

Appendix 5 - Alternative Avoidance Analysis Table

Alternative Avoidance Analysis			
Routing Data	Routing Data Classification	Data Source	Vintage
Aquifer	Crossing Tables Only- Review For Possible Issues Before Issuing Route	United States Geological Survey	2003
Commercially Navigable Waterway	Avoid	Pipeline and Hazardous Materials Safety Administration - National Pipeline Mapping System	2019
Congressional District	Crossing Tables Only- Review For Possible Issues Before Issuing Route	United States Census Bureau- TIGER	2020
Corridor Collocation	Preferred for Pipelines, Powerlines, and Roads (Identify crowded corridors). Railroad collocation to be reviewed after the first pass (not a high priority)	Rextag, United States Census Bureau- TIGER	June 2021, February 2020
County	Crossing Tables Only- Review For Possible Issues Before Issuing Route	United States Census Bureau- TIGER	2020
Critical Habitat			
Dakota Skipper	Avoid	United States Fish and Wildlife Services	April 2021
Piping Plover	Avoid	United States Fish and Wildlife Services	April 2021
Poweshiek skippering	Avoid	United States Fish and Wildlife Services	April 2021
Topeka shiner	Avoid	United States Fish and Wildlife Services	April 2021
American Burying Beetle Range	Avoid	United States Fish and Wildlife Service/Nebraska Natural Heritag Program/Nebraska Game and Parks Commission	May 2020/April 2021
Whooping crane	Avoid	United States Fish and Wildlife Services	April 2021
Depth to Bedrock	Avoid Shallow Bedrock Classification	Natural Resource Conservation Service- State Soil Geographic Dataset	December 2014
Ecosystem Region	Crossing Tables Only- Review For Possible Issues Before Issuing Route	Environmental Protection Agency, United States Fish & Wildlife Service	May 2000, April, 2014
EPA 303 Protected Waterbody	Avoid	Environmental Protection Agency	303c - March 2010, 303d - May 2015
Existing Pipeline	Low Avoidance for Crossings	Rextag	June 2021
Fault Area	No Fault Areas in the SCS Area of Interest	United States Geological Survey	2010
Floodplain 100yr	Low Avoidance- Minimize impacts and crossing lengths around stream and waterbody crossings. FEMA 100 Year Floodplain coverage is incomplete. See Data Comments.	Federal Emergency Management Agency / National Flood Hazard Layer	May 2021
Geologic Units	Review dominant lithology for construction methods overlaid with depth to bedrock for critical flow constraints. Work with construction on rock hardness risk. High level constraint review only.	United States Geological Survey	2017
Infrastructure, Structures, and Other Constraints			
Structure Boundary Outlines	400' offset where applicable. Further review required on structure type... ie Single Family-Dwelling, Multi-Family Dwelling, etc.- Avoid	Microsoft	June 2018
Abandoned Mine	Avoid- Review Site After Routing for Possible Adjustments	North Dakota GIS Hub	March 2021
Airport	Avoid- Review Site After Routing for Possible Adjustments	Geographic Names Information System- United States Geological Survey	May 2021
Airport Or Airfield	Avoid- Review Site After Routing for Possible Adjustments	United States Census Bureau- TIGER	February 2020
Animal Feeding Operation	Avoid- Review Site After Routing for Possible Adjustments	Iowa Department of Natural Resources	February 2021
Animal Feeding Operation	Avoid- Review Site After Routing for Possible Adjustments	Environmental Protection Agency	April 2021
Animal Feedlot Facility	Avoid- Review Site After Routing for Possible Adjustments	Minnesota Pollution Control Agency	May 2021
Bar	Avoid- Review Site After Routing for Possible Adjustments	Geographic Names Information System- United States Geological Survey	May 2021
Beach	Avoid- Review Site After Routing for Possible Adjustments	Geographic Names Information System- United States Geological Survey	May 2021
Biosolids	Avoid- Review Site After Routing for Possible Adjustments	Environmental Protection Agency	April 2021
Bridge	Avoid- Review Site After Routing for Possible Adjustments	Geographic Names Information System- United States Geological Survey	May 2021
Bridge	Avoid- Review Site After Routing for Possible Adjustments	Nebraska Department of Transportation	April 2021
Brownfields Property	Avoid- Review Site After Routing for Possible Adjustments	United States Department of Transportation- National Bridge Inventory	January 2020
Building	Avoid- Review Site After Routing for Possible Adjustments	Environmental Protection Agency	April 2021
Cemetery	Avoid- Review Site After Routing for Possible Adjustments	Geographic Names Information System- United States Geological Survey	May 2021
Cemetery	Avoid- Review Site After Routing for Possible Adjustments	Geographic Names Information System- United States Geological Survey	May 2021
Church	Avoid- Review Site After Routing for Possible Adjustments	United States Census Bureau- TIGER	February 2020
Closed Military Site Resulting From BRAC	Avoid- Review Site After Routing for Possible Adjustments	Geographic Names Information System- United States Geological Survey	May 2021
Closed Criminal Enforcement Case	Avoid- Review Site After Routing for Possible Adjustments	United States Census Bureau- TIGER	February 2020
Coal Mine	Avoid- Review Site After Routing for Possible Adjustments	Environmental Protection Agency	April 2021
Coal Mine	Avoid- Review Site After Routing for Possible Adjustments	U.S. Energy Information Administration and U.S. Department of Labor- Mine Safety & Health Administration	January 2020
Community Water System	Avoid- Review Site After Routing for Possible Adjustments	Iowa Department of Natural Resources	July 2017
