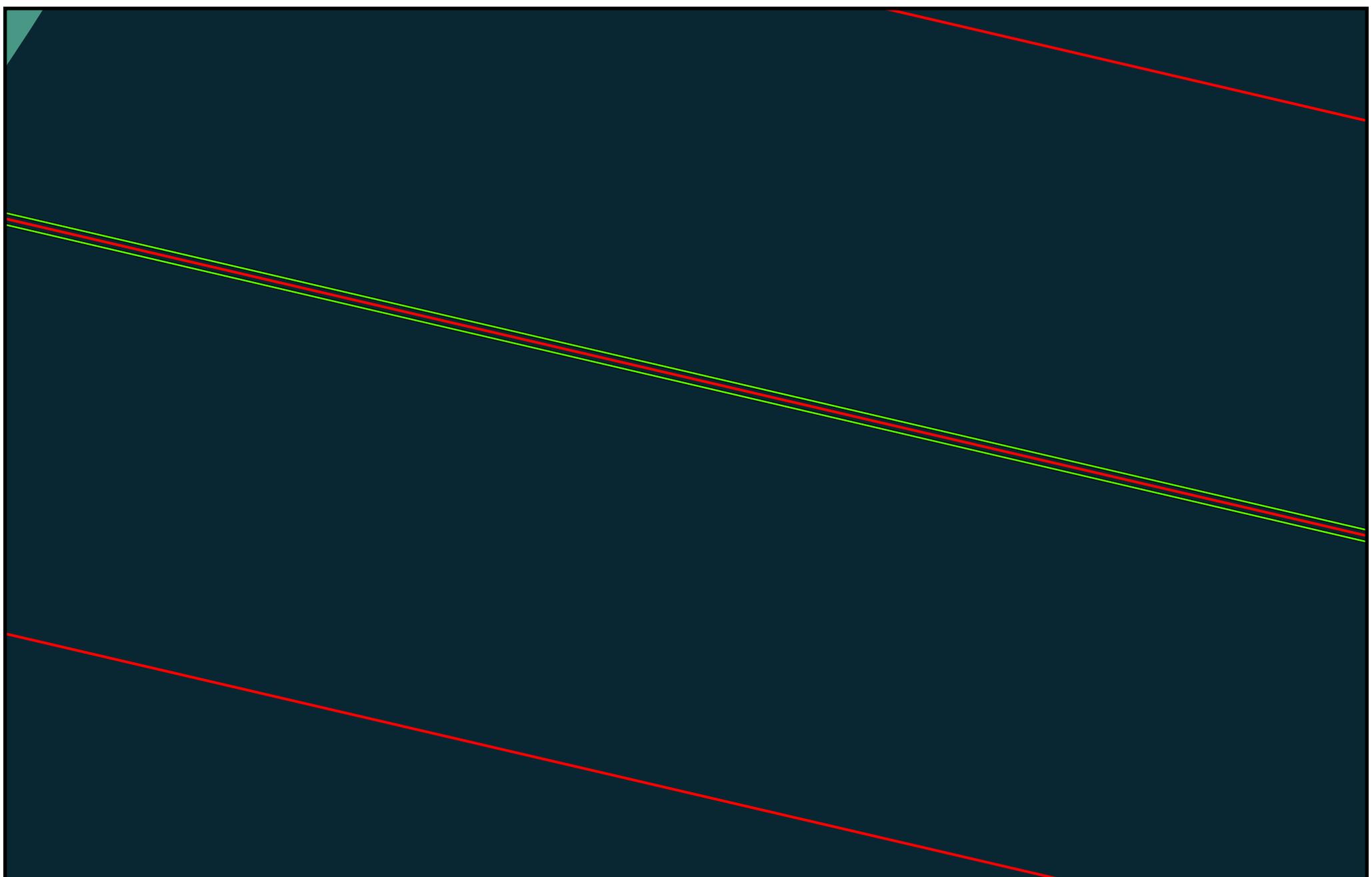


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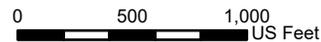
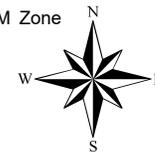
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Legend

