Appendix C – Reclamation BMPS

Appendix D

Best Management Practices and Environmental Commitments

Eastern North Dakota Alternate Water Supply Project
Environmental Impact Statement

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Appendix D Best Management Practices and Environmental Commitments

Introduction

This appendix describes best management practices (Table D-1) and environmental commitments (Table D-2). The following definitions apply to best management practices and environmental commitments in this EIS.

Best Management Practices - Methods intended to avoid or reduce effects while an action is being implemented. These methods are commonly implemented in projects of this nature.

Environmental Commitment - Methods or plans to reduce, offset, or eliminate adverse project effects. Action taken to avoid, reduce the severity of, or eliminate an adverse effect. Environmental commitments could include one or more of the following:

- Avoiding effects.
- Minimizing effects by limiting the degree or magnitude of an action.
- Rectifying effects by restoration, rehabilitation, or repair of the affected environment.
- Reducing or eliminating effects over time.
- Compensating for the effect by replacing or providing substitute resources or environments to offset the loss.

Implementation

The Bureau of Reclamation has entered into a cooperative agreement with the Garrison Diversion Conservancy District to construct the North Dakota State Municipal, Rural, and Industrial (MR&I) Program. Garrison Diversion has been authorized under state law as the organization to administer rural water projects for the Garrison Diversion Project (which includes the Project). Individual rural water organizations and the North Dakota State Water Commission, under agreements with Garrison Diversion, typically perform the direct design and construction activities. These agreements facilitate the best management practices included in this appendix. The cooperative agreement (R17AC00049) with Garrison Diversion ensures that all projects constructed under the agreement will be reviewed and approved by the Bureau of Reclamation. The cooperative agreement also requires Garrison Diversion to adhere to all applicable federal regulations and ensures requirements have been met, including but not limited to the National Environmental Policy Act, National Historic Preservation Act, and application of these best management practices and environmental commitments.

Table D-1: Best Management Practices

Resource	Best Management Practices
General	Construction activities would comply with all appropriate federal, state, and local laws and regulations. This list may include but is not limited to stormwater discharge permits, National Pollution Discharge Elimination System permits, Clean Water Act, and the Migratory Bird Treaty Act.
	Erosion control measures would be employed as appropriate and at stream crossings at all times: (a) Care would be exercised to preserve existing trees along the streambank. (b) Stabilization, erosion controls, restoration, and revegetation of all streambeds and embankments would be performed as soon as a stream crossing is completed and maintained until stable. (c) Riparian woody shrubs and trees would be replanted as necessary to preserve the shading characteristics of the watercourse and the aesthetic nature of the streambank. (d) At locations where soil conditions or slopes are such that erosion may occur along the pipeline trench, construction contractors would be required to construct earth berms perpendicular to the trench line at intervals sufficient to divert water from the trench. (e) In pasture and hayland, straw wattles shall be furnished and installed within 14 days of pipeline installation, at approximately the following intervals: Slope (%) Interval (feet) 7-10 120 10+ 50 (f) Straw wattles shall be a minimum of 6" diameter, and shall be installed across the entire width, plus 3' either side, of the disturbed area.
	Dump grounds, trash piles, and potential hazardous waste sites would be avoided.
	All construction waste materials and excess or unneeded fill associated with construction would be disposed of on uplands; non-wetland areas.
	Standard construction, industry measures would be taken to minimize fugitive dust emissions during construction activities. Any complaints that may arise would be dealt with by the project sponsor and contractor in a timely and effective manner.
	New pipeline, to the extent possible, would be placed just outside and parallel to the road right of way.
	To the extent possible, construction would avoid wetlands; federal, state, and local wildlife areas and refuges; designated critical habitats; migratory bird habitat during the critical nesting season; known cultural resources and historic sites; hazardous material sites; and other resource sensitive areas noted below.
	During the final engineering design phase, Project components would be sited to minimize impacts on or avoid permanent structures and limit, to the extent practicable, impacts on existing land use.
	Construction limits would be clearly marked with stakes or fencing prior to beginning ground disturbing activities. No disturbance would occur beyond these limits other than non-destructive protection measures for erosion/sediment control.
	Material and equipment storage would be only within well-defined, designated staging areas placed outside of wetlands and other sensitive areas.