Concentrated Animal Feeding Operation	Avoid- Review Site After Routing for Possible Adjustments	Environmental Protection Agency	April 2021
Construction & Demolition Landfill	Avoid- Review Site After Routing for Possible Adjustments	Environmental Protection Agency	April 2021
Convent, Monastery, Rectory, Other Religious Group Quarters	Avoid- Review Site After Routing for Possible Adjustments	Environmental Protection Agency	April 2021
Dam	Avoid- Review Site After Routing for Possible Adjustments	United States Census Bureau- TIGER	February 2020
Dam	Avoid- Review Site After Routing for Possible Adjustments	Geographic Names Information System- United States Geological Survey	May 2021
Dam	Avoid- Review Site After Routing for Possible Adjustments	Nebraska Department of Natural Resources	April 2021
Electric Generator	Avoid- Review Site After Routing for Possible Adjustments	United States Army Corps of Engineers	January 2019
Electric Power Generator (Biomass Based)	Avoid- Review Site After Routing for Possible Adjustments	Environmental Protection Agency	April 2021
Electric Power Generator (Coal Based)	Avoid- Review Site After Routing for Possible Adjustments	Environmental Protection Agency	April 2021
Electric Power Generator (Gas Based)	Avoid- Review Site After Routing for Possible Adjustments	Environmental Protection Agency	April 2021
Electric Power Generator (Oil Based)	Avoid- Review Site After Routing for Possible Adjustments	Environmental Protection Agency	April 2021
Electric Power Generator (Solar Based)	Avoid- Review Site After Routing for Possible Adjustments	Environmental Protection Agency	April 2021
Electric Power Generator (Unknown/Other Source)	Avoid- Review Site After Routing for Possible Adjustments	Environmental Protection Agency	April 2021
Electric Power Generator (Water Based)	Avoid- Review Site After Routing for Possible Adjustments	Environmental Protection Agency	April 2021
Electric Power Generator (Wind Based)	Avoid- Review Site After Routing for Possible Adjustments	Environmental Protection Agency	April 2021
Enforcement/Compliance Activity	Avoid- Review Site After Routing for Possible Adjustments	Environmental Protection Agency	April 2021
Ethanol Facility	Avoid- Review Site After Routing for Possible Adjustments	Environmental Protection Agency	April 2021
Ethanol Facility/Gasoline And Diesel Producers	Low Avoidance- Review Site After Routing for Possible Adjustments	Environmental Protection Agency	April 2021
Falls	Low Avoidance- Review Site After Routing for Possible Adjustments	Environmental Protection Agency	April 2021
Golf Course	Avoid- Review Site After Routing for Possible Adjustments	Geographic Names Information System- United States Geological Survey	May 2021
Government Center	Avoid- Review Site After Routing for Possible Adjustments	United States Census Bureau- TIGER	February 2020
Ground And Surface Water Site	Avoid- Review Site After Routing for Possible Adjustments	United States Census Bureau- TIGER	February 2020
Helicopter Landing Pad	Avoid- Review Site After Routing for Possible Adjustments	North Dakota GIS Hub	March 2021
Hospital	Avoid- Review Site After Routing for Possible Adjustments	United States Census Bureau- TIGER	February 2020
Hospital/Hospice/Urgent Care Facility	Avoid- Review Site After Routing for Possible Adjustments	Geographic Names Information System- United States Geological Survey	May 2021
Incorporated Place Park, Forest, Or Recreation Area	Avoid- Review Site After Routing for Possible Adjustments	United States Census Bureau- TIGER	February 2020
Island	Avoid- Review Site After Routing for Possible Adjustments	United States Census Bureau- TIGER	February 2020
Landfill Gas (LFG) Recovery	Avoid- Review Site After Routing for Possible Adjustments	Geographic Names Information System- United States Geological Survey	May 2021
Leaking Underground Storage Tank	Avoid- Review Site After Routing for Possible Adjustments	Environmental Protection Agency	April 2021
Leaking Underground Storage Tank - ARRA	Avoid- Review Site After Routing for Possible Adjustments	Iowa Department of Natural Resources	April 2021
Library	Avoid- Review Site After Routing for Possible Adjustments	Environmental Protection Agency	April 2021
Local Jail or Detention Center	Avoid- Review Site After Routing for Possible Adjustments	United States Census Bureau- TIGER	February 2020
Locale	Avoid- Review Site After Routing for Possible Adjustments	United States Census Bureau- TIGER	February 2020
Locality Point	Avoid- Review Site After Routing for Possible Adjustments	Geographic Names Information System- United States Geological Survey	May 2021
Military	Avoid- Review Site After Routing for Possible Adjustments	United States Census Bureau- TIGER	February 2020
Mine	Avoid- Review Site After Routing for Possible Adjustments	Geographic Names Information System- United States Geological Survey	May 2021
Mine	Avoid- Review Site After Routing for Possible Adjustments	Geographic Names Information System- United States Geological Survey	May 2021
Mine Plant	Avoid- Review Site After Routing for Possible Adjustments	United States Geological Survey- Mineral Resources Data System	March 2017
Mountain Peak Or Summit	Avoid- Review Site After Routing for Possible Adjustments	United States Geological Survey	February 2020
Museum, Visitor Center, Cultural Center, Or Tourist Attraction	Avoid- Review Site After Routing for Possible Adjustments	United States Census Bureau- TIGER	February 2020
NG Transmission Hub	Avoid- Review Site After Routing for Possible Adjustments	United States Census Bureau- TIGER	February 2020
