

BEFORE THE SOUTH DAKOTA PUBLIC UTILITIES COMMISSION

DOCKET NO. HP22-002

**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**

Direct Testimony of Hilary Morey
On Behalf of the Staff of the South Dakota Public Utilities Commission
May 25, 2023



1 **Q: State your name.**

2 A: Hilary Morey

3

4 **Q: State your employer.**

5 A: State of South Dakota, Department of Game, Fish, and Parks

6

7 **Q: State the program for which you work.**

8 A: Division of Wildlife, Terrestrial Resource Section

9

10 **Q: State the program roles and your specific job with the department.**

11 A: The role of the Terrestrial Resources section is to study, evaluate, and
12 assist in the management of all wildlife and associated habitats in South
13 Dakota. Management includes game and non-game wildlife populations,
14 habitat management on public lands and technical assistance and habitat
15 development on private lands, population and habitat inventory, and
16 environmental review of local and landscape projects. As the
17 environmental review senior biologist, I coordinate reviews of various
18 development projects within the state of South Dakota to assist
19 developers with compliance with state wildlife laws and to serve as
20 stewards of our state's outdoor resources.

21

1 **Q: Explain the range of duties you perform.**

2 A: Duties include coordinating environmental review evaluations related to
3 terrestrial and aquatic wildlife and associated habitats and drafting
4 responses with department staff for projects. I also represent the
5 Department on state and national committees. I am a co-principal
6 investigator on two State Wildlife Grants that are researching the effects of
7 wind energy development on species of greatest conservation need. I also
8 assist in field work and wildlife surveys where needed. My resume is
9 attached as Exhibit_HM-1.

10

11 **Q: On whose behalf was this testimony prepared?**

12 A: This testimony was prepared at the request of staff at the South Dakota
13 Public Utilities Commission.

14

15 **Q: What role does the Department of Game, Fish and Parks have in the**
16 **permitting process of a pipeline project?**

17 A: Game, Fish and Parks has no regulatory authority when it comes to
18 permitting of pipeline projects. The agency's role is to consult with
19 developers and provide wildlife survey data, spatial data, peer reviewed
20 literature, and recommendations on how to minimize or avoid potential
21 impacts to wildlife and associated habitats to enable developers to make
22 informed decisions related to natural resources.

23

1 **Q: Have you reviewed the Application and attachments? How else did**
2 **you learn details around the proposed project?**

3 A: Yes, I have reviewed relevant sections of the application and attachments.
4 GFP was first contacted by the developer in October 2021 regarding the
5 Navigator Heartland Greenway (NHG) pipeline.

6

7 **Q: Did GF&P provide comments and recommendations to Navigator**
8 **Heartland Greenway about the project area? Please identify who**
9 **provided those comments and provide a brief summary of them.**

10 A: GFP was initially contacted in October 2021 via a project submission to
11 our online environmental review tool, which provides information related to
12 wildlife and wildlife resources that may be present within a project area.
13 In January 2022, GFP met with wildlife consultants for NHG and
14 discussed potential wildlife species and habitat that may be present within
15 the project area based on the project footprint submitted to the
16 environmental review tool. I have also discussed project details with other
17 GFP biologists who have specialized expertise related to wildlife species
18 of concern or the project location. GFP and NHG discussed federal and
19 state listed species, potential survey methodology, proposed surveys and
20 timelines. After the meeting with wildlife consultants, GFP provided a siting
21 letter to NHG (Exhibit_HM-2). The siting letter described important wildlife
22 habitats (grasslands, wetlands, etc.), information about rare, endangered
23 or threatened species that could occur in the project area, and

1 recommendations to avoid and minimize impacts to wildlife. GFP was also
2 contacted via a website form submission by Environmental Solutions and
3 Innovations Inc. in December 2021 for a search of the South Dakota
4 Natural Heritage Database for threatened, endangered or sensitive
5 species records in the project area. GFP responded to the request by
6 providing species records within the project area. GFP was again
7 contacted in August of 2022 regarding the addition of two lateral lines
8 (Chancellor and Hudson) to the larger project area. NHG requested a
9 Natural Heritage Database search for the additional project area, and GFP
10 provided species records as well as a siting letter for the updated project
11 area (Exhibit_HM-3) in September of 2022. Information and
12 recommendations in the second siting letter sent in September of 2022
13 were similar to those included in the first siting letter referenced above.

14

15 **Q: Are there any sensitive wildlife areas crossed by the project?**

16 A: Yes. The NHG pipeline project crosses several waterbodies (streams,
17 rivers and wetlands), some of which are known to be occupied by the
18 federally endangered Topeka Shiner, areas of native prairie and
19 potentially suitable habitat for the state endangered lined snake. The
20 proposed pipeline route is also near Pallasades State Park (owned and
21 managed by SDGFP), the Aurora Prairie Property owned and managed by
22 The Nature Conservancy, as well as some Natural Resource

1 Conservation Service easement properties along the Big Sioux River near
2 Egan, SD.

3
4 Grasslands (particularly untilled native prairie) are of high
5 conservation value in South Dakota. Approximately 70% of the native
6 mixed-grass prairie has been lost in eastern South Dakota, and
7 approximately 32% has been lost in western South Dakota (Wright and
8 Wimberly 2013, Bauman et al. 2016). Across the Great Plains Region, it's
9 estimated that less than 5% of original tallgrass prairie remains intact
10 (Samson et al. 2004). A majority of the potentially undisturbed grasslands
11 in the project boundary occur near water bodies, particularly in and around
12 riparian areas.

13
14 A number of small streams and rivers are proposed to be crossed by the
15 NHG project. Installation of the NHG pipeline could temporarily impact
16 streams and wetlands where open trench installation will be used. NHG
17 proposes to restore any impacts to waterbodies where open trench
18 installation will be used.

19
20 **Q: Did GFP provide any recommendations to NHG on ways to avoid or**
21 **minimize impacts to wildlife and habitat impacts from construction of**
22 **the project? If yes, what were those recommendations?**

23

1 Yes, GFP provided recommendations in letters addressed to the applicant
2 (exhibit_HM-2 and exhibit_HM-3), as well as via email correspondence.
3 The primary recommendations were to route the pipeline and associated
4 infrastructure in previously disturbed areas (e.g. existing ROW), minimize
5 fragmentation, and utilize existing infrastructure. GFP further provided
6 recommendations to horizontally directional drill under streams that may
7 be occupied by the federally endangered Topeka Shiner, and
8 recommendations to minimize impacts to state endangered Lined Snakes.

9

10 **Q: Based on the information provided in the Application, in your opinion**
11 **does the environmental survey work completed or in process of**
12 **being completed by Navigator properly identify potential impacts to**
13 **the terrestrial and aquatic environment?**

14 A: Proper wildlife surveys are important for determining if sensitive wildlife
15 habitats and/or protected species may be present within a project area,
16 and what potential avoidance, minimization or mitigation measures may
17 be needed to avoid impacts to those species (e.g. seasonal timing
18 restrictions for construction near eagle nests, tree removal outside of the
19 bat active season). NHG completed the proper desktop analysis to identify
20 potential sensitive and protected species present in the project area, as
21 well as identification of potential waterbodies and important wildlife
22 habitats within the project area.

23

1 Based on applicants' response to PUC staff's data requests, wildlife
2 survey work is pending for: bat acoustic surveys, eagle and raptor nest
3 surveys, Dakota Skipper habitat assessment survey and pollinator habitat
4 assessment survey. The applicant indicated that survey work is
5 anticipated to conclude in June of 2023. The list of proposed
6 species/species groups to be surveyed is appropriate; however no survey
7 methods were provided to GFP for review. It is our understanding that
8 Navigator is consulting with the US Fish and Wildlife Service on these
9 surveys and proper methodology.

10

11 At the time of filing of this testimony, one round of Lined Snake
12 presence/absence surveys has been completed (Fall 2022) with a second
13 round of surveys proposed for spring of 2023. GFP had the opportunity to
14 review and concur with the proposed survey methods for lined snakes in
15 2022 and 2023. The methodology that was proposed by NHG was
16 appropriate. Survey effort in 2022 for Lined Snake was very limited as
17 NHG did not have permission to survey for Lined Snakes on 11 of 15 sites
18 identified to contain potentially suitable habitat. In the absence of access
19 to private properties for lined snake surveys, GFP is presuming the
20 presence of lined snakes at the 11 un-surveyed sites identified in 2022
21 NHG Lined Snake Survey Report for the purpose of adopting avoidance
22 and minimization measures related to lined snakes.