Resource	Best Management Practices
	Structures affected by pipeline construction, including utilities, roads, highways, rivers, canals, railroads, agricultural irrigation facilities, fences, and other structures, would be replaced, repaired, or restored to their current condition or better after construction.
	Construction debris would be hauled from the work site to a disposal location approved by the Contracting Officer or his/her representative.
	If established survey benchmarks must be removed or should any monuments be dislodged or damaged during construction, the National Geodetic Survey (Attn: N/CG 162, Rockville, Maryland 20852) would be contacted.
	No above ground structures that would interfere with the above ground movement of floodwaters would be placed in the flood plain or would be protected with flood protection.
Surface Water	Contractors would be required to make at least two boring attempts before using an alternate wetland, stream or river crossing method.
	Intermittent streams would be crossed only during low-flow periods and preferably when the streambeds are dry.
	Identified river or stream crossings would be performed by horizontal directional drilling operations whenever practicable, which would not disturb the stream channel or the adjacent wetlands.
Groundwater	Established ground water monitoring wells would be avoided. However, if any monitoring wells are inadvertently damaged or impacted during project construction, the Water Appropriation Division of the North Dakota Office of the State Engineer would be contacted.
Water Quality	As part of the National Pollution Discharge Elimination System permitting requirement, a Stormwater Pollution Prevention Plan would be developed and submitted to the ND Department Environmental Quality prior to commencing construction activities.
	The Stormwater Pollution Prevention Plan would include erosion control measures to prevent or reduce erosion, soil loss, and nonpoint source pollution. These practices may include, but are not limited to, silt fencing, filter fabric, sediment logs, hay bales, temporary sediment ponds, check dams, and/or immediate mulching of exposed areas to minimize sedimentation and turbidity effects as a result of construction activities. The placement and specific measures used would be dictated by site specific conditions.
	In-stream flows would be maintained during stream crossing construction. Spoil, debris piling, construction materials, and any other obstructions would be removed from stream crossings to preserve normal water flow.
	Stream crossings would be routed, as practicable, to minimize disturbance. Intermittent streams would be crossed only during low-flow periods and preferably when streambeds are dry.
	Disturbed portions of the stream banks and beds of rivers, streams, and other waterways would be protected by rock riprap of adequate size and type to minimize erosion and scour. Any slopes greater than 3:1 would be protected with erosion-control blankets after seeding.
Aquatics	In-stream flows would be maintained during stream crossing construction. Water would be allowed to flow around or past stream crossings to preserve normal water flow downstream from construction.
	To minimize impacts to fisheries resources any stream identified as a fishery (confer with ND Game and Fish Department) that cannot be directionally bored would be avoided from April 15 to June 1 and crossed later in the summer or fall when flows are low or the stream is dry.

Resource	Best Management Practices
	Avoid work in Class II or higher waters (fisheries – confirm with ND Game and Fish Department) April 15 – June 1, or directionally bore. (ND Century Code: CHAPTER 33-16-02.1 STANDARDS OF QUALITY FOR WATERS OF THE STATE)
	In consultation with the Service, the following screen and velocity recommendations would be incorporated into the design of intake structure(s) of the Project: 1) Intakes shall be screened and maintained with 1/4-inch or smaller mesh size opening. 2) Johnson intake screens shall have wire spacing 1/8 inch or smaller. 3) Intake velocities shall not exceed 1/2 foot per second with 20 feet of overhead water. 4) Intake velocities shall not exceed 1/4 foot per second where 20 feet of overhead water cannot be achieved. 5) Intakes shall be marked so they are observable during day and night hours, as appropriate.
Wetlands/Riparian Areas	Long- and short-term effects on wetlands and riparian areas would be avoided to the extent practicable and in compliance with Section 404 of the Clean Water Act
	Erosion control measures would be employed as appropriate and at stream crossings prior to construction activities. In addition: Preserve, if feasible, existing trees along the stream bank. Stabilize, control erosion, restore, and revegetate streambeds and embankments as soon as a stream crossing is completed, following vegetation best management practices, and maintain until stable. Replant riparian, as necessary, woody shrubs and trees appropriate to ecological characteristics of the site to preserve shading characteristics of the watercourse and the aesthetic nature of the stream bank.
	Any equipment used previously in a water body that is jurisdictional under the Clean Water Act or a water body designated as infested by the North Dakota Game and Fish Department would be disinfected prior to entering Reclamation lands or facilities to prevent the spread of invasive aquatic species. Disinfection will occur as stated in the Inspection and Cleaning Manual for Equipment and Vehicles to Prevent the Spread of Invasive Species. The manual may be accessed at: http://www.usbr.gov/mussels/prevention/docs/EquipmentInspectionandCleaningManual2012.pdf
	All temporarily disturbed wetlands would be reestablished following construction by doing the following: Restore contours to previous elevations Compact trenches sufficiently to prevent drainage along the trench or via bottom seepage Salvage and replace topsoil Backfill in such a manner as to not drain wetland or stream Reestablish wetlands to similar type of wetland and wetland function
Vegetation and Land Use	To the extent practicable, construction would avoid: Wetlands Federal, state, and local wildlife areas and refuges Native prairie However, if these areas are disturbed during pipeline construction, topsoil would be replaced, and revegetation plans would be specifically designed for these areas to ensure

