

**BEFORE THE PUBLIC UTILITIES COMMISSION
OF THE STATE OF SOUTH DAKOTA**

**IN THE MATTER OF THE APPLICATION OF NAVIGATOR HEARTLAND
GREENWAY, LLC FOR A PERMIT UNDER THE SOUTH DAKOTA ENERGY
CONVERSION AND TRANSMISSION FACILITIES ACT TO CONSTRUCT THE
HEARTLAND GREENWAY PIPELINE IN SOUTH DAKOTA**

DOCKET NO. HP22-002

**Direct Testimony of Sara Thronson
On Behalf of the Staff of the South Dakota Public Utilities Commission
May 25th, 2023**



1 **Q: Please state your name and business address.**
2
3 A: Sara Thronson, 222 S 9th Street, Suite 2900, Minneapolis, Minnesota 55402
4
5 **Q: Describe your educational background.**
6
7 A: I received my bachelor's degree in 2002 from Northland College in Environmental
8 Studies, and a master's degree from the University of Minnesota in 2006.
9
10 **Q: By whom are you now employed?**
11
12 A: I have been employed by Environmental Resources Management, Inc. (previously
13 Natural Resource Group, LLC) since 2006. I currently hold the position of
14 Associate Partner.
15
16 **Q: What work experience have you had that is relevant to your involvement on
17 this project?**
18
19 A: While working at ERM my responsibilities have included providing clients in the
20 pipeline and transmission line industries with environmental permitting and
21 environmental review services. Specific tasks have included assisting in the
22 preparation of Environmental Impact Statements and Environmental Assessments
23 under the National Environmental Policy Act and/or applicable state programs. I
24 have worked on projects across the United States including post construction
25 restoration monitoring programs.
26
27 **Q: What is the purpose of your testimony?**
28
29 A: I evaluated the Seismicity and Subsidence, Geological Project Constraints and
30 Mitigation, and the Soils, Erosion, and Sedimentation sections (Sections 6.2.2,
31 6.2.4, and 6.3, respectively) of the Navigator Heartland Greenway Pipeline System
32 South Dakota Public Utilities Commission (SDPUC) Application. The purpose of
33 my evaluation was to determine whether a sufficient level of detail was provided to
34 describe the geology and soil characteristics, as well as soil-related limitations and
35 potential hazards associated with pipeline construction (specifically erosion,
36 subsidence potential, slope instability, and geologic constraints). I also reviewed
37 Exhibits A3 (Topographic Maps), A4 (Soil Maps), C (Supplementary Tables), and
38 E (Environmental Construction Guidance) from the Application and the Applicants
39 responses to staff data requests (received through 5/25/2023) to further evaluate
40 the level of detail provided for the proposed route.
41
42 **Q: Did you review sections 6.2 and 6.3 of Navigator's Application for the
43 Heartland Greenway carbon dioxide pipeline ("Project") that address
44 geological features and soil types along the proposed route?**
45

46 A: Yes, I reviewed Sections 6.2.2, 6.2.4, and 6.3 of Navigator’s Application for the
47 Heartland Greenway carbon dioxide pipeline which addressed the geological
48 features and soil types along the proposed route.
49

50 **Q: Does the proposed route cross any geological features that have the**
51 **potential for subsidence or land movement? If so, please explain.**
52

53 A: Yes, the proposed route crosses soil types and geologic features that have the
54 potential for subsidence and land movement. The potential for land subsidence is
55 present in sections of the proposed route due to the abundance of karst terrain.
56 According to Section 6.2.2 of the application, approximately 15.58 miles of the
57 Project encounters karst terrain. However, the risk of land subsidence is low due
58 to the carbonate rock formations (which have the potential for karst topography)
59 being buried under approximately 50 feet of glacial drift deposits. The only geologic
60 unit within the Project that is susceptible to land movement is the Pierre Shale
61 which comprises approximately 8.32 miles of the proposed route from MP 9.08 to
62 MP 17.41.
63

64 **Q: In your opinion, does Navigator address the concerns with subsidence or**
65 **land movement in a manner that is consistent with industry standard**
66 **practices during pipeline routing?**
67