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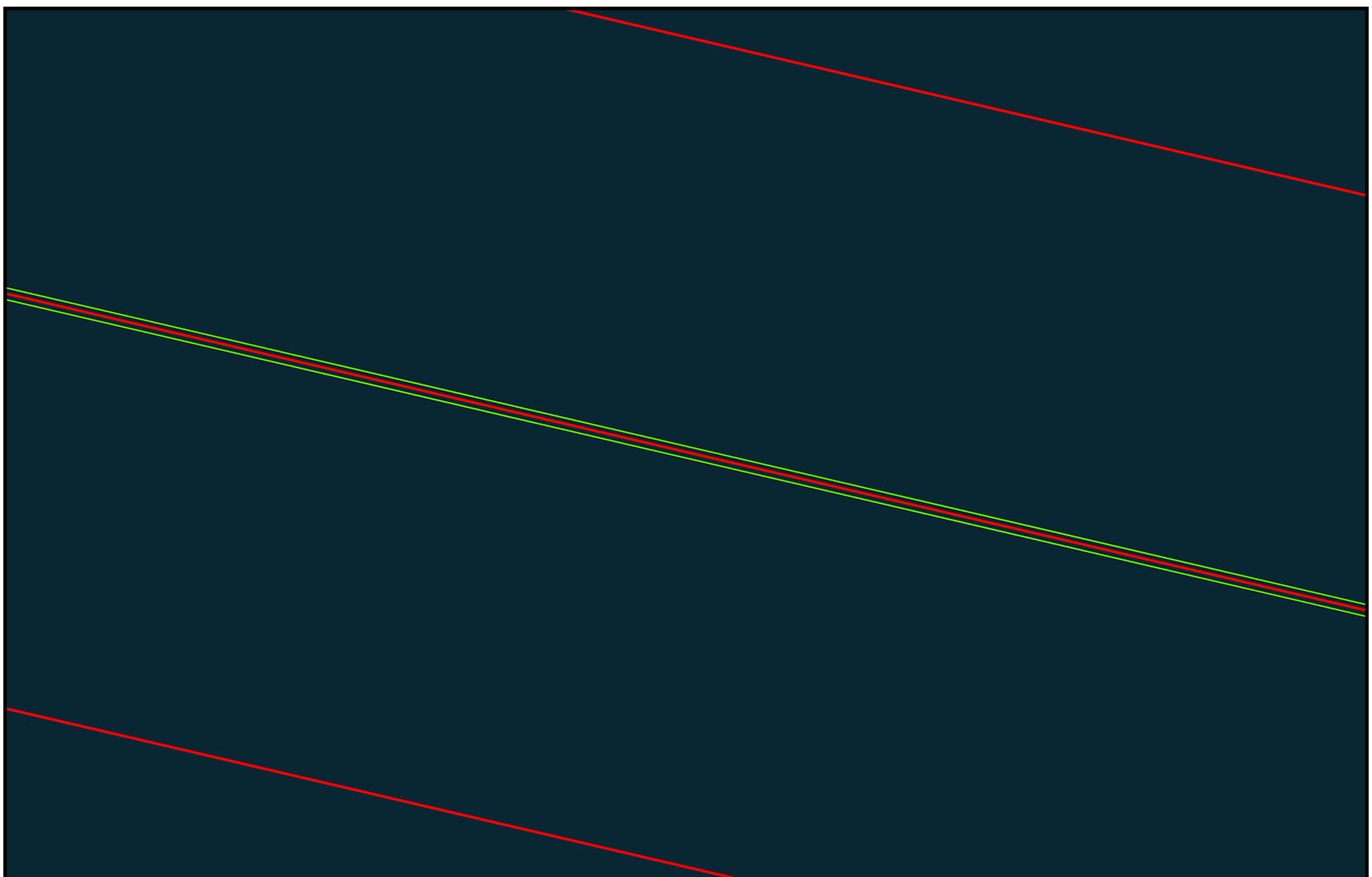


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Detailed Constraints Map

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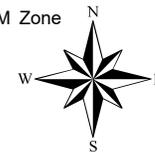
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Legend