23

1 **Q: What are the potential impacts to terrestrial wildlife and terrestrial**
2 **wildlife habitat as a result of the construction of a pipeline project?**

3 A: Potential impacts to wildlife associated with construction of the proposed
4 project could include habitat loss (temporary and permanent), alteration
5 and fragmentation of habitat. Some species of wildlife (e.g. fossorial or
6 ground dwelling) could potentially be crushed during ground disturbing
7 activities. Some bird species (e.g. raptors, eagles, waterfowl etc.) could be
8 disturbed by construction activity during sensitive life stages such as the
9 nesting and fledging periods.

10

11 Permanent habitat loss can occur from construction of access roads,
12 buildings, launcher/receiver sites and mainline valves. This is often a small
13 percent of the total project acreage. Temporary habitat loss occurs when
14 habitat is disturbed for a time during construction of the pipeline but is
15 restored after construction. Habitat fragmentation is the division of a block
16 of habitat into smaller, and at times into isolated patches. Habitat
17 fragmentation can decrease the overall value of the remaining habitat.
18 Identification and avoidance of contiguous blocks of habitat, especially in
19 altered landscapes, is an important component of grassland and wetland
20 bird conservation (Bakker 2020).

21

22 **Q: Can you suggest methods to address temporary and permanent**
23 **changes to terrestrial habitat?**

1 A: Temporary impacts to terrestrial habitat resulting from construction
2 activities likely can be reclaimed by restoring impacted areas by grading
3 and reseeding. We had previously provided the applicant with a
4 publication titled “Best Management Practices Guide for Restoration of
5 Native Grasslands and Sensitive Sites Resulting from Energy or Industrial
6 Development” (Bauman 2020) for their consideration in project planning
7 and referenced it in our October 2022 siting letter. In general, disturbed
8 areas should be restored using native seed sources to reduce the
9 introduction of new or discourage encroachment of already present exotic
10 and/or invasive species. Above ground, permanent facilities should be
11 sited in areas that have been previously disturbed.

12

13 **Q: Are there different types of grasslands?**

14 A: Yes.

15

16 **Q: Please describe the following: native prairie, hayland, pasture, CRP,
17 and cropland.**

18 A: Grasslands are areas that contain plant species such as graminoids and
19 are commonly used for grazing or set aside for conservation purposes.

20 They can also be areas which are planted to a mixture of grasses and
21 legumes for livestock grazing or feed. Native prairie is grassland upon

22 which the soil has not undergone a mechanical disturbance associated

23 with agriculture or any other type of development. Hayland is grassland

1 that is managed by frequent mowing and often contains non-native plant
2 species either intentionally or by encroachment. Pasture is grassland that
3 may contain non-native plant species either intentionally or by
4 encroachment and is managed through grazing. In some instances,
5 hayland and pasture could be native prairie; in other situations, hayland
6 and pasture could be land once cultivated and restored to grassland
7 habitat. Conservation Reserve Program acres (CRP) can be protection of
8 existing grassland or grassland that occurs on land that was once tilled
9 and used for crop production and has now been seeded to herbaceous
10 cover. The CRP program is intended to address soil loss, water quality,
11 and provide wildlife habitat. Cropland could be described as agricultural
12 lands cultivated and used to grow crops such as corn, soybeans, small
13 grains, and others.

14

15 **Q: Are there any areas of native prairie in the proposed project?**

16 A: Yes. Spatial analysis conducted by Bauman et al. (2016) has identified
17 potentially undisturbed lands within the proposed project, particularly in
18 riparian areas across the project. Bauman et al. (2016) is one of the best
19 available spatial data sets representing the location of untilled native
20 grasslands.

21

22 **Q: Do grasslands other than native prairie have conservation value?**

1 A: Yes. Working grasslands like pasture, hayland, and conservation
2 grassland plantings (e.g. CRP plantings) serve as surrogates for native
3 grasslands. Some grassland dependent species (prairie grouse, Baird's
4 sparrow, Northern Harriers) require grassland patches with relatively tall
5 (12 inches or more) vegetation and accumulation of residual litter
6 characterized by light grazing pressure. Other species (Ferruginous
7 Hawks, Burrowing Owl, Chestnut-collared Longspur) require open
8 expanses of grasslands characterized by short vegetation that is typical of
9 moderate to heavy grazing pressure. Sprague's Pipit, Long-billed Curlew,
10 Bobolink and Dickcissel require grasslands with moderate grass heights
11 and periodic disturbance from grazing, mowing or prescribed fire (Johnson
12 et al. 2010, Bakker 2005, Shaffer and DeLong 2019). Although various
13 patches of grassland habitat can appear in "better" or "worse" condition
14 based on vegetation height and plant species composition, GFP considers
15 all grassland habitat as important for wildlife based on the information
16 presented above. Grassland birds have evolved with a gradation of
17 grazing intensities. Grassland wildlife diversity can be maximized by
18 creating a heterogeneous landscape comprised of short, medium and tall
19 vegetation structures. Grazing (haying and burning) management can
20 provide this variation in vegetative structure.

21

22 **Q: One of the GF&P's recommendations was that efforts should be**
23 **made to avoid siting the project in grasslands, especially untilled**

1 **native prairie. Based on the information in the Application and the**
2 **proposed project route, did Navigator demonstrate efforts to address**
3 **this recommendation? Please explain.**

4 A: It appears that the majority of the proposed project will be sited in
5 previously disturbed areas (e.g. cropland). However, at the time of filing of
6 this testimony, the exact location of access roads, mainline valves and any
7 other associated infrastructure is not available for review.

8

9 Q: **Are there any areas of large (> 160 acre) contiguous grassland**
10 **habitat in the proposed project?**

11 A: No.

12

13 Q: **If the final project route changed from that provided in the**
14 **application, could the potential terrestrial environment impacts**
15 **change?**

16 A: Yes.

17

18 Q: **What are the potential impacts to aquatic wildlife and aquatic wildlife**
19 **habitat as a result of the construction of a pipeline project?**

20

21 A: Impacts to aquatic habitats (streams, lakes, rivers and wetlands) can be
22 temporary or permanent. Temporary impacts from construction of the
23 NHG pipeline project related to open trench installation across a

1 waterbody include: increase in sedimentation, changes in stream bottom
2 elevations, or disturbance to riparian habitats. Temporary impacts from
3 construction of the NHG pipeline project related to horizontal directional
4 drilling across a waterbody could include an unintentional release of
5 drilling fluid into a stream during horizontal drilling. Permanent impacts to
6 aquatic habitats from construction of the NHG pipeline project could
7 include conversion of palustrine forested wetlands and palustrine scrub-
8 shrub wetlands to palustrine emergent wetlands (e.g. permanent change
9 in vegetative community and resulting ecological function of a wetland).

10

11 Aquatic species could be directly impacted by entrainment or impingement
12 during water pumping operations during construction of the NHG pipeline.
13 Aquatic invasive species (in particular zebra mussels) could inadvertently
14 be introduced to a new waterbody in the state by improperly
15 decontaminated construction equipment or improper discharge of water
16 for construction or hydrostatic testing (e.g. run off into a waterbody).

17

18 **Q: Can you suggest methods to address temporary and permanent**
19 **impacts to aquatic habitat?**

20 A: Open trench waterbody crossings should be conducted during periods of
21 low or no flow as much as is practicable and stream bottoms should be
22 returned to pre-construction elevations. GFP also recommends
23 maintaining seasonally appropriate flows as much as is practicable during

1 in-stream construction. To prevent the spread of aquatic invasive species,
2 GFP recommends using the U.S. Bureau of Reclamation Equipment
3 Inspection and Cleaning Manual (located at:
4 [https://www.usbr.gov/mussels/prevention/docs/EquipmentInspectionandCl](https://www.usbr.gov/mussels/prevention/docs/EquipmentInspectionandCleaningManual2021.pdf)
5 [eaningManual2021.pdf](https://www.usbr.gov/mussels/prevention/docs/EquipmentInspectionandCleaningManual2021.pdf)).

6
7 A contingency plan should be drafted to outline potential impacts and
8 response to an inadvertent release of drilling fluid for locations where
9 horizontal directional boring will occur. At the time of filing of this
10 testimony, no contingency plan has been provided.