Resource	Best Management Practices
	reestablishment of a similar type and quality of native vegetation recommended by local National Resources Conservation Service (NRCS) office and approved by the landowner. Impacts to federal or state wildlife areas may require additional agency review.
	Vegetated areas temporarily disturbed by construction (except cropland) would be revegetated with species appropriate to ecological conditions of the surrounding area, and in a manner that prevents erosion and noxious weed invasion. Reclamations Integrated Pest Management Plan would be utilized as a guide in preventing the spread of noxious weeds. Revegetation would occur as soon as practicable after construction and would follow all pertinent local and state regulations. Temporary seeding may be required when areas remain disturbed for more than 30 days.
	All equipment and recreational vehicles should be free of invasive species prior to entering Reclamation lands or facilities as stated in the Inspection and Cleaning Manual for Equipment and Vehicles to Prevent the Spread of Invasive Species. The manual may be accessed at: http://www.usbr.gov/mussels/prevention/docs/EquipmentInspectionandCleaningManual2012.pdf
	Woody species including those bordering wetlands, shelterbelts, riparian woodlands, woody draws, or woodland vegetation would be avoided to the extent practicable. For unavoidable impacts to woody habitats, credit for equal value or environmental equivalent: (a) would be applied toward the impact and deducted from Reclamation's Mitigation Enhancement Ledger **or** (b) the Project sponsor may develop separate acceptable mitigation.
	Prior to beginning construction through PLOTS, Conservation Reserve Program lands, program or private wetlands, the project sponsor would consult with: (a) respective landowners, NRCS, and U.S. Department of Agriculture Farm Services Agency to ensure that landowner eligibility in farm subsidy programs (if applicable) would not be jeopardized by project actions and (b) ensure that Swampbuster requirements would not be violated by construction activities
	Topsoil would be removed and stockpiled separately from surface soils for reapplication following construction. In-stream flows would be maintained during stream crossing construction. Water would be allowed to flow around or past stream crossings to preserve normal water flow downstream from construction.
	If Project construction cannot avoid North Dakota Sate Trust Lands, then easements would need to be obtained prior to construction.
	Topsoil, soil amendments, fertilizers, and mulches would be reapplied selectively as appropriate, prior to revegetation during favorable plant establishment climate conditions to match site conditions and revegetation goals.
Wildlife	Identified potential habitat for federal or state threatened, endangered, critical habitat and sensitive species would be avoided if feasible.
	Construction would be prohibited within 1/2 mile of designated piping plover or interior least tern breeding areas during the breeding season (April 15 through August 31) when these species are present.
	If threatened or endangered species are identified and encountered during construction, all ground-disturbing activities in the immediate area would be stopped to consult with the U.S. Fish and Wildlife Service (Service) and determine appropriate steps to avoid affecting the species.