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|-----------------------|-----------------------------------|-----------------|
| Project Centerline | Estuarine and Marine Deepwater | Artificial Path |
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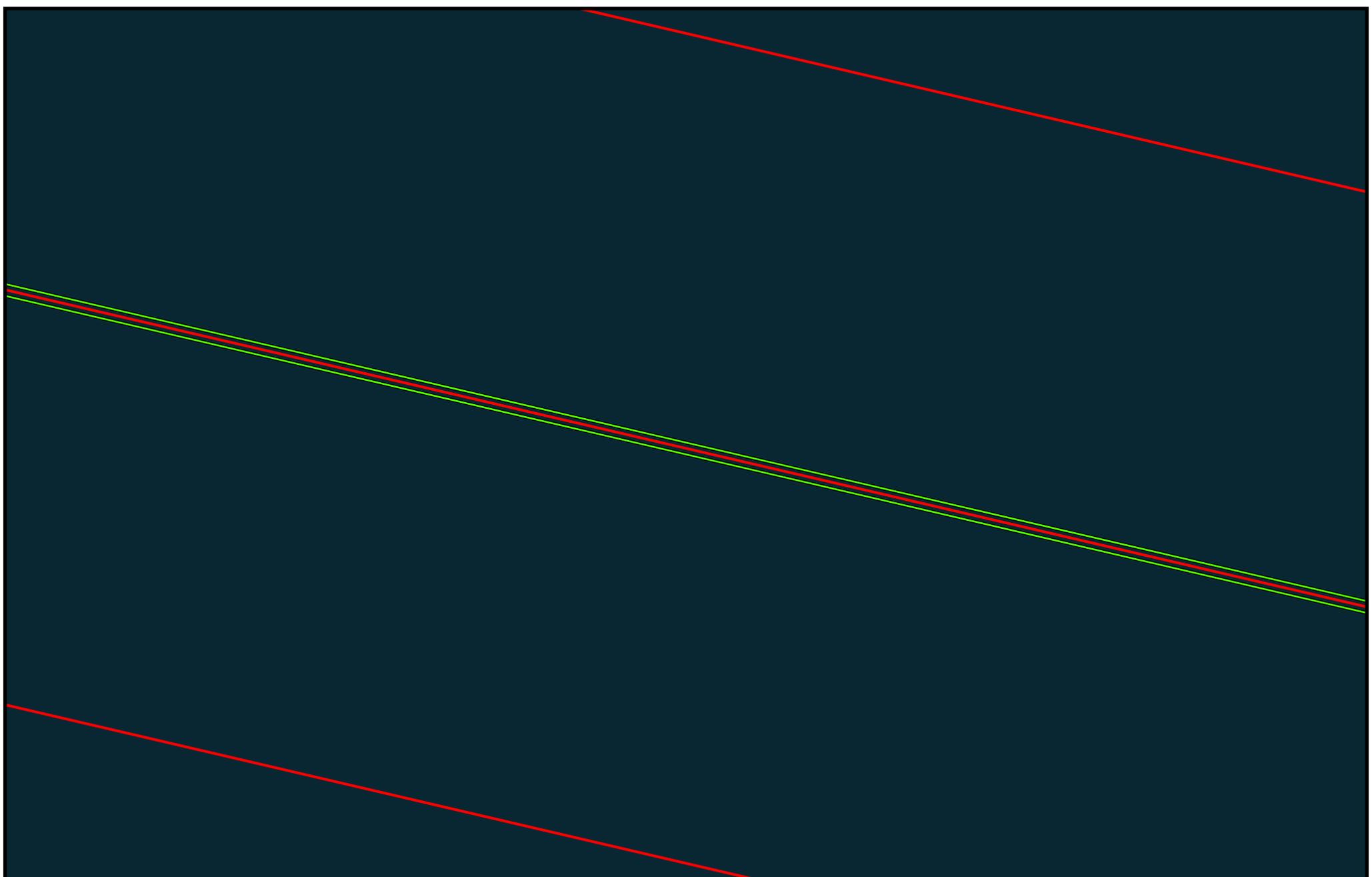


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Detailed Constraints Map

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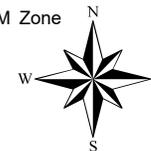
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Legend