11

12 **Q: If the final project route changed from that provided in the**
13 **application, could the potential aquatic environment impacts**
14 **change?**

15 A: Yes.

16

17 **Q: Do any State threatened or endangered species have the potential to**
18 **be impacted by the NHG project?**

19 A: Yes, the state endangered Lined Snake (*Tropidoclonion lineatum*), could
20 potentially be present within the project area. Lined snakes are a small,
21 fossorial snake species that typically inhabit undisturbed prairies along
22 woodland corridors. This species of snake is primarily nocturnal and can
23 be difficult to observe. Construction of the NHG pipeline could temporarily

1 impact lined snake habitat that is present within the project area. Direct
2 mortality (e.g. crushing) could occur during construction if lined snakes are
3 present within the project area, but were not detected with surveys. At the
4 time of filing this testimony, it is unclear whether above ground facilities
5 associated with the NHG will be constructed in or adjacent to potential
6 lined snake habitat.

7
8 The Topeka Shiner (*Notropis topeka*) a federally listed fish species could
9 also be impacted by construction of the NHG pipeline. The Topeka Shiner
10 is a small-bodied prairie stream fish. These fish typically inhabit mid-sized
11 prairie streams. Within the project area Topeka shiners are known to
12 inhabit: West Pipestone Creek, Brookfield Creek, Big Sioux River, Medary
13 Creek, Split Rock Creek, Beaver Creek, Long Creek and Four Mile Creek.
14 Impacts to Topeka Shiners (and other federally listed species) will be
15 addressed by a Biological Assessment prepared by NHG on behalf of the
16 U.S. Army Corps of Engineers. The Army Corps of Engineers will provide
17 the Biological Assessment to the USFWS for their review and subsequent
18 Biological Opinion. The Biological Assessment was not available to review
19 at the time of filing this testimony.

20

21 **Q: Does GFP have any recommendations on how to avoid, minimize or**
22 **mitigate impacts to listed species from the construction of the NHG**
23 **pipeline project?**

1 A: Yes. GFP recommended that NHG use horizontal directional drilling for
2 any stream crossings where Topeka Shiners could be present. However,
3 as mentioned above, the USFWS has authority over the federally listed
4 Topeka Shiner and mitigation measures will likely be outlined in the
5 biological assessment.

6

7 GFP and NHG collaborated to outline avoidance and mitigation measures
8 related to potential impacts to lined snakes within the project area. As
9 mentioned above, GFP presumes presence of a species where potentially
10 suitable habitat occurs if adequate surveys could not be performed. The
11 following measures were discussed and agreed upon between the two
12 parties:

13

- 14 1. Silt fence will be installed at least one day prior to commencing
15 construction at a site during the lined snake active period (April-October)
16 and remain in-place until construction of that segment of the pipeline is
17 complete, and any excavation is backfilled.
- 18 2. Silt fence will be secured with wooden stakes and the lower edges
19 should be buried to prohibit snakes and other animals from crawling under
20 unsecured fencing.
- 21 3. A permitted wildlife monitor will visually survey the fenced off
22 construction area the morning prior to commencing construction or staging
23 construction materials for any lined snakes that may have emerged in the

1 fenced area. Lined snakes are primarily nocturnal, and could become
2 trapped if they were present prior to exclusion fencing being installed.

3 4. Construction crews and contractors working within the 15 areas
4 identified will be trained on how to identify lined snakes.

5 5. Construction will stop if lined snakes are encountered within the
6 area. The on-site wildlife monitor will remove and relocate lined snakes if
7 they are present within the construction area. Construction can commence
8 once snakes are removed.

9 6. If lined snakes are encountered during construction, GFP requires
10 sightings be reported as stipulated in the wildlife monitor's wildlife
11 collectors permit and threatened and endangered species authorization.
12 GFP also requests a photo voucher if possible.

13 7. We suggest that Navigator not use plastic erosion control mesh in
14 conjunction with silt fencing, as plastic mesh can entangle snakes.

15
16 **Q: Are there any GF&P owned lands or other public lands that may be**
17 **impacted by the project?**

18 A: Based on review of the application materials, it does not appear that any
19 GF&P owned lands will be directly impacted by the project. Pallisades
20 State Park is located near the project, however it does not appear that any
21 part of the construction of this project will impact this property.

22

1 **Q: Does the project route cross any walk-in areas that are open to**
2 **public hunting?**

3
4 A: Based on information provided in the application, one walk-in-area parcel
5 may be impacted by the project. Walk-in-areas are properties that are
6 privately owned and have an agreement with GFP which opens them to
7 free public access for hunting.

8
9 **Q: Does GF&P request Navigator to coordinate closure of walk-in areas**
10 **during construction activities? If yes, how would GF&P like**
11 **Navigator to coordinate closure of those areas.**

12
13 A: Yes. GFP requests that the applicant be required to
14 contact the department at least 60 days prior to the start of construction to
15 coordinate public access to walk-in areas that may be temporarily
16 disrupted due to construction activities. Game, Fish and Parks will then
17 determine if any action is required from our agency to notify the public of
18 any changes to public access. Possible actions by GFP include: updating
19 the public hunting atlas (if notified before May 1st of construction year),
20 updating the public access map in the GFP app and additional signage at
21 affected properties during construction activities. Providing up-to-date
22 information on timing of construction in or near walk-in areas will help
23 ensure the safety of construction crews and hunters.

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Q: You mentioned the applicant requested data from the Natural Heritage Database. What is the South Dakota Natural Heritage database? What type of information does it contain?

A: The South Dakota Natural Heritage database tracks species at risk. Species at risk are those that are listed as threatened or endangered at the state or federal level or those that are rare. Rare species are those found at the periphery of their range, those that have isolated populations or those for which we simply do not have extensive information on.

This database houses and maintains data from a variety of sources including site-specific surveys, research projects and incidental reports of species that cover a time period from 1979 to the present. It is important to note that the absence of data from this database does not preclude a species presence in the proposed project area.

Q: In summary, does GF&P offer any specific permit recommendations should the permit be granted?

A: GFP recommends memorializing the lined snake mitigation measures proposed above in the form of a permit condition.

Q: Does this conclude your testimony?

A: Yes.

1 Literature Cited

- 2 Bakker, K.K. 2020. South Dakota species of habitat fragmentation concern:
3 grassland birds. Report developed for: U.S. Fish and Wildlife Service,
4 South Dakota Ecological Services Field Office, Pierre, SD, 38 pp.
- 5 Bakker, K.K. 2005. South Dakota All Bird Conservation Plan. Developed for:
6 South Dakota Department of Game, Fish and Parks. Wildlife Division
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8 <https://gfp.sd.gov/UserDocs/nav/bird-plan.pdf>
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10 grasslands and sensitive sites resulting from energy or industrial
11 development. South Dakota State University Extension. 12 pp. Available
12 online at: [https://extension.sdstate.edu/sites/default/files/2020-09/P-](https://extension.sdstate.edu/sites/default/files/2020-09/P-00184.pdf)
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- 16 Johnson, R.R., D.A. Granfors, N.D. Niemuth, M.E. Estey and R.E. Reynolds.
17 2010. Delineating grassland bird conservation areas in the U.S. Prairie
18 Pothole Region. Journal of Fish and Wildlife Management, 1:38-42.
- 19 Samson, F. B., F. L. Knopf, and W. R. Ostlie. 2004. Great Plains ecosystems:
20 past, present, and future. Wildlife Society Bulletin 32:6–15.
- 21 Shaffer, J.A., and J.P DeLong. 2019. The effects of management practices on
22 Grassland Birds-An introduction to North American grasslands and the
23 practices used to manage grasslands and grassland birds. USGS

Hilary A Morey

523 East Capitol Ave
Pierre, SD 57501
605-773-6208
Hilary.Morey@state.sd.us

Education

2011 M.S. Wildlife and Fisheries Science-Fisheries Option. South Dakota State University (SDSU), Brookings, SD.

Thesis: Influence of Diet and Environmental Variation on Physiological Responses of Juvenile Pallid Sturgeon (*Scaphirhynchus albus*).

2009 B.S. Fisheries and Water Resources-Fisheries Option, and Biology with Aquaculture minor. University of Wisconsin-Stevens Point (UWSP), Stevens Point, WI.