Resource	Best Management Practices
	Project sponsor is responsible for compliance with the Migratory Bird Treaty Act. Sites for project features would be selected to minimize potential for environmental impacts to nesting migratory birds. Construction would be timed to avoid migratory bird nesting. Avoid work around wetlands April 1 through July 15.
	Project sponsor is responsible for identifying bald eagle and raptor nests to ensure construction within 660 feet of visible nesting bald eagles or other raptors would be avoided from February through August.
	Project sponsor would coordinate with the Service's appropriate Refuges and Wetland Management Districts and provide the latest map version of project features to avoid impacts to Service lands, including wetland and grassland easements, national wildlife refuges, and waterfowl production areas (WPAs), allowing for identification of an avoidance route for the contractor. Any impacts to national wildlife refuges or WPAs would have to go through a refuge compatibility determination.
	The Project sponsors utility company is responsible for providing an Avian Protection Plan that follows the guidelines below. Project power lines would be: (a) Buried (Service 2010a) to minimize electrocution hazards to raptors and minimize impacts to all birds, bats, and particularly benefit whooping cranes. Use *Suggested Practices for Avian Protection on Power Lines - The State of the Art in 2006*, Avian Power Line Interaction Committee, Edison Electric Institute, Raptor Research Foundation, Washington, D.C., or similar standards would be used. Available online at https://www.aplic.org/uploads/files/2634/APPguidelines_final-draft_Aprl2005.pdf ***or*** (b) Any new, aboveground power lines and an additional equal length of existing power lines in the same vicinity must be marked with visibility enhancement devices to benefit migrating whooping cranes as well as all migratory birds and bats. Use *Reducing Avian Collisions with Power Lines – The State of the Art 2012*, Avian Power Line Interaction Committee, Edison Electric Institute, Raptor Research Foundation, Washington, D.C., or similar standards. Available online: https://www.aplic.org/uploads/files/15518/Reducing_Avian_Collisions_2012watermarkLR.pdf.
	If forested habitat is identified prior to construction activities, Reclamation would determine if bat surveys are required. If any tree (with a diameter of greater than 3 inches) removal activities cannot be avoided between April and September, then northern long-eared bat surveys would be conducted to confirm absence of the species. If any suitable roost sites, possible hibernacula, or the species are observed during the onsite meeting, then any steps taken to avoid and minimize disturbance of this habitat would be documented.
Noise and Vibration	Night construction would be avoided near residential and populated areas.
Visual Resources	As noted for vegetation, short-term disturbances associated with constructing facilities would be revegetated and/or landscaped.
	Existing topographic grades would be restored following pipeline excavation.
	Constructed facilities would be designed to blend with the architectural characteristics of surrounding structures.
	Valve boxes would be left above grade in a cultivated field if agreeable to the landowner or moved to the nearest fence or right-of-way. Valves would not be located adjacent to or in close proximity to a paved or graveled road and would be painted a neutral color that blends with the background, reduces visibility, and maintains the viewshed.

Resource	Best Management Practices
Historic Properties	Direct disturbance to historical properties would be avoided to the extent feasible.
	All known burials or cemeteries would be avoided to the extent possible. All such burials or cemeteries would be avoided to the extent possible. If a burial or cemetery cannot be avoided or is encountered during construction, Reclamation would comply with the Native American Graves Protection and Repatriation Act if graves are discovered on federal or trust lands or within reservation boundaries. Reclamation would comply with North Dakota Century Code 23-06-27: "Protection of Human Burial Sites, Human Remains, and Burial Goods" for graves on private or state-owned lands.
	If unrecorded cultural resources or traditional cultural properties are encountered during construction, all ground disturbance activity within the area would be stopped, Reclamation and appropriate authorities would be notified, and all applicable stipulations of the Section 106 programmatic agreement would be followed. Activities in the area would resume only when compliance has been completed.
Paleontological Resources	All previously recorded paleontological resources and paleontologically sensitive zones within the path of the alternative selected in the Record of Decision would be inspected in the field by a qualified paleontologist. Avoidance measures would be developed to avoid significant resources.
	Reclamation would consult with North Dakota Geological Survey to identify areas for paleontological survey where significant fossils are likely. Paleontological surveys would be completed prior to construction. Based upon survey data, Reclamation would consult with a qualified paleontologist about revising routes to avoid damaging significant fossil locations.
Hazardous Materials	A Hazardous Spill Plan or Spill Prevention, Control and Countermeasures Plan, whichever is appropriate, would be in place, stating what actions would be taken in the event of a spill, notification measures, and preventive measures to be implemented, such as the placement of refueling facilities, storage, and handling of hazardous materials.
	All equipment would be maintained in a clean and well-functioning operating condition to avoid or minimize contamination from automotive fluids.
	Before construction, a more detailed hazardous materials assessment in conformance with the scope and limitations of American Society for Testing Materials (ASTM) 1527-05: "Standard Practice for Environmental Site Assessments: Phase I Environmental Site Assessment Process" would be conducted to identify sites with soil and/or groundwater contamination not documented in readily ascertainable agency files (ASTM 2005).
	Any known solid waste disposal areas identified in the construction sites would be avoided or removed and properly disposed at a permitted solid waste disposal facility
	Equipment or vehicles would not be refueled within 100 feet of rivers, streams, or identified wetlands. If onsite fuel tanks are used, approved containment devices would be required.
	Identified evidence of hazardous materials, petroleum product spills, or other contamination would be avoided or excavated and properly disposed at a permitted waste disposal facility.
	If soil and/or groundwater contamination is encountered during construction, mitigation procedures would be implemented to minimize the risk to construction workers and to future operations.
Unique and Prime Farmland/ Agricultural Lands	To the extent feasible, construction activities on irrigated lands would be avoided during the growing season.
	Cropland disturbed by construction would be restored with topsoil to the depth, quality, grade, and relative density as the original surface as described for soils below. Pipelines