68 A: Due to the low-risk potential for subsidence or landslides in the Project area,
69 Navigator has sufficiently outlined necessary mitigation methods that are
70 consistent with industry standards. Section 6.2.4 discusses the corrective action
71 to be taken if shallow bedrock or boulders are encountered during construction.
72 Navigator also addresses that if blasting is indeed necessary to assist with ditch
73 excavation, then best management practices (BMPs) will be implemented
74 appropriately to minimize potential impacts. To ensure that the scope of each
75 potential geologic hazard is properly assessed, Navigator has coordinated with
76 Terracon Consultants, Inc. to conduct a Geohazard Assessment Study. Navigator
77 expects the Geohazard Analysis to be completed by the end of Q1 2023.
78

79 **Q: Do you have any additional recommendations for Navigator with regards**
80 **for mitigating risks associated with subsidence or land movement?**
81

82 A: Yes, I would recommend that Navigator provide a figure set in the Geohazard
83 Analysis that appropriately addresses the areas where geological hazards may be
84 encountered by the proposed route. These figures would complement the
85 preexisting Table 6.2-2, which outlines the milepost ranges of each geological
86 hazard and their respective risk levels. Navigator expects the Geohazard Analysis
87 to be completed by the end of Q1 2023. Based on the results of the Geohazard
88 Analysis additional measures might be recommended.
89

90 **Q: Should the results of Geohazard Analysis and the associated mitigation**
91 **measures be reviewed by the SDPUC in order to determine that Navigator**

92 **will implement all appropriate measures to protect the pipeline from**
93 **subsidence and land movement?**

94
95 A: Yes, I would recommend that the results of the Geohazard Analysis be reviewed
96 by the SDPUC prior to determination. Per the Application, the Geohazard Analysis
97 will include many categories of hazards and will identify the appropriate mitigation
98 measures to be incorporated into the final design. The SDPUC should review these
99 measures and make additional recommendations as needed.

100
101 **Q: Does the proposed route cross any soil types that have the potential for**
102 **erosion? If so, please explain.**

103
104 A: Yes, the proposed route crosses soil types that have the potential for erosion.
105 Section 6.3 estimates that 43.88 miles of the proposed route have water erodibility
106 potential, as designated by the Natural Resources Conservation Service (NRCS).
107 Soil parameters that help identify if a soil is highly erodible include, but are not
108 limited to, the classification of land capability and slope. The land capability class
109 and subclass designations of the NRCS were determined for the proposed pipeline
110 route. Section 6.3 states that “Soils with a land capability class and subclass of Ve
111 through VIIIe are considered to be highly erodible. Soils with a land capability class
112 and subclass of IIIe through IVe are considered to be moderately erodible”. The
113 Application does not provide a description or visual that details the land capability
114 class or subclass of segments of the proposed pipeline route. In Table C-1 (Soils
115 Characteristics of Soil Map Units Crossed by the Heartland Greenway Pipeline
116 System Centerlines) of Exhibit C and Section 6.3, the Application states that
117 “*Steep slopes are defined as soils that have slopes greater than 8 percent*” which
118 can be a major contributor to the water erosion potential of the soil. Table 6.3-1
119 (Summary of Major Soil Characteristics Impacted by Project (miles)) approximates
120 that 13.58 miles of the soils crossed by the proposed route are situated on steep
121 slopes.

122
123 **Q: Does Navigator propose any methods for mitigating erosion during**
124 **construction and/or operation of the pipeline? If so, please explain.**

125
126 A: Yes, Navigator proposed methods for mitigating erosion during construction and
127 operation within Section 6.3 and Exhibit E. Within Exhibit E, there were also
128 references made to a Stormwater Pollution Prevention Plan (SWPPP), an
129 Agricultural Construction Mitigation Plan, and a Weed Control Plan, all of which
130 the Applicant has stated are being developed within the guidelines of the NRCS,
131 South Dakota Department of Agricultural and natural Resources (DANR), and the
132 county weed managers; however, it is my understanding that these documents
133 have not yet been submitted to the PUC for review (as of 5/25/2023).