Professional Experience

Environmental Review Senior Biologist October 2018-present

SD Game, Fish and Parks, Pierre, SD

I review proposed development projects in the state of South Dakota for potential impacts to federal and state threatened and endangered species and their habitats. I review relevant scientific literature, and official reports related to habitat conservation, habitat restoration, wildlife ecology, and impacts of development on sensitive species and incorporate evidence into recommendations for developers to avoid and minimize conflicts with wildlife and wildlife habitat. I provide relevant scientific information and testimony to the South Dakota Public Utilities Commission related to wind energy, solar energy and pipeline projects at evidentiary hearings and through official correspondence. I serve as a co-principle investigator on two State Wildlife Grants (T-94-R-1: Prairie Grouse Ecology in Relation to the Sweetland Wind Energy Facility and T-92-R-1-Estimating Raptor Density at Two Wind Energy Facilities in Northeastern South Dakota).

Fisheries Biologist

April 2013 – October 2018

SD Game, Fish and Parks, Ft. Pierre, SD

I lead and assisted field crews to complete biological surveys (gill and fyke-nets, electrofishing, hydroacoustics, etc.) on Lake Sharpe and Lake Oahe in central South Dakota. I assisted with annual report review and preparation, manuscript preparation, manuscript reviews, creating presentations for public outreach, creating professional presentations, and writing and reviewing research proposals to secure project funding. I hired, trained, supervised and mentored seasonal fisheries technicians (1-2 per field season) and assisted with mentoring and training numerous fisheries interns.

Biological Science Technician (Fisheries)

December 2011 – April 2013

U.S. Fish and Wildlife Service, Columbia, MO.

I lead and assisted field crews to complete biological assessments on the lower Missouri River related to the Pallid Sturgeon Population Assessment Program. I also lead electrofishing and eDNA sampling crews in the Chicago Area Waterway System (CAWS) to assist with multi-state monitoring efforts for invasive silver and big-head carp presence. I was responsible for writing annual reports, paper datasheet quality control, analyzing long-term datasets for the Pallid Sturgeon Population Assessment Program. I participated in and assisted in coordinating multiple outreach and education events throughout central Missouri. I assisted with the development of new station projects and performed data analysis as needs arose. I presented results of such analyses in the form of technical presentations to stakeholder groups and peer groups at professional meetings.

Graduate Research Assistant (M.S.)

June 2009 – November 2011

South Dakota State University, Brookings, SD.

I conducted research on pallid sturgeon physiology, including the effects of diet and temperature regime on growth, food consumption and metabolism. I maintained the U.S.G.S. cooperative research unit wet lab at SDSU, where we housed 48 federally endangered pallid sturgeon and supervised and trained technicians. I presented the results of my research in the form of posters and technical presentations.

Professional Affiliation

2004 – Present

American Fisheries Society

National Chapter (2009-Present)

Fisheries Management Section (2013- 2018)

Education Section (2010-2018)

Genetics Section (2009-2018)

Dakota Chapter (2009-present)

2012 - 2018	North American Sturgeon and Paddlefish Society
2018-Present	The Wildlife Society (National Chapter) South Dakota Chapter
2018-Present	National Association of Wetland Managers (formerly Association of State Wetland Managers)

Professional Service

Energy Committee Chair	2022
South Dakota Chapter of the Wildlife Society	
Wind Wildlife Working Group Member	2021-Present
Association of Fish and Wildlife Agencies	
Energy and Wildlife Policy Committee Member	2020-Present
Association of Fish and Wildlife Agencies	
Wind Energy Work Group Chair	July 2020-June 2022
Midwest Landscape Initiative Midwest Association of Fish and Wildlife Agencies	
Mentor	2020-Present
The Wildlife Society-South Dakota Chapter	
Wind Energy Work Group Member	2019-Present
Midwest Landscape Initiative Midwest Association of Fish and Wildlife Agencies	
Technical Committee Member	2019-Present
Midwest Landscape Initiative Midwest Association of Fish and Wildlife Agencies	
Crucial Habitat Assessment Tool Policy Committee	2019-Present
Western Association of Fish and Wildlife Agencies	
AFS Professional Certification Committee	2017-2020
American Fisheries Society	

Board Member at Large 2017-2018
North American Sturgeon and Paddlefish Society

Secretary 2015-2018
North Central Division AFS Walleye Technical Committee

Young Professional Committee Member 2013-2018
Fisheries Management Section of AFS

Committee Chair 2013-2014
North Central Division AFS Walleye Technical Committee

Peer Reviewer 2009-Present
Fisheries Management and Ecology, Transactions of the American Fisheries Society, Prairie Naturalist.

Awards

- 2018 Outstanding Performance Award South Dakota Game, Fish and Parks
- 2018 Best Professional Poster Award Dakota Chapter AFS (co-author)
- 2017 Best Professional Poster Award Dakota Chapter AFS (co-author)
- 2017 Emerging Leader Mentorship Award American Fisheries Society
- 2016 Best Professional Poster Award Dakota Chapter AFS (lead author)
- 2016 Award of Merit American Fisheries Society Fish Management Section
- 2014 MICRA Sturgeon and Paddlefish Committee Travel Award
- 2011 American Fisheries Society John E. Skinner Memorial Award
- 2011 Honorable Mention for Best Student Poster Competition, 141st Annual Meeting of the American Fisheries Society, Seattle, WA.

Publications

- Fincel, M., C. Goble, D. Gravenhof, **H. Morey**. 2022. Detection range of two acoustic transmitters in four reservoir habitat types using passive receivers. *Animal Biotelemetry* 10:20. <https://doi.org/10.1186/s40317-022-00291-1>
- Gravenhof, D.A., **H.A. Morey**, C.W. Goble, M.J. Fincel and J.L. Davis. 2020. Short term survival and tag retention of gizzard shad implanted with dummy transmitters. *Journal of Fisheries Sciences* 14:001-007.

Fincel, M., N. Kludt, **H. Meyer**, M. Weber and C. Longhenry. 2019. Long-term data suggest potential interactions of introduced walleye and smallmouth bass on native sauger in four Missouri River impoundments. *Journal of Fish and Wildlife Management*. 10:602-618.

Maahs, B.C., **H.A. Meyer**, N.D. Huysman, J.M. Voorhees and M.E. Barnes. 2018. Mortality of landlocked fall chinook salmon broodstock after electrofishing or ascending a fish ladder. *Jacobs Journal of Aquaculture and Research* 3:1-3.

Huysman N., J.M. Vorhees, **H. Meyer**, E. Krebs and M.E. Barnes. 2018. Characteristics of landlocked fall chinook salmon producing either viable or completely non-viable eggs. *International Journal of Fisheries and Aquatic Sciences* 6: 86-88.

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Meyer, HA, SR Chipps, BDS Graeb, and RA Klumb. 2017. Growth, food consumption and energy status of age-0 pallid sturgeon (*Scaphirhynchus albus*) fed a commercial or invertebrate diet. *Journal of Fish and Wildlife Management*.

Kaemingk, MA, DJ Dembkowski, **HA Meyer**, and LM Gigliotti. 2013. Some insight for undergraduates seeking an advanced degree in wildlife and fisheries sciences. *Fisheries*.

Select Presentations

Meyer, H., C. Pasbrig and M. Fincel. 2018. Population dynamics and movement of shovelnose sturgeon in a Missouri River impoundment. North American Sturgeon and Paddlefish Society Annual Meeting, Columbia, MO.

Jungwirth, J., B. Miller, H. **Meyer**, J. Davis, M. Fincel and C. Longhenry. 2018. Selective removal of largemouth bass in small prairie impoundments (**presenting author**). North Central Division AFS Walleye Technical Committee Meeting, Spirit Lake, IA.

Meyer, H.A., M.J. Fincel and R.P. Hanten. 2017. Use of acoustic telemetry to assess over-winter survival of gizzard shad. American Fisheries Society Annual Meeting, Tampa, FL.

Meyer, H.A., R.P. Hanten, M.J. Fincel and J.L. Davis. 2016. Survival of gizzard shad after dummy transmitter implantation (poster). Dakota Chapter of the American Fisheries Society Annual Meeting, Spearfish, SD.