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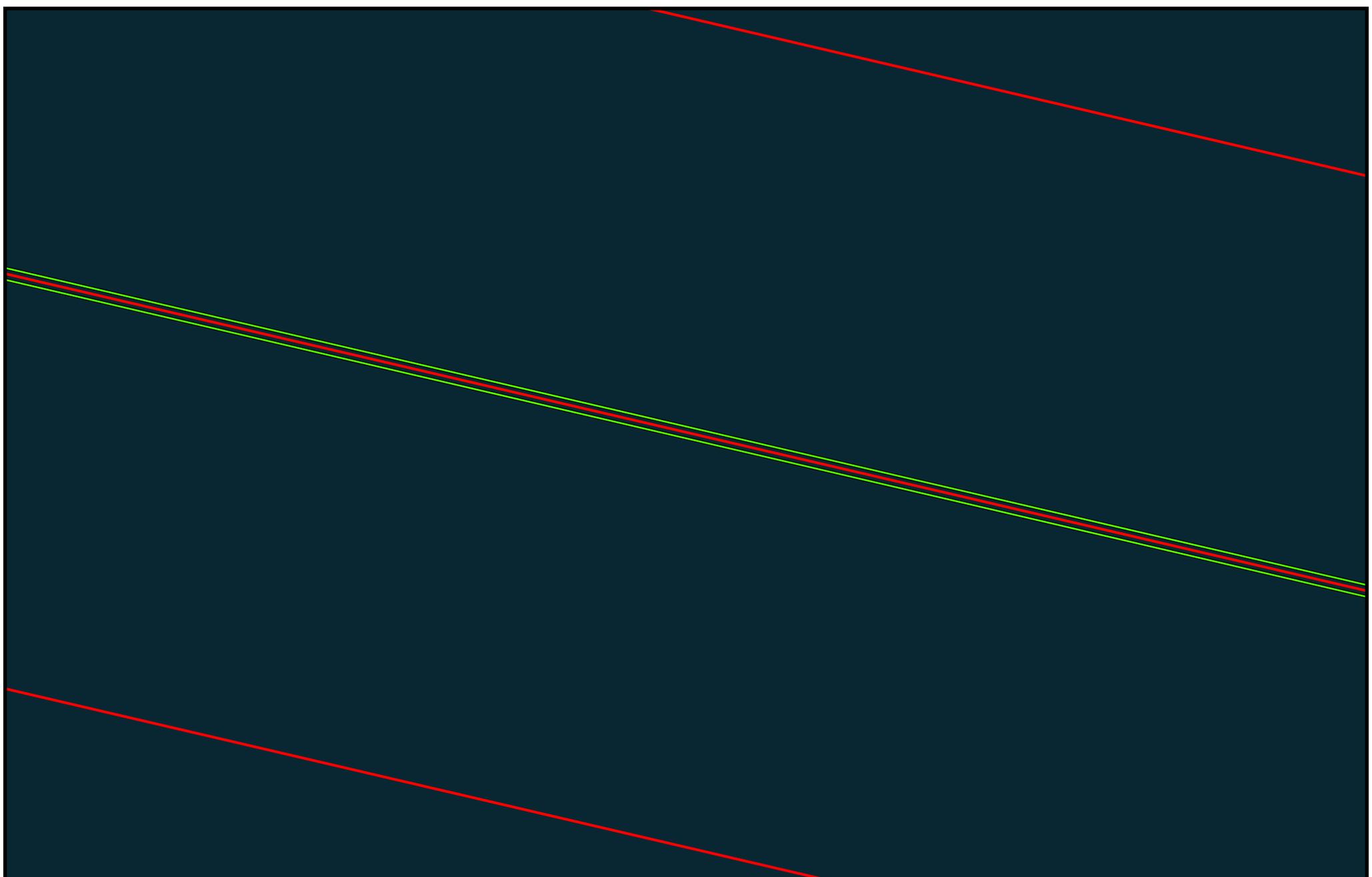


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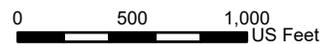
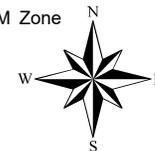
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Legend

- | | | |
|-----------------------|-----------------------------------|-----------------|
| Project Centerline | Estuarine and Marine Deepwater | Artificial Path |
| Survey Area | Estuarine and Marine Wetland | Canal/Ditch |
| 100-year Floodplain | Freshwater Emergent Wetland | Coastline |
| SPM Buoy | Freshwater Forested/Shrub Wetland | Perennial |
| Booster Station | Freshwater Pond | |
| Alternative Workspace | Lake | |
| | Other | |
| | Riverine | |

Coordinate System: NAD 1983 UTM Zone 15N
 Projection: Transverse Mercator
 Datum: North American 1983
 Units: Meter
 Basemap: 2017 ESRI Aerial Imagery
 1:10,000