Non-Transient Non-Community Water System	Avoid- Review Site After Routing for Possible Adjustments	U.S. Energy Information Administration	April 2020
Npdes Permit	Avoid- Review Site After Routing for Possible Adjustments	Environmental Protection Agency	April 2021

Alternative Avoidance Analysis				
Routing Data	Routing Data Classification	Data Source	Vintage	
NPDES Pretreatment Program	Avoid- Review Site After Routing for Possible Adjustments	Environmental Protection Agency	April 2021	
NPDES Stormwater Permit	Avoid- Review Site After Routing for Possible Adjustments	Environmental Protection Agency	April 2021	
NPDES Unpermitted	Avoid- Review Site After Routing for Possible Adjustments	Environmental Protection Agency	April 2021	
NRIS Cultural Site	Avoid- Review Site After Routing for Possible Adjustments	Environmental Protection Agency	April 2021	
Other Hazardous Waste Activities	Avoid- Review Site After Routing for Possible Adjustments	National Parks Service- National Register of Historic Places	November 2020	
Other Park, Forest, Or Recreation Area (Quasi-Public, Independent Park Commission, E	Avoid- Review Site After Routing for Possible Adjustments	Environmental Protection Agency	April 2021	
Park	Avoid- Review Site After Routing for Possible Adjustments	United States Census Bureau- TIGER	February 2020	
Petroleum / Alternative Fuels Filling Station	Avoid- Review Site After Routing for Possible Adjustments	Geographic Names Information System- United States Geological Survey	May 2021	
Petroleum Refinery	Avoid- Review Site After Routing for Possible Adjustments	Alternative Fuels Data Center(USDOE)	November 2020	
Place Of Worship	Avoid- Review Site After Routing for Possible Adjustments	U.S. Energy Information Administration	July 2020	
Post Office	Avoid- Review Site After Routing for Possible Adjustments	United States Census Bureau- TIGER	February 2020	
Private Park, Forest, Or Recreation Area	Avoid- Review Site After Routing for Possible Adjustments	Geographic Names Information System- United States Geological Survey	May 2021	
Radio Tower	Avoid- Review Site After Routing for Possible Adjustments	United States Census Bureau- TIGER	February 2020	
Regional Park, Forest, Or Recreation Area	Avoid- Review Site After Routing for Possible Adjustments	South Dakota Game, Fish and Parks	February 2012	
School	Avoid- Review Site After Routing for Possible Adjustments	United States Census Bureau- TIGER	February 2020	
School Or Academy	Avoid- Review Site After Routing for Possible Adjustments	Geographic Names Information System- United States Geological Survey	May 2021	
Sinkhole Site	Avoid- Review Site After Routing for Possible Adjustments	United States Census Bureau- TIGER	February 2020	
Solid & C&D Waste Landfill	Avoid- Review Site After Routing for Possible Adjustments	Iowa Department of Natural Resources	February 2021	
Spring	Avoid- Review Site After Routing for Possible Adjustments	Environmental Protection Agency	April 2021	
State Master	Low Avoidance- Review Site After Routing for Possible Adjustments	Geographic Names Information System- United States Geological Survey	May 2021	
State Park, Forest, Or Recreation Area	Avoid- Review Site After Routing for Possible Adjustments	Environmental Protection Agency	April 2021	
Storm Water Construction	Avoid- Review Site After Routing for Possible Adjustments	United States Census Bureau- TIGER	February 2020	
Storm Water Industrial	Avoid- Review Site After Routing for Possible Adjustments	Environmental Protection Agency	April 2021	
Summit	Avoid- Review Site After Routing for Possible Adjustments	Environmental Protection Agency	April 2021	
Superfund (Non-NPL)	Avoid- Review Site After Routing for Possible Adjustments	Geographic Names Information System- United States Geological Survey	May 2021	
Superfund NPL	Avoid- Review Site After Routing for Possible Adjustments	Environmental Protection Agency	April 2021	
Tower	Avoid- Review Site After Routing for Possible Adjustments	Environmental Protection Agency	April 2021	
Tower	Avoid- Review Site After Routing for Possible Adjustments	Geographic Names Information System- United States Geological Survey	May 2021	
Traffic Circle	Avoid- Review Site After Routing for Possible Adjustments	United States Census Bureau- TIGER	February 2020	
Train Station, Trolley Or Mass Transit Rail Station	Avoid- Review Site After Routing for Possible Adjustments	United States Census Bureau- TIGER	February 2020	
Transportation Terminal	Avoid- Review Site After Routing for Possible Adjustments	United States Census Bureau- TIGER	February 2020	
Transportation Terminal	Avoid- Review Site After Routing for Possible Adjustments	Streetmap	2009	
Underground Storage Tank	Avoid- Review Site After Routing for Possible Adjustments	United States Department of Transportation	April 2020	
Unspecified Universe	Avoid- Review Site After Routing for Possible Adjustments	Iowa Department of Natural Resources	April 2021	
US Government Facility	Avoid- Review Site After Routing for Possible Adjustments	Environmental Protection Agency	April 2021	
Wastewater Outfall	Avoid- Review Site After Routing for Possible Adjustments	Bureau of Indian Affairs	June 2018	
Water Monitoring Site	Avoid- Review Site After Routing for Possible Adjustments	Iowa Department of Natural Resources	April 2021	
Water Treatment Plant	Avoid- Review Site After Routing for Possible Adjustments	South Dakota Game, Fish and Parks	February 2013	
Water Treatment Plant	Avoid- Review Site After Routing for Possible Adjustments	Iowa Department of Natural Resources	March 2020	