- Meyer, HA, K Grohs, D Shumann and MJ Fincel. 2015.** Movement of translocated paddlefish in Lake Sharpe, South Dakota. North American Sturgeon and Paddlefish Society Annual Meeting, Oshkosh, WI.
- Meyer, HA, MJ Fincel, WE Adams and CL Longmire. 2014.** The business of fishing: use and satisfaction of anglers on a large reservoir. 144th Annual Meeting of the
- Meyer, HA, CJ Ridenour, WJ Doyle and TD Hill. 2012.** Influence of flow regime on the condition of blue suckers in the lower Missouri River. 142nd Annual Meeting of the American Fisheries Society, St. Paul, MN.
- Meyer, HA, CJ Ridenour, WJ Doyle and TD Hill. 2012.** Lateral distribution of *Scaphirhynchus* sturgeon during flood flows in the lower Missouri River: 2010 case study. Mississippi Interstate Cooperative Resource Association Sturgeon and Paddlefish Committee Annual Meeting, Kirkwood, MO.
- Meyer, HA, SR Chipps, BDS Graeb, and RA Klumb. 2011.** Latitudinal variation in pallid sturgeon physiology. 141st Annual Meeting of the American Fisheries Society, Seattle, WA.
- Meyer, HA, SR Chipps, BDS. Graeb, and RA Klumb. 2011.** Growth and energy status of age-0 pallid sturgeon fed a commercial or invertebrate diet (Poster). 141st Annual Meeting of the American Fisheries Society, Seattle, WA.

Training Received

Leadership SD State Government Program	April-October 2022
Wetland Delineation Wetland Training Institute	May 2022
Reflections on Agency Management Association of Fish and Wildlife Agencies	March 2021
Adaptive Leadership Principles Association of Fish and Wildlife Agencies	July 2020
Mitigation Banking and In-Lieu Fee Program Interagency Review Team Training The Conservation Fund	June 2019
Writing and reviewing NEPA documents ShIPLEY Group	March 2019

Overview of the NEPA Process
Shiple Group

January 2019

Nationwide Permits
Wetland Training Institute

January 2019

S.C.U.B.A.-Openwater Diving
SSI

October 2017

Program MARK Workshop
Iowa State University

July 2017

R for Fisheries Scientists
Michigan State University/American Fisheries Society

August 2013



SOUTH DAKOTA DEPARTMENT OF GAME, FISH AND PARKS

523 EAST CAPITOL AVENUE | PIERRE, SD 57501

January 25, 2022

Laurid Broughton
Environmental Solutions & Innovations, Inc.
4525 Este Ave.
Cincinnati, OH 45232

RE: Heartland Greenway-Navigator
Proposed Carbon Capture Pipeline
Brookings, Minnehaha and Moody Counties, South Dakota
South Dakota Game, Fish and Parks Siting Recommendations

Dear Laurid,

Thank you for contacting South Dakota Game, Fish and Parks (GFP) regarding the proposed Heartland Greenway Navigator carbon capture and sequestration pipeline project in Brookings, Minnehaha and Moody Counties, South Dakota. The proposed project would include the construction of approximately 60 miles of underground pipeline through South Dakota. We strive to collaborate with developers to balance wildlife conservation with development in our state. The purpose of this letter is to provide information, siting recommendations (e.g. avoidance, minimization and mitigation measures) and wildlife survey recommendations for the development and siting of the proposed project. We have prepared the following information to address environmental concerns regarding threatened, endangered, and rare species, areas of high conservation value, and species of concern in South Dakota. Impacts to wildlife and their associated habitats can be minimized by using responsible, wildlife friendly siting recommendations early in the project planning stage of development.

The Heartland Greenway project was originally introduced to GFP in October of 2021 via a submission to our online environmental review tool. Shortly after the project submission, representatives from GFP as well as the South Dakota Department of Agriculture and Natural Resources met with representatives from Environmental Solutions & Innovations (ESI) to discuss the project and any permitting needs from each respective agency. During that meeting, GFP made ESI aware of potential threatened or endangered species present in the project area, as well as our role in permitting. GFP appreciates the early engagement with us at this stage of project planning. We are providing this letter as a follow-up to that meeting, and to document our wildlife related concerns and recommendations for the Heartland Greenway Project.

SOUTH DAKOTA NATURAL HERITAGE DATABASE

The South Dakota Natural Heritage Program monitors species at risk. Species at risk are those that are listed as threatened or endangered at the state or federal level or those that are rare. Rare species in South Dakota are found at the periphery of their range, have isolated populations or are species of which we simply do not have extensive information. A list of species monitored by the Heritage Program can be found at <https://gfp.sd.gov/natural-heritage-program/>. We recommend a **yearly database**



search, to ensure that developers are aware of changing patterns in wildlife use at a site. **Please note many places in South Dakota have not been surveyed for rare or protected species and the absence of a species from the database does not preclude its presence from your project area.**

Species records can be requested through the Natural Heritage Program at this link: <https://gfp.sd.gov/forms/heritagedata/>. Alternatively, GFP has an online Environmental Review Tool available for project planning purposes: <https://ert.gfp.sd.gov/> This tool is free to use and has a number of publicly available spatial layers as well as the capability to generate a report of species that may be present. Please note that this tool will not give specific locations of sensitive species; only a list of species that may be found in the project area. ESI submitted a project to the environmental review tool, and a resulting report (Project ID: 2021-10-21-163) was generated and provided to the project proponent. The results in the report include any species within 5 miles of the proposed project area.

We have completed an initial search of the project area and found the following records within 1 mile of the proposed project boundary:

- Topeka Shiner (*Notropis topeka*), federally endangered
- Powesheik Skipperling (*Oarisma powesheik*), federally endangered; last observed in 1995
- Lined Snake (*Tropidoclonion lineatum*), state endangered

HABITATS IMPORTANT TO CONSERVATION IN SOUTH DAKOTA

Native Grasslands

Grasslands are of high conservation value in South Dakota, and many acres are converted to cropland annually. Approximately 70% of the native mixed-grass prairie has been lost in eastern South Dakota, and approximately 32% has been lost in western South Dakota (Wright and Wimberly 2013, Bauman et al. 2016, Bauman et al. 2016). All grasslands within the project boundary should be identified. Untilled grasslands, large grassland blocks and grasslands with native plant species are of particular importance and special care should be taken to avoid these areas. Other grassland types such as native rangeland, grazed grasslands (with native plant species), pasture (grazed grasslands with non-native plant species), and Conservation Reserve Program lands (formerly tilled lands planted to vegetative cover for erosion control and wildlife habitat) also serve as wildlife habitat. Placement of project infrastructure in contiguous blocks of grasslands causes fragmentation and result in less suitable habitat for grassland dependent species. Early identification of grassland areas provides the information needed to avoid further grassland loss, degradation, and fragmentation. Game, Fish and Parks recommends using both the National Land Composition Data (NLCD) layer and a layer available from the SDSU Extension office that identified potentially undisturbed lands in eastern South Dakota (Bauman et al. 2016) to identify and quantify grassland habitats that may be impacted by the construction of this project. The report and associated spatial layer associated with Bauman et al. (2016) can be found at: <https://openprairie.sdstate.edu/>.

Our initial review of the proposed project area indicates that a majority of the land cover is in agricultural production. The majority of grassland/hayland resources are present near riparian areas and associated with locations where the proposed project crosses major streams (Big Sioux River, Split Rock Creek, etc.).

Grasslands should not be “ranked” or considered less important solely based on height of grass or composition of species. Some grassland dependent species such as Sharp-Tailed Grouse (*Tympanuchus phasianellus*), Baird’s Sparrow (*Centronyx bairdii*), and Northern Harriers (*Circus hudsonius*) require grassland patches with relatively tall (12 inches or more) vegetation and accumulation of residual litter characterized by light grazing pressure (Bakker 2005, Johnson et al. 2010, Shaffer and DeLong 2019, Bakker 2020). Other species such as Ferruginous Hawks (*Buteo regalis*), Burrowing Owl (*Athene cunicularia*), Thick Billed Longspur (*Rhynchophanes mccownii*), and Chestnut-collared Longspur (*Calcarius ornatus*) require open expanses of grasslands characterized by short vegetation that is typical of moderate to heavy grazing pressure (Bakker 2005, Johnson et al. 2010, Shaffer and DeLong 2019, Bakker 2020). Sprague’s Pipit (*Anthus spragueii*), Long-billed Curlew (*Numenius americanus*), Bobolink (*Dolichonyx oryzivorus*) and Dickcissel (*Spiza americana*) require grasslands with moderate grass heights and periodic disturbance from grazing, mowing or prescribed fire (Bakker 2005, Johnson et al. 2010, Shaffer and DeLong 2019, Bakker 2020). Although various patches of grassland habitat can appear in “better” or “worse” condition based on vegetation height and plant species composition, GFP considers all grassland habitat as important for wildlife based on the information presented above.