134
135 **Q: Since the SWPPP is currently under development, do you have any specific**
136 **recommendations that the Commission should require Navigator provide**
137 **for review?**

138
139 A: The Application does not state that final preconstruction design efforts will include
140 site-specific plans that will identify and locate the type of BMPs proposed for
141 specific locations with highly erodible soils. I recommend that the SDPUC require
142 that pre-construction design efforts include BMPs specific to locations with higher
143 erosion potential including the 13.58 miles of the soils crossed by the proposed
144 route are situated on steep slopes as described in Table 6.3-1 of the application.
145

146 **Q: Do you have any additional recommendations for mitigating erosion**
147 **concerns?**
148

149 A: I recommend that Navigator provide descriptions for the locations where topsoil
150 segregation, along with other mitigation measures, will occur along the proposed
151 pipeline route as mentioned in Section 6.3, "Hydric Soils and Compaction
152 Potential". Table 6.3-1 references that approximately 11.14 miles crossed by the
153 proposed pipeline route are hydric soils and 111.13 miles are considered to have
154 a high soil rutting hazard. To minimize compaction during the construction process,
155 Navigator has proposed to implement several other erosional mitigation practices
156 along with topsoil segregation including the use of timber mats, using low ground-
157 weight bearing equipment, and limiting the amount of construction in wet weather
158 conditions. It would be advised that references, with specific MP callouts, be made
159 for extents of the proposed pipeline route that are designated as having a high risk
160 for soil rutting, compaction, wind and water erodibility, and steep slopes so that the
161 Environmental Inspectors (EIs) can have the data more readily accessible during
162 construction and restoration to know where the problem areas are expected to be.
163

164 Exhibit E states that both topsoil and subsoil may be decompacted per landowner
165 stipulations or applicable permits. Exhibit E also describes winter construction
166 techniques that will be implemented to address erosion and control and
167 stabilization techniques. These techniques are consistent with industry standards
168 and describe the challenges and mitigation measures for construction,
169 stabilization, and monitoring during frozen or thawing conditions. The EIs and
170 Construction Managers will determine when and where these measures will be
171 implemented as that cannot be determined without knowing the final construction
172 schedule or the weather conditions.
173

174 **Q: Does the proposed route cross any soil types that could inhibit future**
175 **revegetation of ground disturbed during construction activities? If so,**
176 **please explain.**
177

178 A: Yes, the proposed route crosses soil types that could inhibit future revegetation of
179 ground disturbed during construction activities. Section 6.3, "Revegetation" states
180 the primary factors that influence a soil's ability to regrow vegetation include
181 whether the soil is classified as being prime farmland or hydric, the soil rutting
182 hazard, the compaction potential, the steepness of slope, and the soil's potential
183 for erosion via water or wind. The revegetation potential for each map unit within

184 the proposed pipeline project area, can be found in Table C-1 of Exhibit C. Table
185 6.3-1 summarizes the major soil characteristics that are impacted by the Project
186 and approximates that 4.67 miles of the proposed pipeline route crosses soils with
187 a low revegetation potential. It would be advised that references, with specific MP
188 callouts, be made for extents of the proposed pipeline route that are designated as
189 having a low revegetation potential so that the EIs can have the data more readily
190 accessible during construction and restoration to know where the problem areas
191 are expected to be.

192
193 **Q: In your opinion, does Navigator have the proper plans in place to manage**
194 **these soil types in order to facilitate revegetation after pipeline**
195 **construction?**

196
197 A: Navigator outlines plans to promote soil fertility and limit erosion and compaction
198 through the application of fertilizers and installment of erosional controls such as
199 erosion control blankets, mulch, and tackifiers. Exhibit E provides details regarding
200 restoration and revegetation success criteria and record keeping that are
201 consistent with industry standards.

202
203 Navigator does not identify if any areas with saline, sodic, and saline-sodic soils
204 would be crossed by the proposed Project; however, Exhibit E does describe that
205 a soil salinity map will be prepared. These soil types can be linked to revegetation
206 issues and loss of agricultural productivity if soils are not handled properly during
207 construction. I recommend that Navigator include a discussion of saline-sodic soils
208 in the Agricultural Construction Mitigation Plan, in addition to the statements made
209 in Exhibit E regarding the soil amendments or topsoil supplementation to ensure
210 successful revegetation.