Well	Avoid- Review Site After Routing for Possible Adjustments	Environmental Protection Agency	April 2021	
Well	Avoid- Review Site After Routing for Possible Adjustments	Iowa Department of Natural Resources	November 2020	
Well	Avoid- Review Site After Routing for Possible Adjustments	Minnesota Geological Society	October 2019	
Wind Farm	Avoid- Review Site After Routing for Possible Adjustments	Nebraska Oil and Gas Conservation Commission	March 2021	
Wind Turbine	Avoid- Review Site After Routing for Possible Adjustments	Iowa Department of Natural Resources	September 2015	
Workforce Lodging	Avoid- Review Site After Routing for Possible Adjustments	Iowa Department of Natural Resources	January 2019	
Karst Topography				
Karst Boundary	Avoid- Review Karst Area After Routing for Possible Adjustments- Review other pipelines in the same area for reference.	United States Geological Survey	Published 1984; Digitized 2005	
Karst Rock Type	Avoid- Review Karst Area After Routing for Possible Adjustments- Review other pipelines in the same area for reference.	United States Geological Survey	July 2014	
Land Cover				
Alfalfa	Low Avoidance	United States Department of Agriculture/United States Geological Survey - National Agricultural Statistics Service	2020 Edition; Published February 2021	
Barley	Low Avoidance	United States Department of Agriculture/United States Geological Survey - National Agricultural Statistics Service	2020 Edition; Published February 2021	
Barren	Low Avoidance	United States Department of Agriculture/United States Geological Survey - National Agricultural Statistics Service	2020 Edition; Published February 2021	
Buckwheat	Low Avoidance	United States Department of Agriculture/United States Geological Survey - National Agricultural Statistics Service	2020 Edition; Published February 2021	
Canola	Low Avoidance	United States Department of Agriculture/United States Geological Survey - National Agricultural Statistics Service	2020 Edition; Published February 2021	
Carrots	Low Avoidance	United States Department of Agriculture/United States Geological Survey - National Agricultural Statistics Service	2020 Edition; Published February 2021	
Chick Peas	Low Avoidance	United States Department of Agriculture/United States Geological Survey - National Agricultural Statistics Service	2020 Edition; Published February 2021	
Christmas Trees	Low Avoidance	United States Department of Agriculture/United States Geological Survey - National Agricultural Statistics Service	2020 Edition; Published February 2021	
Clover/Wildflowers	Avoid	United States Department of Agriculture/United States Geological Survey - National Agricultural Statistics Service	2020 Edition; Published February 2021	
Corn	Low Avoidance	United States Department of Agriculture/United States Geological Survey - National Agricultural Statistics Service	2020 Edition; Published February 2021	
Dbl Crop Barley/Corn	Low Avoidance	United States Department of Agriculture/United States Geological Survey - National Agricultural Statistics Service	2020 Edition; Published February 2021	
Dbl Crop Barley/Soybeans	Low Avoidance	United States Department of Agriculture/United States Geological Survey - National Agricultural Statistics Service	2020 Edition; Published February 2021	
Dbl Crop Corn/Soybeans	Low Avoidance	United States Department of Agriculture/United States Geological Survey - National Agricultural Statistics Service	2020 Edition; Published February 2021	
Dbl Crop WinWht/Corn	Low Avoidance	United States Department of Agriculture/United States Geological Survey - National Agricultural Statistics Service	2020 Edition; Published February 2021	
Dbl Crop WinWht/Sorghum	Low Avoidance	United States Department of Agriculture/United States Geological Survey - National Agricultural Statistics Service	2020 Edition; Published February 2021	
Dbl Crop WinWht/Soybeans	Low Avoidance	United States Department of Agriculture/United States Geological Survey - National Agricultural Statistics Service	2020 Edition; Published February 2021	
Deciduous Forest	Low Avoidance	United States Department of Agriculture/United States Geological Survey - National Agricultural Statistics Service	2020 Edition; Published February 2021	
Developed/High Intensity	Avoid	United States Department of Agriculture/United States Geological Survey - National Agricultural Statistics Service	2020 Edition; Published February 2021	
Developed/Low Intensity	Avoid	United States Department of Agriculture/United States Geological Survey - National Agricultural Statistics Service	2020 Edition; Published February 2021	
Developed/Med Intensity	Avoid	United States Department of Agriculture/United States Geological Survey - National Agricultural Statistics Service	2020 Edition; Published February 2021	
Developed/Open Space	Avoid	United States Department of Agriculture/United States Geological Survey - National Agricultural Statistics Service	2020 Edition; Published February 2021	
Dry Beans	Avoid	United States Department of Agriculture/United States Geological Survey - National Agricultural Statistics Service	2020 Edition; Published February 2021	
Durum Wheat	Low Avoidance	United States Department of Agriculture/United States Geological Survey - National Agricultural Statistics Service	2020 Edition; Published February 2021	
Evergreen Forest	Low Avoidance	United States Department of Agriculture/United States Geological Survey - National Agricultural Statistics Service	2020 Edition; Published February 2021	