Wetlands and Streams

The prairie pothole region of South Dakota supports a wide diversity of bird species (~80 species; Johnson et al. 1997). All wetlands and other waterbodies within the project boundary should be identified and delineated. Note that wetland delineation should occur during time periods when a basin typically holds water (late spring-early summer) and that the spatial extent of a wetland may change within or among years. Please see the US Army Corps of Engineers Midwest Regional Supplement for details on prairie pothole wetland delineation (USACE 2010). We recommend avoiding siting the project in wetlands, streams or within a wetland complex (multiple wetland basins adjacent to each other that may be hydrologically connected). Wetland complexes support higher species richness compared to isolated wetlands of similar size (Naugle et al. 1999). If streams, particularly stream crossings where Topeka Shiners may be present cannot be avoided, we recommend horizontal directional drilling to avoid impacts to this federally endangered species.

Invasive and Non-native Plant Species

Ground disturbing activity can increase opportunity for the introduction and establishment of invasive, non-native plant species. Based on the information listed above, GFP recommends controlling noxious weeds at the project site, as well as revegetating with native, weed-free seed mixes.

SPECIES OF CONCERN

Grassland Nesting Birds

Grassland nesting bird populations have been declining faster than any other bird group in North America (Peterjohn and Sauer 1999, Rosenberg et al. 2019). Many grassland nesting bird species require large tracts of open, contiguous grasslands. Placement of project infrastructure (e.g. roads) in large, intact grassland parcels can fragment habitat and displace certain species of grassland dependent birds such as Western Meadowlark (*Sturnella neglecta*), Upland Sand Piper (*Bartramia longicauda*), Grasshopper Sparrow (*Ammodramus savannarum*), Chestnut Collared Longspur (Pruett et al. 2009, Shaffer and Buhl 2015, Bakker 2020). We recommend avoiding grassland habitats during project siting. If grassland habitats cannot be avoided, we recommend minimizing disturbance to these areas by siting project infrastructure along previously disturbed areas, such as road rights-of-way.

If impacts to grassland habitats cannot be avoided, GFP may recommend mitigation in the form of voluntary habitat offsets/compensation. Shaffer et al. (2019) provides a science-based framework that

calculates biological values lost by development in grassland or prairie pothole habitats. We suggest using this framework and associated models to estimate impacts and develop a voluntary habitat offset plan. GFP employs several private lands habitat biologists, partners with habitat conservation organizations and can assist with development of habitat offset/improvement plans. Examples of potential voluntary conservation measures could include (but are not limited to): working with landowners to create grazing management plans to enhance existing grassland habitats and increase forage production for livestock, installation of grazing infrastructure (water lines, fencing, etc.) to assist with rotational grazing, cedar removal in areas where encroachment is a threat to grasslands, conservation easements, prescribed burning plans, etc. Please contact us if you have any questions or would like to learn more about ways to improve or enhance working lands and existing grassland habitat in and around the project area.

Lined Snake-State Endangered

Lined snakes typically inhabit remnant, undisturbed prairie habitats, particularly along woodland corridors. They are most often observed by searching under objects they are sheltering under, such as rocks and logs. In South Dakota, lined snakes have a limited population and are typically found along the Big Sioux River, as far north as Palisades State Park. Lined snakes are active from April through October. Roads can be a major source of mortality for this species of snake. You can find more information on lined snake biology and habitat needs here: https://www.sdherps.org/species/tropidoconion_lineatum.

For project planning purposes, we recommend first completing a desktop habitat assessment to delineate any potential lined snake habitat within the project area. In particular, lined snakes and their habitat may occur along: Beaver Creek, Fourmile Creek and Split Rock Creek. After a desktop habitat assessment is completed, we further recommend completing visual surveys along the pipeline route in lined snake habitat. Visual surveys should occur during the active season (April-October).

If lined snakes are encountered during the construction phase of the project we recommend the following avoidance measures:

- Lined snakes could use construction material staging areas as shelter during the active season. When staging construction materials near lined snake habitat, we recommend elevating those materials slightly off the ground, in order to allow snakes to escape when materials are removed.
- If the project requires trenching for installation of infrastructure, we recommend backfilling the trench at the end of each workday (April-October), so snakes cannot fall into open trenches and to be trapped and buried under fill. If trenches cannot be filled prior to the end of the workday, we further recommend covering open trenches and inspecting open trenches left overnight for endangered snake species prior to backfilling.

If lined snakes are encountered during pre-construction surveys or during project construction, please contact Eileen Dowd Stukel (605-773-4229 or Eileen.DowdStukel@state.sd.us) for further consultation.

Poweshiek Skipperling-Federally Endangered

The Poweshiek Skipperling is a prairie-dependent butterfly. These small butterflies typically inhabit remnant tallgrass and mixed grass prairie. To avoid impacting this species, we recommend avoiding siting project infrastructure in undisturbed grassland tracts. Under Section 7 of the Endangered Species Act, the U.S. Fish and Wildlife Service has authority over federally listed species. We urge you to

coordinate with the U.S. Fish and Wildlife Service South Dakota Ecological Services office further on this matter.

Topeka Shiner-Federally Endangered

The Topeka Shiner is a small-bodied prairie stream fish. These fish typically inhabit mid-sized prairie streams. Topeka shiners are known to inhabit: West Pipestone Creek, Brookfield Creek, Big Sioux River, Medary Creek, Split Rock Creek, Beaver Creek and Four Mile Creek within the project area. To avoid impacts to Topeka Shiner, we recommend horizontal directional drilling at any stream crossings where Topeka Shiner are known to occur. Under Section 7 of the Endangered Species Act, the U.S. Fish and Wildlife Service has authority over federally listed species. We urge you to coordinate with the U.S. Fish and Wildlife Service South Dakota Ecological Services office further on this matter.

OTHER CONSIDERATIONS

Public and Other Protected Lands

South Dakota is home to approximately 5 million acres of publicly accessible lands for hunting, fishing, and recreation. Public lands provide a multitude of recreational opportunities such as fishing, hunting, hiking, biking, bird watching, camping, boating, swimming, and educational opportunities. Public lands also provide a wide diversity of habitat that supports hundreds of species including birds, bats, amphibians, insects, and plants. To protect the recreational, educational, and biological integrity of these lands, they need to be identified early in the development process. Some areas may have special designations that prohibit wind energy facilities. Spatial information on public lands can be found at <https://gfp.sd.gov/maps/> or on our Environmental Review Tool. If GFP owned lands or private lands leased for hunting access (e.g. Walk-In-Area program) will be impacted by project activities, GFP requests to be notified of construction timelines and details of the potential disruption in order to notify the public of any impacts to these areas. If private lands leased for hunting access (Walk-In-Areas) will be permanently affected or hunting access prohibited, GFP may recommend voluntary mitigation/off sets to public access. Palisades State Parks appears to be near, but not impacted by the proposed project. It is not clear if any impacts will occur to the state park. If impacts are anticipated, or a temporary construction easement is required, please contact the Park Manager (John Drummer) at 605-594-3824.

We also wanted to note that the project footprint appears to be adjacent to The Aurora Prairie tract, owned and managed by The Nature Conservancy. This property is located approximately 1.5 miles south of the town of Aurora, South Dakota. We recommend consulting with The Nature Conservancy if any impacts are proposed to this property.

Powerlines

It's unclear whether this project will include the installation of any power lines, however we include the following information for project planning purposes. Powerline strikes and electrocutions are a known cause of mortality to birds. GFP recommends implementing mitigation measures described in The Avian Power Line Interaction Committee guidelines (<https://www.aplic.org/>). Additionally, GFP recommends avoiding placement of over-head powerlines adjacent to or between bodies of water (wetlands and lakes), as this could increase the risk of bird strikes, particularly for waterfowl. We further recommend burying collection and transmission lines when possible.