211
212 **Q: Do you have any additional recommendations for Navigator regarding**
213 **these soil types in order to enhance revegetation after pipeline**
214 **construction?**

215
216 A: I would recommend that reference maps, with specific MP callouts, be made for
217 extents of the proposed pipeline route that are designated as having a low
218 revegetation potential so that the EIs can have the data more readily accessible
219 during construction and restoration to know where the problem areas are
220 anticipated to be.

221
222 **Q: Does this conclude your testimony?**

223
224 A: Yes.

Sara Thronson

Associate Partner

Sara is an Associate Partner and Biological Lead, specializing in natural resource management. She provides all aspects of project management pertaining to site selection, botanical and wildlife field surveys, field data management, report preparation, and agency submittals for biological permits on private and public lands. Sara manages endangered/threatened species section 7 consultations and avoidance/ mitigation plans for bats, mussels, birds and rare plants. She manages field teams, prepares and reviews final reports, as well as prepares FERC documents, Migratory Bird Treaty Act compliance planning, and post construction restoration monitoring.



Experience: 17 years' experience of consulting in natural resources and the energy sector

Email: sara.thronson@erm.com

LinkedIn: [https:// www.linkedin.com/in/sara-thronson-9988673](https://www.linkedin.com/in/sara-thronson-9988673)

Education

- M.S. Soil Science, University of Minnesota-Department of Soil, Water, and Climate, USA, 2007
- B.S. Environmental Studies, Northland College, USA, 2002

Languages

- English, native speaker

Fields of Competence

- Natural Resources
- US Forest Service
- National Environmental Policy Act
- Federal Energy Regulatory Commission
- US Fish and Wildlife Service, Section 7 Consultation
- Migratory Bird Treaty Act

Key Industry Sectors

- Oil & Gas Midstream
- Mining
- Renewable Energy
- Environmental Baseline Studies
- Stakeholder engagement

Key Projects

Line 5 Replacement, Enbridge Energy

Routing and permitting of 40 miles of pipeline replacement to avoid Reservation Lands in northern WI. Deputy Project Manager responsible for client communications, reviewing application materials, tracking schedules and budgets for permit applications to the WI state agencies.

Alliance Capacity Expansion Project, Enbridge Energy

Compressor Station upgrades in ND, MN, and IL and 81 miles of 20 inch natural gas pipelines in ND. Project Manager responsible for developing project schedules, managing budgets, oversight of field surveys and preparation of the Federal Energy Regulatory Commission (FERC) pre-filing materials.

Dominion Energy Transmission, Inc., Atlantic Coast Pipeline Project

600 miles of 42-inch, 36-inch, 20-inch, and 16-inch natural gas pipelines in WV, VA, and NC. Project Manager and Biological Lead responsible for analyzing federally listed species constraints, leading US Forest Service Sensitive Species surveys and consultations, Fish and Wildlife Service Section 7 agency consultations including drafting Biological Assessments, and preparing resource report 3 for the FERC Section 7(c) application.

Spectra Energy Partners - Texas Eastern Transmission, LP, Bailey East Mine Panel 2L Project

Replacement of natural gas pipeline in Greene County, PA. Biological lead responsible to managing protected species surveys and consultations.

IPS Engineering/EPC, Bluegrass Pipeline Project

1107 miles of 24-inch-diameter natural gas liquids pipeline from WV to TX. Biological task lead involved in the regulatory planning phase of the project and responsible for managing and assisting the

permitting with the US Fish and Wildlife Service, COE, BLM, and USFS, and analyzing and summarizing federal and state permit requirements associated with the threatened and endangered species and cultural resources.

Alliance Pipeline L.P., Tioga Lateral Pipeline Project

Construction of 78 miles of 12-inch-diameter natural gas pipeline lateral across four counties in ND. Threatened and endangered species biological lead responsible for preparation of Resource Reports for the FERC; coordinated consultations with state and federal agencies; oversaw field surveys; and coordinated creation of MBTA Conservation Plan.

El Paso Corporation, Marcellus Ethane Pipeline System Project

Abandonment of approximately 850 miles of pipeline currently transporting natural gas from LA to OH and the subsequent conversion of the pipeline to transport ethane from OH to LA. Biological lead responsible for preparation of biological portions of a FERC section 7(c) Environmental Report Application; developing permitting and implementation strategies; and participating in environmental field surveys.