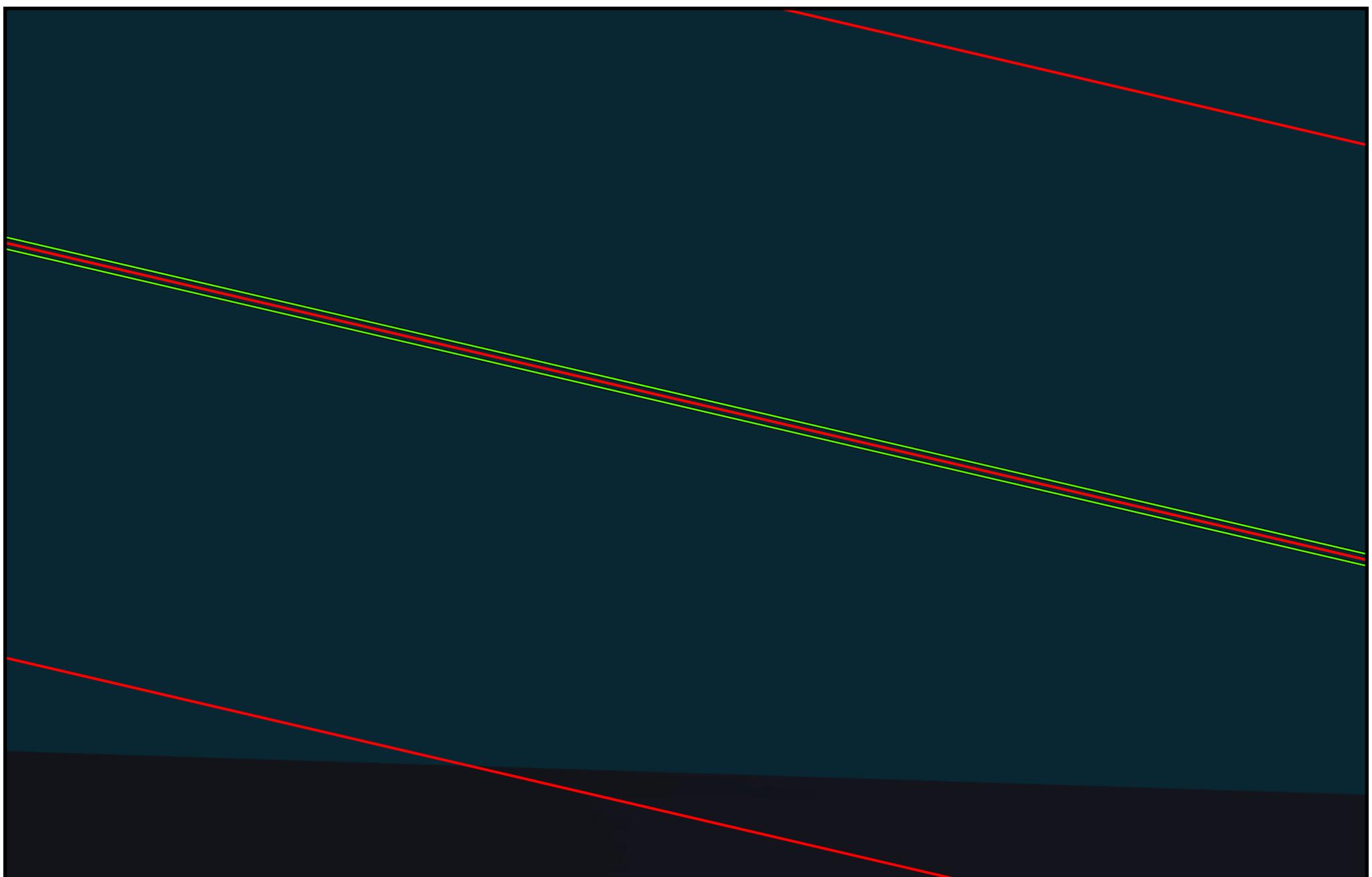


**THE ALTERNATE
 ROUTE ASSESSMENT
 OF THE BLUEWATER
 SPM PROJECT**

Detailed Constraints Map

Figure 3

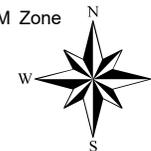
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Legend