SUMMARY

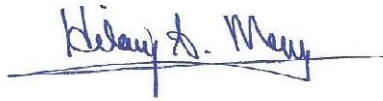
Thank you for the opportunity to provide comments on the proposed Heartland Greenway carbon capture and sequestration pipeline in Brookings, Minnehaha and Moody Counties, South Dakota. We

strive to work with developers to balance wildlife conservation with development in our state. In summary, GFP recommends the following to avoid or minimize impacts to wildlife and wildlife habitats:

- Consulting with GFP and USFWS early and often during the development of the project
- Making annual data requests from the South Dakota Natural Heritage Database or the Environmental Review Tool
- Conducting desktop analysis of project area to assess initial risks to wildlife and wildlife habitat
- Conducting appropriate field surveys to assess wildlife habitat and wildlife use
- Use results of wildlife field surveys to inform project siting (e.g. if a project identifies sensitive wildlife habitat or a resource rich area, the project should consider relocation)
- Calculating impacts of proposed project
- Avoid siting of project infrastructure in grassland, especially undisturbed grasslands
 - If grassland habitats cannot be avoided, minimize project footprints in grassland blocks or co-locate along already disturbed areas
 - Prepare a voluntary habitat offset/compensation plan for any unavoidable impacts to grassland habitats in the project area
- Site project infrastructure in previously disturbed areas as much as possible
- Avoid siting project infrastructure in wetlands, streams, or waterbodies, as well as in wetland complexes
- Horizontally Drill under any stream crossing where Topeka Shiners are known to occur

Please keep GFP involved in all future correspondence. We would appreciate a chance to review any proposed changes to the project footprint or specific information related to project infrastructure siting when it is available. For any additional questions or information, please contact me at 605.773.6208 or the email below.

Sincerely,



Hilary Morey
 Environmental Review Senior Biologist
 523 East Capitol Avenue
 Pierre, SD 57501
hilary.morey@state.sd.us

cc: Natalie Gates (USFWS Pierre)
 Darren Kearny (SD PUC)

Literature Cited

- Bakker, K.K. 2020. South Dakota species of habitat fragmentation concern: grassland birds. Report developed for: U.S. Fish and Wildlife Service, South Dakota Ecological Services Field Office, Pierre, SD, 38 pp.
- Bakker, K.K. 2005. South Dakota All Bird Conservation Plan. Developed for: South Dakota Department of Game, Fish and Parks. Wildlife Division Report 2005-09, Pierre, SD. Accessible online at: <https://gfp.sd.gov/UserDocs/nav/bird-plan.pdf>
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SOUTH DAKOTA DEPARTMENT OF GAME, FISH AND PARKS

523 EAST CAPITOL AVENUE | PIERRE, SD 57501

October 3, 2022

Michelle Cortez
Perennial Environmental Services LLC
13100 Norwest Freeway
Suite 150
Houston, TX 77040

RE: Heartland Greenway-Navigator
Poet Laterals Expansion
Proposed Carbon Capture Pipeline
Lincoln and Turner Counties, South Dakota
South Dakota Game, Fish and Parks Siting Recommendations

Dear Michelle,

Thank you for contacting South Dakota Game, Fish and Parks (GFP) regarding the proposed expansion of the Heartland Greenway Navigator carbon capture and sequestration pipeline project in Lincoln and Turner Counties, South Dakota. The proposed project would include the construction of approximately 46 miles of underground pipeline through South Dakota. We strive to collaborate with developers to balance wildlife conservation with development in our state. The purpose of this letter is to provide information, siting recommendations (e.g. avoidance, minimization and mitigation measures) and wildlife survey recommendations for the development and siting of the proposed project. We have prepared the following information to address environmental concerns regarding threatened, endangered, and rare species, areas of high conservation value, and species of concern in South Dakota. Impacts to wildlife and their associated habitats can be minimized by using responsible, wildlife friendly siting recommendations early in the project planning stage of development.

The Heartland Greenway project was originally introduced to GFP in October of 2021 via a submission to our online environmental review tool. Shortly after the project submission, representatives from GFP as well as the South Dakota Department of Agriculture and Natural Resources met with representatives from Environmental Solutions & Innovations (ESI) to discuss the project and any permitting needs from each respective agency. During that meeting, GFP made ESI aware of potential threatened or endangered species present in the project area, as well as our role in permitting. GFP provided a siting recommendation letter to ESI on January 25th, 2022, with information on sensitive species and sensitive wildlife habitat that may be found in the project area. GFP was contacted in August of 2022 with an expansion of the project to include two lateral lines in Lincoln and Turner Counties. This recommendation letter specifically addresses the potential sensitive species and wildlife habitats that may be impacted by the two proposed lateral lines that will connect to the larger project.



GFP appreciates the early engagement with us at this stage of project planning. We are providing this letter as a follow-up to the request for information from August 11th, 2022, for the two new lateral lines, and to document our wildlife related concerns and recommendations for this portion of the Heartland Greenway Project.

SOUTH DAKOTA NATURAL HERITAGE DATABASE

The South Dakota Natural Heritage Program monitors species at risk. Species at risk are those that are listed as threatened or endangered at the state or federal level or those that are rare. Rare species in South Dakota are found at the periphery of their range, have isolated populations or are species of which we simply do not have extensive information. A list of species monitored by the Heritage Program can be found at <https://gfp.sd.gov/natural-heritage-program/>. We recommend a **yearly database search**, to ensure that developers are aware of changing patterns in wildlife use at a site. A search of the Natural Heritage Database was conducted, and results were provided to Perennial Environmental on 9/16/22. **Please note many places in South Dakota have not been surveyed for rare or protected species and the absence of a species from the database does not preclude its presence from your project area.**

Species records can be requested through the Natural Heritage Program at this link: <https://gfp.sd.gov/forms/heritagedata/>. Alternatively, GFP has an online Environmental Review Tool available for project planning purposes: <https://ert.gfp.sd.gov/>. This tool is free to use and has a number of publicly available spatial layers as well as the capability to generate a report of species that may be present. Please note that this tool will not give specific locations of sensitive species; only a list of species that may be found in the project area. ESI submitted a project to the environmental review tool, and a resulting report (Project ID: 2022-08-11-468) was generated and sent to ESI. The results in the report include any species within 5 miles of the proposed project area.

We have completed an initial search of the project area and found the following records of sensitive species within 1 mile of the proposed project boundary:

- Topeka Shiner (*Nootropic topeka*), federally endangered
- North American River Otter (*Lontra canadensis*), Species of Greatest Conservation Need (SGCN)
- Blue Sucker (*Cyprinus elongatus*), SGCN

HABITATS IMPORTANT TO CONSERVATION IN SOUTH DAKOTA

Native Grasslands

Grasslands are of high conservation value in South Dakota, and many acres are converted to cropland annually. Approximately 70% of the native mixed-grass prairie has been lost in eastern South Dakota, and approximately 32% has been lost in western South Dakota (Wright and Wimberly 2013, Bauman et al. 2016, Bauman et al. 2016). All grasslands within the project boundary should be identified. Untilled grasslands, large grassland blocks and grasslands with native plant species are of particular importance and special care should be taken to avoid these areas. Other grassland types such as native rangeland, grazed grasslands (with native plant species), pasture (grazed grasslands with non-native plant species), and Conservation Reserve Program lands (formerly tilled lands planted to vegetative cover for erosion control and wildlife habitat) also serve as wildlife habitat. Placement of project infrastructure in contiguous blocks of grasslands causes fragmentation and result in less suitable habitat for grassland dependent species. Additionally, once grasslands are disturbed, it is very difficult to reclaim untilled

native grasslands to their original state (Bauman et al. 2020). Early identification of grassland areas provides the information needed to avoid further grassland loss, degradation, and fragmentation. Game, Fish and Parks recommends using both the National Land Composition Data (NLCD) layer and a layer available from the SDSU Extension office that identified potentially undisturbed lands in eastern South Dakota (Bauman et al. 2016) to identify and quantify grassland habitats that may be impacted by the construction of this project. The report and associated spatial layer associated with Bauman et al. (2016) can be found at: <https://openprairie.sdstate.edu/>.

Our initial review of the proposed project area indicates that most of the land cover is in agricultural production. Remnant grassland/hayland resources are present near riparian areas and associated with locations where the proposed project crosses streams (Beaver Creek, Long Creek, etc.).