Fallow/Idle Cropland	Avoid	United States Department of Agriculture/United States Geological Survey - National Agricultural Statistics Service	2020 Edition; Published February 2021	
Flaxseed	Low Avoidance	United States Department of Agriculture/United States Geological Survey - National Agricultural Statistics Service	2020 Edition; Published February 2021	
Grapes	Low Avoidance	United States Department of Agriculture/United States Geological Survey - National Agricultural Statistics Service	2020 Edition; Published February 2021	
Grassland/Pasture	Low Avoidance	United States Department of Agriculture/United States Geological Survey - National Agricultural Statistics Service	2020 Edition; Published February 2021	
Herbaceous Wetlands	Low Avoidance	United States Department of Agriculture/United States Geological Survey - National Agricultural Statistics Service	2020 Edition; Published February 2021	
Lentils	Avoid	United States Department of Agriculture/United States Geological Survey - National Agricultural Statistics Service	2020 Edition; Published February 2021	
Millet	Low Avoidance	United States Department of Agriculture/United States Geological Survey - National Agricultural Statistics Service	2020 Edition; Published February 2021	
Mint	Low Avoidance	United States Department of Agriculture/United States Geological Survey - National Agricultural Statistics Service	2020 Edition; Published February 2021	
Misc Veggies & Fruits	Low Avoidance	United States Department of Agriculture/United States Geological Survey - National Agricultural Statistics Service	2020 Edition; Published February 2021	
Mixed Forest	Low Avoidance	United States Department of Agriculture/United States Geological Survey - National Agricultural Statistics Service	2020 Edition; Published February 2021	
Mustard	Avoid	United States Department of Agriculture/United States Geological Survey - National Agricultural Statistics Service	2020 Edition; Published February 2021	
Oats	Low Avoidance	United States Department of Agriculture/United States Geological Survey - National Agricultural Statistics Service	2020 Edition; Published February 2021	
Onions	Low Avoidance	United States Department of Agriculture/United States Geological Survey - National Agricultural Statistics Service	2020 Edition; Published February 2021	
Open Water	Low Avoidance	United States Department of Agriculture/United States Geological Survey - National Agricultural Statistics Service	2020 Edition; Published February 2021	

Alternative Avoidance Analysis				
Routing Data	Routing Data Classification	Data Source	Vintage	
Other Crops	Avoid	United States Department of Agriculture/United States Geological Survey - National Agricultural Statistics Service	2020 Edition; Published February 2021	
Other Hay/Non Alfalfa	Low Avoidance	United States Department of Agriculture/United States Geological Survey - National Agricultural Statistics Service	2020 Edition; Published February 2021	
Peas	Low Avoidance	United States Department of Agriculture/United States Geological Survey - National Agricultural Statistics Service	2020 Edition; Published February 2021	
Peppers	Low Avoidance	United States Department of Agriculture/United States Geological Survey - National Agricultural Statistics Service	2020 Edition; Published February 2021	
Pop or Orn Corn	Low Avoidance	United States Department of Agriculture/United States Geological Survey - National Agricultural Statistics Service	2020 Edition; Published February 2021	
Potatoes	Low Avoidance	United States Department of Agriculture/United States Geological Survey - National Agricultural Statistics Service	2020 Edition; Published February 2021	
Pumpkins	Low Avoidance	United States Department of Agriculture/United States Geological Survey - National Agricultural Statistics Service	2020 Edition; Published February 2021	
Radishes	Low Avoidance	United States Department of Agriculture/United States Geological Survey - National Agricultural Statistics Service	2020 Edition; Published February 2021	
Rye	Low Avoidance	United States Department of Agriculture/United States Geological Survey - National Agricultural Statistics Service	2020 Edition; Published February 2021	
Safflower	Low Avoidance	United States Department of Agriculture/United States Geological Survey - National Agricultural Statistics Service	2020 Edition; Published February 2021	
Shrubland	Low Avoidance	United States Department of Agriculture/United States Geological Survey - National Agricultural Statistics Service	2020 Edition; Published February 2021	
Sod/Grass Seed (Review data accuracy for any major route variances)	Low Avoidance	United States Department of Agriculture/United States Geological Survey - National Agricultural Statistics Service	2020 Edition; Published February 2021	
Sorghum	Avoid	United States Department of Agriculture/United States Geological Survey - National Agricultural Statistics Service	2020 Edition; Published February 2021	
Soybeans	Low Avoidance	United States Department of Agriculture/United States Geological Survey - National Agricultural Statistics Service	2020 Edition; Published February 2021	
Spring Wheat	Low Avoidance	United States Department of Agriculture/United States Geological Survey - National Agricultural Statistics Service	2020 Edition; Published February 2021	
Squash	Low Avoidance	United States Department of Agriculture/United States Geological Survey - National Agricultural Statistics Service	2020 Edition; Published February 2021	
Sugarbeets	Low Avoidance	United States Department of Agriculture/United States Geological Survey - National Agricultural Statistics Service	2020 Edition; Published February 2021	