Resource	Best Management Practices
	crossing agricultural fields would be backfilled and compacted to prevent settling when the field is irrigated.
	Long-term effects on prime and unique farmland would be avoided to the extent feasible. If avoidance is not possible, Reclamation would complete and submit a Farmland Conversion Form (AD-1006) to the NRCS in compliance with the Farmland Protection Policy Act for any long-term change in land use.

Table D-2: Environmental Commitments

Resource	Environmental Commitments
Surface Water	When pipeline construction through a stream or wetland basin is unavoidable, existing basin contours would be restored and trenches would be sufficiently compacted to prevent any drainage along the trench or through bottom seepage.
	Where open trench crossing of stream is required, the stream channel would be reestablished following pipe installation.
Vegetation and Wetlands	Where construction cannot avoid: Wetlands Federal, state, and local wildlife areas and refuges, and Native prairie. If these areas are disturbed during pipeline construction, topsoil would be replaced, and revegetation plans would be specifically designed for these areas to ensure reestablishment of a similar type and quality of native vegetation recommended by local NRCS office and approved by the landowner.
	Effects on jurisdictional wetlands and waters of the United States would require authorization from the U.S. Army Corps of Engineers. A compensatory mitigation plan may be required for the loss of any wetlands and would include methods to replace specific functions of affected wetlands.
	Lost wetlands would be replaced acre for acre with ecological equivalency or 1/2 acre for acre with ecological equivalency (adversely affected wetlands) as required by the Project's authorizing legislation: (a) by crediting previously completed wetland restoration for the Garrison Diversion Unit (GDU) and deducting those credits from Reclamation's Mitigation and Enhancement Ledger (MEL)[1] **or** (b) the Project sponsor may develop separate acceptable mitigation.
	Lost woodlands would be mitigated 2:1 (acres) in accordance with MEL[1]
	Lost grasslands would be mitigated 1:1 in accordance with MEL[1]
Wildlife	Pipelines, water treatment plants, and pump station facilities would be realigned, where feasible, to avoid sensitive wildlife habitat. If sensitive wildlife habitat cannot be avoided, then mitigation would be determined in coordination and agreement with Reclamation and the Project sponsor, including pertinent regulatory agencies.
	Preconstruction surveys may occur with the Project sponsor and Reclamation to identify sensitive habitats and wildlife use before construction to allow implementing best management practices and mitigation measures.

[1] Reclamation has credits for created and restored wetlands in the MEL that can be used to mitigate impacts to wetlands. The GDU MEL was developed according to the 1985 memorandum of understanding between Reclamation, the U.S. Fish and Wildlife Service (Service), and the North Dakota Game and Fish Department regarding the establishment of mitigation and enhancement debits and credits for wildlife purposes. The MEL documents GDU project impacts, mitigation requirements, and concurrence for planning purposes and for review by other agencies and the public. Projected impacts listed were first presented in the GDU Commission Report. The GDU Reformulation Act of 1986 resulted in the adjustment of the projected impacts to reflect modifications to the project. Impacts to date reflect modifications to the project.

Resource	Environmental Commitments
Historic Properties	Reclamation will continue complying with stipulations in *Programmatic Agreement Between the Bureau of Reclamation, The Advisory Council on Historic Preservation, and the North Dakota State Historic Preservation Officer for the Implementation of Reclamation Undertakings in North Dakota* for the life of the project and in consultation with tribes.
	Avoidance will be the preferred method for treating historic properties. However, should that not be possible, the programmatic agreement identifies the standards to be used in developing mitigation plans.
	Reclamation will consult under Section 106 of the National Historic Preservation Act with appropriate Indian Tribes regarding the locations of and potential impacts to properties of traditional religious and cultural importance. If any such properties cannot be avoided and must be mitigated, Reclamation will invite the appropriate Tribes to participate in development of an appropriate treatment plan.
	All gravel, fill, and rock materials will be obtained from a source approved by Reclamation to ensure compliance with Section 106 of the National Historic Preservation Act.