Grasslands should not be “ranked” or considered less important solely based on height of grass or composition of species. Some grassland dependent species such as Sharp-Tailed Grouse (*Tympanuchus phasianellus*), Baird’s Sparrow (*Centronyx bairdii*), and Northern Harriers (*Circus hudsonius*) require grassland patches with relatively tall (12 inches or more) vegetation and accumulation of residual litter characterized by light grazing pressure (Bakker 2005, Johnson et al. 2010, Shaffer and DeLong 2019, Bakker 2020). Other species such as Ferruginous Hawks (*Buteo regalis*), Burrowing Owl (*Athene cunicularia*), Thick Billed Longspur (*Rhynchophanes mccownii*), and Chestnut-collared Longspur (*Calcarius ornatus*) require open expanses of grasslands characterized by short vegetation that is typical of moderate to heavy grazing pressure (Bakker 2005, Johnson et al. 2010, Shaffer and DeLong 2019, Bakker 2020). Sprague’s Pipit (*Anthus spragueii*), Long-billed Curlew (*Numenius americanus*), Bobolink (*Dolichonyx oryzivorus*) and Dickcissel (*Spiza americana*) require grasslands with moderate grass heights and periodic disturbance from grazing, mowing or prescribed fire (Bakker 2005, Johnson et al. 2010, Shaffer and DeLong 2019, Bakker 2020). Although various patches of grassland habitat can appear in “better” or “worse” condition based on vegetation height and plant species composition, GFP considers all grassland habitat as important for wildlife based on the information presented above.

Wetlands and Streams

The prairie pothole region of South Dakota supports a wide diversity of bird species (~80 species; Johnson et al. 1997). All wetlands and other waterbodies within the project boundary should be identified and delineated. Note that wetland delineation should occur during time periods when a basin typically holds water (late spring-early summer) and that the spatial extent of a wetland may change within or among years. Please contact the US Army Corps of Engineers to determine the appropriate regional supplement for use in your project area. We recommend avoiding siting the project in wetlands, streams or within a wetland complex (multiple wetland basins adjacent to each other that may be hydrologically connected). Wetland complexes support higher species richness compared to isolated wetlands of similar size (Naugle et al. 1999). If streams, particularly stream crossings where Topeka Shiners may be present cannot be avoided, we recommend horizontal directional drilling to avoid impacts to this federally endangered species.

Invasive and Non-native Plant Species

Ground disturbing activity can increase opportunity for the introduction and establishment of invasive, non-native plant species. Based on the information listed above, GFP recommends controlling noxious weeds at the project site, as well as revegetating with native, weed-free seed mixes.

SPECIES OF CONCERN

Grassland Nesting Birds

Grassland nesting bird populations have been declining faster than any other bird group in North America (Peterjohn and Sauer 1999, Rosenberg et al. 2019). Many grassland nesting bird species require large tracts of open, contiguous grasslands. Placement of project infrastructure (e.g., roads) in large, intact grassland parcels can fragment habitat and displace certain species of grassland dependent birds such as Western Meadowlark (*Sturnella neglecta*), Upland Sand Piper (*Bartramia longicauda*), Grasshopper Sparrow (*Ammodramus savannarum*), and Chestnut Collared Longspur (Pruett et al. 2009, Shaffer and Buhl 2015, Bakker 2020). We recommend avoiding grassland habitats during project siting. If grassland habitats cannot be avoided, we recommend minimizing disturbance to these areas by siting project infrastructure along previously disturbed areas, such as road rights-of-way.

If impacts to grassland habitats cannot be avoided, GFP may recommend mitigation in the form of voluntary habitat offsets/compensation. Shaffer et al. (2019) provides a science-based framework that calculates biological values lost by development in grassland or prairie pothole habitats. We suggest using this framework and associated models to estimate impacts and develop a voluntary habitat offset plan. Shaffer et al. (2022) also provides a tutorial on how to use the avian-impact off-set method that was developed in Shaffer et al. 2019. GFP employs several private lands habitat biologists, partners with habitat conservation organizations and can assist with development of habitat offset/improvement plans. Examples of potential voluntary conservation measures could include (but are not limited to): working with landowners to create grazing management plans to enhance existing grassland habitats and increase forage production for livestock, installation of grazing infrastructure (water lines, fencing, etc.) to assist with rotational grazing, cedar removal in areas where encroachment is a threat to grasslands, conservation easements, prescribed burning plans, etc. Please contact us if you have any questions or would like to learn more about ways to improve or enhance working lands and existing grassland habitat in and around the project area. Bauman (2020) provides best management practices related to reclamation of grassland habitats after energy development.

Topeka Shiner-Federally Endangered

The Topeka Shiner is a small-bodied prairie stream fish that typically inhabit mid-sized prairie streams. Topeka shiners are known to inhabit Long Creek, which is within the project area. To avoid impacts to Topeka Shiner, we recommend horizontal directional drilling at any stream crossings where Topeka Shiner are known to occur. Under Section 7 of the Endangered Species Act, the U.S. Fish and Wildlife Service has authority over federally listed species. We urge you to coordinate with the U.S. Fish and Wildlife Service South Dakota Ecological Services office further on this matter.

OTHER CONSIDERATIONS

Public and Other Protected Lands

South Dakota is home to approximately 5 million acres of publicly accessible lands for hunting, fishing, and recreation. Public lands provide a multitude of recreational opportunities such as fishing, hunting, hiking, biking, bird watching, camping, boating, swimming, and educational opportunities. Public lands also provide a wide diversity of habitat that supports hundreds of species including birds, bats, amphibians, insects, and plants. To protect the recreational, educational, and biological integrity of these lands, they need to be identified early in the development process. Some areas may have special designations that prohibit development. Spatial information on public lands can be found at <https://gfp.sd.gov/maps/> or on our Environmental Review Tool. If GFP owned lands or private lands leased for hunting access (e.g. Walk-In-Area program) will be impacted by project activities, GFP

requests to be notified of construction timelines and details of the potential disruption in order to notify the public of any impacts to these areas. If private lands leased for hunting access (Walk-In-Areas) will be permanently affected or hunting access prohibited, GFP may recommend voluntary mitigation/off sets to public access. It does not appear that this project will impact GFP owned, leased, or managed lands.

Powerlines

It's unclear whether this project will include the installation of any power lines, however we include the following information for project planning purposes. Powerline strikes and electrocutions are a known cause of mortality to birds. GFP recommends implementing mitigation measures described in The Avian Power Line Interaction Committee guidelines (<https://www.aplic.org/>). Additionally, GFP recommends avoiding placement of over-head powerlines adjacent to or between bodies of water (wetlands and lakes), as this could increase the risk of bird strikes, particularly for waterfowl. We further recommend burying collection and transmission lines when possible.

SUMMARY

Thank you for the opportunity to provide comments on the proposed Heartland Greenway carbon capture and sequestration pipeline laterals in Lincoln and Turner Counties, South Dakota. We strive to work with developers to balance wildlife conservation with development in our state. In summary, GFP recommends the following to avoid or minimize impacts to wildlife and wildlife habitats:

- Consulting with GFP and USFWS early and often during the development of the project
- Making annual data requests from the South Dakota Natural Heritage Database or the Environmental Review Tool
- Conducting desktop analysis of the project area to assess initial risks to wildlife and wildlife habitat
- Conducting appropriate field surveys to assess wildlife habitat and wildlife use
- Share results and copies of field surveys with GFP and USFWS for project review
- Use results of wildlife field surveys to inform project siting (e.g., if a project identifies sensitive wildlife habitat or a resource rich area, the project should consider relocation)
- Calculating impacts of proposed project
- Avoid siting of project infrastructure in grassland, especially undisturbed grasslands
 - If grassland habitats cannot be avoided, minimize project footprints in grassland blocks or co-locate along already disturbed areas (e.g., Road Rights-of-Way)
 - Use Best Management Practices outlined in Bauman 2020 if impacts to grasslands cannot be avoided
 - Prepare a voluntary habitat offset/compensation plan for any unavoidable impacts to grassland habitats in the project area
- Site project infrastructure in previously disturbed areas as much as possible
- Avoid siting project infrastructure in wetlands, streams, or waterbodies, as well as in wetland complexes

- Horizontally Drill under any stream crossing where Topeka Shiners are known to occur

Please keep GFP involved in all future correspondence. We would appreciate a chance to review any proposed changes, to the project footprint, proposed field study designs, field study results or specific information related to project infrastructure siting when it is available. For any additional questions or information, please contact me at 605.773.6208 or the email below.

Sincerely,



Hilary Morey
Environmental Review Senior Biologist
523 East Capitol Avenue
Pierre, SD 57501
hilary.morey@state.sd.us

cc: Natalie Gates (USFWS Pierre)
Darren Kearny (SD PUC)

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