Sunflower	Low Avoidance	United States Department of Agriculture/United States Geological Survey - National Agricultural Statistics Service	2020 Edition; Published February 2021	
Sweet Corn	Low Avoidance	United States Department of Agriculture/United States Geological Survey - National Agricultural Statistics Service	2020 Edition; Published February 2021	
Switchgrass	Low Avoidance	United States Department of Agriculture/United States Geological Survey - National Agricultural Statistics Service	2020 Edition; Published February 2021	
Triticale	Low Avoidance	United States Department of Agriculture/United States Geological Survey - National Agricultural Statistics Service	2020 Edition; Published February 2021	
Vetch	Low Avoidance	United States Department of Agriculture/United States Geological Survey - National Agricultural Statistics Service	2020 Edition; Published February 2021	
Watermelons	Low Avoidance	United States Department of Agriculture/United States Geological Survey - National Agricultural Statistics Service	2020 Edition; Published February 2021	
Winter Wheat	Low Avoidance	United States Department of Agriculture/United States Geological Survey - National Agricultural Statistics Service	2020 Edition; Published February 2021	
Woody Wetlands	Low Avoidance	United States Department of Agriculture/United States Geological Survey - National Agricultural Statistics Service	2020 Edition; Published February 2021	
Land Ownership Potential Conflicts				
Agricultural Easement	Avoid- Review Site After Routing for Possible Adjustments	United States Geological Survey - PADUS v2_1	December 2020	
Airport	Avoid	Streetmap	2009	
Airport - Statistical Representation	Avoid- Review Site After Routing for Possible Adjustments	United States Census Bureau- TIGER	February 2020	
Amusement Center	Avoid- Review Site After Routing for Possible Adjustments	United States Census Bureau- TIGER	May 2016	
Approved or Proclamation Boundary	Low Avoidance- Review Site After Routing for Possible Adjustments	United States Geological Survey - PADUS v2_1	December 2020	
Campground	Avoid- Review Site After Routing for Possible Adjustments	United States Census Bureau- TIGER	February 2020	
Cemetery	Avoid- Review Site After Routing for Possible Adjustments	United States Census Bureau- TIGER	February 2020	
Coal Mine	Avoid- Review Site After Routing for Possible Adjustments	Iowa Department of Natural Resources	July 2017	
Commercial Workplace	Avoid- Review Site After Routing for Possible Adjustments	United States Census Bureau- TIGER	February 2020	
Conservation Area	Avoid- Review Site After Routing for Possible Adjustments	United States Geological Survey - PADUS v2_1	December 2020	
Conservation Easement	Avoid- Review Site After Routing for Possible Adjustments	National Conservation Easement Database	August 2020	
Conservation Easement	Avoid- Review Site After Routing for Possible Adjustments	United States Geological Survey - PADUS v2_1	December 2020	
Convent, Monastery, Rectory, Other Religious Group Quarters	Avoid- Review Site After Routing for Possible Adjustments	United States Census Bureau- TIGER	February 2020	
County Park, Forest, or Recreation Area	Avoid- Review Site After Routing for Possible Adjustments	United States Census Bureau- TIGER	February 2020	
Federal Other or Unknown	Avoid- Review Site After Routing for Possible Adjustments	United States Geological Survey - PADUS v2_1	December 2020	
Federal Penitentiary, State Prison, or Prison Farm	Avoid- Review Site After Routing for Possible Adjustments	United States Census Bureau- TIGER	February 2020	
Forest Stewardship Easement	Avoid- Review Site After Routing for Possible Adjustments	United States Geological Survey - PADUS v2_1	December 2020	
Golf Course	Avoid- Review Site After Routing for Possible Adjustments	United States Census Bureau- TIGER	February 2020	
Government Center	Avoid- Review Site After Routing for Possible Adjustments	United States Census Bureau- TIGER	February 2020	
Grazing Allotment - BLM	Avoid- Review Site After Routing for Possible Adjustments	Bureau of Land Management	April 2021	
Grazing Allotment - USFS	Avoid- Review Site After Routing for Possible Adjustments	United States Forest Service	April 2021	
Historic or Cultural Area	Avoid- Review Site After Routing for Possible Adjustments	United States Geological Survey - PADUS v2_1	December 2020	
Hospital/Hospice/Urgent Care Facility	Avoid- Review Site After Routing for Possible Adjustments	United States Census Bureau- TIGER	February 2020	
Hotel, Motel, Resort, Spa, Hostel, YMCA, or YWCA	Avoid- Review Site After Routing for Possible Adjustments	United States Census Bureau- TIGER	February 2020	
Incorporated Place Park, Forest, or Recreation Area	Avoid- Review Site After Routing for Possible Adjustments	United States Census Bureau- TIGER	February 2020	
Industrial Building or Industrial Park	Avoid- Review Site After Routing for Possible Adjustments	United States Census Bureau- TIGER	February 2020	
Inventoried Roadless Area	Avoid- Review Site After Routing for Possible Adjustments	United States Geological Survey - PADUS v2_1	December 2020	
Juvenile Institution	Avoid- Review Site After Routing for Possible Adjustments	United States Census Bureau- TIGER	February 2020	
Local Conservation Area	Avoid- Review Site After Routing for Possible Adjustments	United States Geological Survey - PADUS v2_1	December 2020	
Local Historic or Cultural Area	Avoid- Review Site After Routing for Possible Adjustments	United States Geological Survey - PADUS v2_1	December 2020	