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| Project Centerline | Estuarine and Marine Deepwater | Artificial Path |
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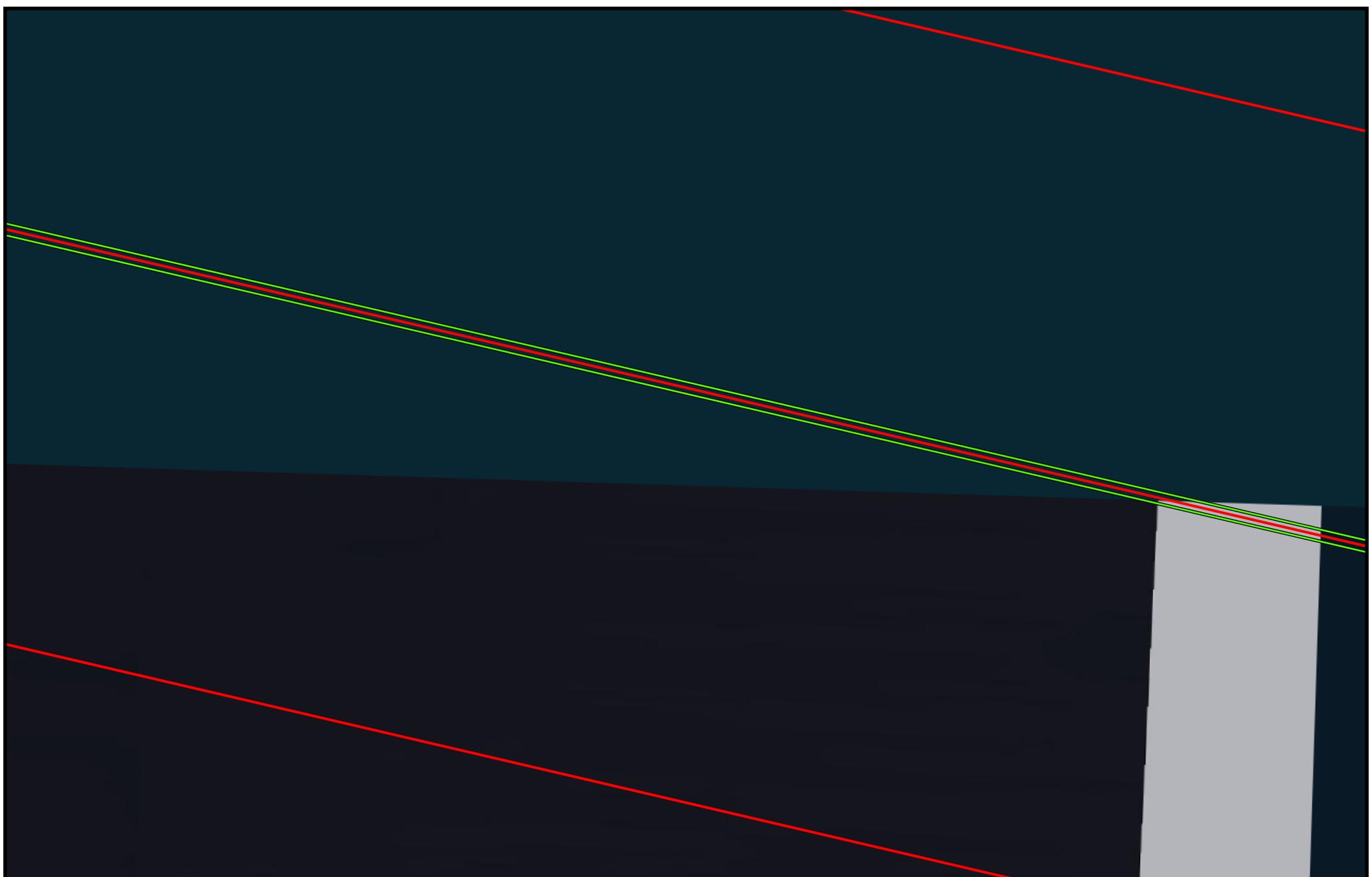


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 SPM PROJECT**

Detailed Constraints Map

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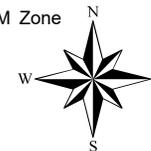
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Legend