Local Jail or Detention Center	Avoid- Review Site After Routing for Possible Adjustments	United States Census Bureau- TIGER	February 2020	
Local Other or Unknown	Avoid- Review Site After Routing for Possible Adjustments	United States Geological Survey - PADUS v2_1	December 2020	
Local Park	Avoid- Review Site After Routing for Possible Adjustments	United States Geological Survey - PADUS v2_1	December 2020	
Local Recreation Area	Avoid- Review Site After Routing for Possible Adjustments	United States Geological Survey - PADUS v2_1	December 2020	
Local Resource Management Area	Avoid- Review Site After Routing for Possible Adjustments	United States Geological Survey - PADUS v2_1	December 2020	
Military Land	Avoid- Review Site After Routing for Possible Adjustments	United States Geological Survey - PADUS v2_1	December 2020	
Museum, Visitor Center, Cultural Center, or Tourist Attraction	Avoid- Review Site After Routing for Possible Adjustments	United States Census Bureau- TIGER	February 2020	
National Forest or Other Federal Land	Avoid- Review Site After Routing for Possible Adjustments	United States Census Bureau- TIGER	February 2020	
National Grassland	Avoid- Review Site After Routing for Possible Adjustments	North Dakota GIS Hub	November 2019	
National Grassland	Avoid- Review Site After Routing for Possible Adjustments	United States Geological Survey - PADUS v2_1	December 2020	
National Public Lands	Avoid- Review Site After Routing for Possible Adjustments	United States Geological Survey - PADUS v2_1	December 2020	
National Recreation Area	Avoid- Review Site After Routing for Possible Adjustments	United States Geological Survey - PADUS v2_1	December 2020	
National Wildlife Refuge	Avoid- Review Site After Routing for Possible Adjustments	United States Geological Survey - PADUS v2_1	December 2020	
Native American Land Area	Avoid- Review Site After Routing for Possible Adjustments	Bureau of Indian Affairs	December 2018	
Native American Land Area	Avoid- Review Site After Routing for Possible Adjustments	United States Geological Survey - PADUS v1_4	May 2016	
Native Prairie Community	Avoid- Review Site After Routing for Possible Adjustments	Minnesota Department of Natural Resources	April 2021	
NRIS Cultural Site	Avoid- Review Site After Routing for Possible Adjustments	National Parks Service- National Register of Historic Places	November 2020	
Nursing Home, Retirement Home, or Home for the Elderly	Avoid- Review Site After Routing for Possible Adjustments	United States Census Bureau- TIGER	February 2020	
Other Correctional Institution	Avoid- Review Site After Routing for Possible Adjustments	United States Census Bureau- TIGER	February 2020	
Other Easement	Avoid- Review Site After Routing for Possible Adjustments	United States Geological Survey - PADUS v2_1	December 2020	
Other Employment Center	Avoid- Review Site After Routing for Possible Adjustments	United States Census Bureau- TIGER	February 2020	
Other Park, Forest, or Recreation Area (quasi-public, independent park commission, etc)	Avoid- Review Site After Routing for Possible Adjustments	United States Census Bureau- TIGER	February 2020	
Park	Avoid- Review Site After Routing for Possible Adjustments	United States Census Bureau- TIGER	February 2020	
Place of Worship	Avoid- Review Site After Routing for Possible Adjustments	United States Census Bureau- TIGER	February 2020	
Private Conservation	Avoid- Review Site After Routing for Possible Adjustments	United States Geological Survey - PADUS v2_1	December 2020	
Private Other or Unknown	Avoid- Review Site After Routing for Possible Adjustments	United States Geological Survey - PADUS v2_1	December 2020	
Private Park, Forest, or Recreation Area	Avoid- Review Site After Routing for Possible Adjustments	United States Census Bureau- TIGER	February 2020	
Private Recreation or Education	Avoid- Review Site After Routing for Possible Adjustments	United States Geological Survey - PADUS v2_1	December 2020	
Reclamation Land	Avoid- Review Site After Routing for Possible Adjustments	North Dakota GIS Hub / North Dakota State Bureau of Reclamation Lands	September 2020	
Recreation Management Area	Avoid- Review Site After Routing for Possible Adjustments	United States Geological Survey - PADUS v2_1	December 2020	
Recreation or Education Easement	Avoid- Review Site After Routing for Possible Adjustments	United States Geological Survey - PADUS v2_1	December 2020	

Alternative Avoidance Analysis				
Routing Data	Routing Data Classification	Data Source	Vintage	
Regional Park, Forest, or Recreation Area	Avoid- Review Site After Routing for Possible Adjustments	United States Census Bureau- TIGER	February 2020	
Research Natural Area	Avoid- Review Site After Routing for Possible Adjustments	United States Geological Survey - PADUS v2_1	December 2020	
Research or Educational Area	Avoid- Review Site After Routing for Possible Adjustments	United States Geological Survey - PADUS v2_1	December 2020	
Resource Management Area	Avoid- Review Site After Routing for Possible Adjustments	United States Geological Survey - PADUS v2_1	December 2020	
Scenic Byway	Avoid- Review Site After Routing for Possible Adjustments	Iowa Department of Transportation	July 2020	
Scenic Byway	Avoid- Review Site After Routing for Possible Adjustments	North Dakota GIS Hub	February 2017	
School or Academy	Avoid- Review Site After Routing for Possible Adjustments	United States Census Bureau- TIGER	February 2020	
Shopping Center or Major Retail Center	Avoid- Review Site After Routing for Possible Adjustments	United States Census Bureau- TIGER	February 2020	