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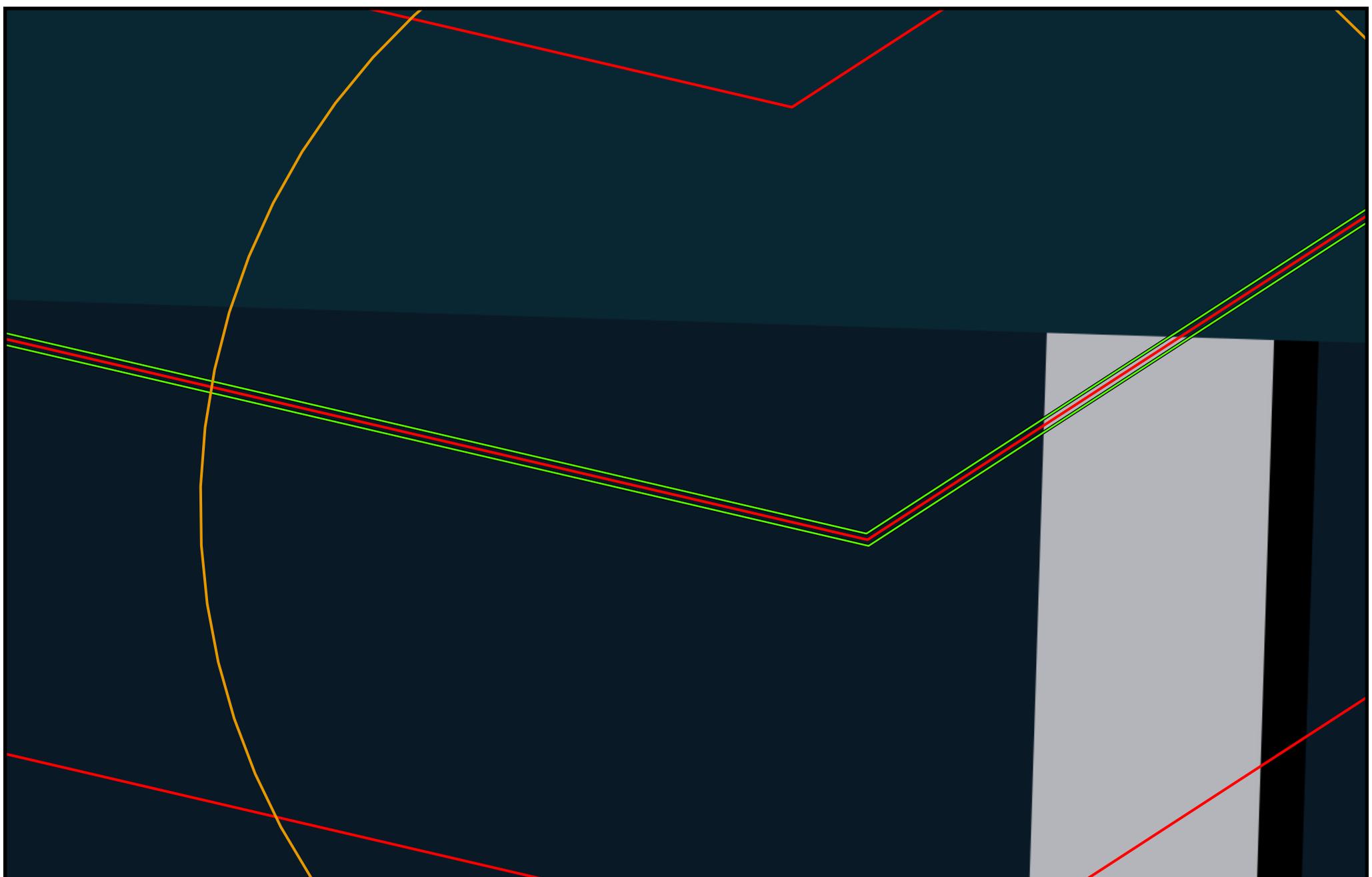


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Detailed Constraints Map

Figure 3

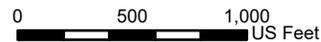
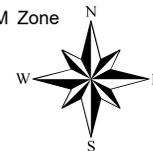
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Legend

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|-----------------------|-----------------------------------|-----------------|
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 ROUTE ASSESSMENT
 OF THE BLUEWATER
 SPM PROJECT**

Detailed Constraints Map

Figure 3

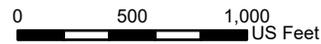
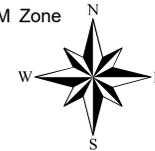
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Legend

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|-----------------------|-----------------------------------|-----------------|
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Detailed Constraints Map

Figure 3

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