Sinkhole Area	Avoid- Review Site After Routing for Possible Adjustments	Iowa Department of Natural Resources	February 2021	
Solid Waste Facility	Avoid- Review Site After Routing for Possible Adjustments	North Dakota GIS Hub	April 2019	
State Conservation Area	Avoid- Review Site After Routing for Possible Adjustments	United States Geological Survey - PADUS v2_1	December 2020	
State Historic or Cultural Area	Avoid- Review Site After Routing for Possible Adjustments	United States Geological Survey - PADUS v2_1	December 2020	
State Other or Unknown	Avoid- Review Site After Routing for Possible Adjustments	United States Geological Survey - PADUS v2_1	December 2020	
State Park	Avoid- Review Site After Routing for Possible Adjustments	United States Geological Survey - PADUS v2_1	December 2020	
State Park, Forest, or Recreation Area	Avoid- Review Site After Routing for Possible Adjustments	United States Census Bureau- TIGER	February 2020	
State Recreation Area	Avoid- Review Site After Routing for Possible Adjustments	United States Geological Survey - PADUS v2_1	December 2020	
State Resource Management Area	Low Avoidance- Review Site After Routing for Possible Adjustments	United States Geological Survey - PADUS v2_1	December 2020	
State Wilderness	Avoid- Review Site After Routing for Possible Adjustments	United States Geological Survey - PADUS v2_1	December 2020	
Superfund Site	Avoid- Review Site After Routing for Possible Adjustments- Review Arsenic Trioxide Boundary from the project data sources in North Dakota. Very broad and possible accuracy data inaccuracy.	The Agency for Toxic Substances and Disease Registry	December 2014	
Trailer Court or Mobile Home Park	Avoid- Review Site After Routing for Possible Adjustments	United States Census Bureau- TIGER	February 2020	
University or College	Avoid- Review Site After Routing for Possible Adjustments	United States Census Bureau- TIGER	February 2020	
Unknown	Avoid- Review Site After Routing for Possible Adjustments	United States Geological Survey - PADUS v2_1	December 2020	
Unknown Easement	Avoid- Review Site After Routing for Possible Adjustments	United States Geological Survey - PADUS v2_1	December 2020	
USACE Reservoirs	Avoid- Review Site After Routing for Possible Adjustments	United States Army Corps of Engineers	August 2020	
Waterfowl Production Area	Avoid- Review Site After Routing for Possible Adjustments	North Dakota GIS Hub	November 2019	
Wellhead Protection Area	Avoid- Review Site After Routing for Possible Adjustments	Minnesota Department of Health	July 2019	
Wild and Scenic River	Avoid- Review Site After Routing for Possible Adjustments	Minnesota Department of Natural Resources	November 2006	
Wildlife Management Area	Avoid- Review Site After Routing for Possible Adjustments	North Dakota GIS Hub	September 2020	
Landslide Risk	High to High Moderate Susceptibility- Avoid. Review existing pipelines in the area for any potential previous constraints.	United States Geological Survey	2001	
Levee	Avoid	Federal Emergency Management Agency / National Flood Hazard Layer	2021	
NHD Flowline	Artificial Path, Stream or River- Perennial (Avoid) ; Canal/Ditch- (Low Avoidance) ; Connector- (Low Avoidance) ; Stream or River- Ephemeral (Low Avoidance) ; Stream or River- Intermittent (Low Avoidance) ; Water Pipeline - Underground (Avoid)	United States Geological Survey	June 2020	
NHD Waterbody	Pond- Low Avoidance ; Lake- Avoid ; Swamp/Marsh- Avoid ; Reservoir- Avoid	United States Geological Survey	June 2020	
NWI Wetland	Freshwater Emergent Wetland- Low Avoidance ; Freshwater Forested/Shrub Wetland- Avoid ; Freshwater Pond- Low Avoidance ; Lake- Avoid ; Riverine- Avoid	United States Fish and Wildlife Services	October 2020	
Peak Ground Acceleration	Avoid Areas of High/Active PGA	National Atlas of the United States	2012	
PHMSA HCAs				
Other Populated Area	Avoid	Pipeline and Hazardous Materials Safety Administration - National Pipeline Mapping System	February 2017	
Highly Populated Area	Avoid	Pipeline and Hazardous Materials Safety Administration - National Pipeline Mapping System	December 2017	
Powerlines	Low Avoidance for Crossings. Identify and review high voltage powerline crossings.	Rextag	June 2021	
Percent Side Hill Slope	0-15% Preferred; 15-20% Low Avoidance ; 20-30% Avoid ; >30% Avoid	United States Department of Agriculture/United States Geological Survey/Natural Resource Conservation Service- National Geospatial Center of Excellence	Varies	
SSURGO Soils	Crossing Tables Only- Review For Possible Issues Before Issuing Route	United States Department of Agriculture/United States Geological Survey/Natural Resource Conservation Service- National Geospatial Center of Excellence	Varies	
State Legislative Boundaries	Crossing Tables Only- Review For Possible Issues Before Issuing Route	United States Census Bureau- TIGER	December 2019	
Transportation	Bike Path or Trail- Low Avoidance ; Local Neighborhood Road, Rural Road, City Street- Low Avoidance ; Primary Road- Avoid ; Private Road- Low Avoidance ; Railroad- Avoid ; Ramp- Avoid ; Secondary Road- Avoid ; Walkway/Pedestrian Trail- Low Avoidance	United States Census Bureau- TIGER	February 2020	
Watershed	Crossing Tables Only- Review For Possible Issues Before Issuing Route	United States Geological Survey	February 2020	
U.S.A.C.E District	Crossing Tables Only- Review For Possible Issues Before Issuing Route	United States Army Corps of Engineers	January 2021	
U.S.F.W.S Regional Boundary	Crossing Tables Only- Review For Possible Issues Before Issuing Route	United States Fish and Wildlife Services	May 2021	