

Appendix J

Reclamation Plan

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Reclamation Plan

1.0 Introduction

Greencore will construct and operate approximately 231.1 miles of 20 inch-diameter CO₂ pipeline from the Conoco Philips Lost Cabin Gas Plant in Fremont County, Wyoming to a point in the Belle Creek Field oil field in Powder River County, Montana. The proposed pipeline would transport CO₂ as a dense-phase fluid for a proposed Enhanced Oil Recovery (EOR) project at the Belle Creek Field and, potentially to other delivery points when markets develop.

The pipeline will be federally regulated by the Department of Transportation under 49 Code of Federal Regulations Part 195: Transportation of Hazardous Liquid by Pipeline. It will be designed in accordance with the applicable requirements of DOT 195 and will incorporate pig launching and receiving facilities, mainline block valves, meter station, cathodic protection, and supervisory control field equipment.

The project would start at a point in Township 38 North (T38N), Range 90 West (R90W), Section 11 at the Lost Cabin Gas Plant to a point in the Belle Creek Field, T8S, R54E, Section 27. The alignment sheets (included separately) contain detail location information.

1.1 Purpose of Plan

This Reclamation Plan (Plan) describes measures to be taken by Greencore and its contractors to promote the successful reclamation of the disturbed areas. Measures identified in this Plan apply to work within the defined project right-of-way, access roads, temporary use areas, and other areas used during construction of the project.

This Plan prescribes methods to protect and replace topsoil, control and minimize soil erosion, protect water resources, and encourage revegetation which would limit the spread of noxious weeds and limit erosion. This Plan should be used in conjunction with the reclamation measures described in the Wyoming BLM Reclamation Policy (Section 6.0).

The Environmental Assessment (EA), Plan of Development (POD), and Stormwater Pollution Prevention Plan (SWPPP) also contain mitigation measures, permit stipulations, and describe standard reclamation practices. This Plan was developed as the implementing document for reclamation measures.

2.0 Roles and Responsibilities

2.1 Greencore

Greencore will be responsible for ensuring that this Plan and other permit stipulations for project reclamation are distributed to the contractor and Environmental Inspector (EI) and ensure the roles and responsibilities are understood by field personnel. Greencore will also ensure that environmental oversight of the project includes pre-construction marking and flagging of waterbodies and wetlands. Additionally, Greencore will be responsible for meeting long-term reclamation and soil stabilization standards after the project is completed.

2.2 Contractors

The construction contractor will be responsible for ordering and maintaining an inventory of environmental control supplies and materials sufficient to meet daily construction requirements and for use in emergency situations. The construction contractor will be responsible for the installation and maintenance of all Best Management Practices (BMPs) during the construction phases.

The reclamation contractor will be responsible for reclamation after the construction contractor has installed the pipe and associated facilities and cleared the right-of-way of construction debris and equipment. The reclamation contractor will be responsible for seedbed preparation, seeding, mulching, and rebuilding or installing long term BMPs such as water bars, diversion berms, rock check dams, etc. BMPs are described in detail in the SWPPP (Appendix E, POD). Both construction and reclamation contractors will coordinate closely with the Environmental Inspector (EI).

2.3 Environmental Inspector

Greencore's EI will have the responsibility to ensure field activities by the construction contractor and reclamation contractor are performed in accordance with this Plan and other permit stipulations and plans. The EI will have the authority to make site-specific field changes to BMPs and reclamation procedures within the guidelines of this Plan and after consultation with the fee-landowner or Bureau of Land Management (BLM), if necessary. The EI will also be responsible for the coordination and timing of reclamation activities between the construction contractor and the reclamation contractor. The EI will keep daily logs of reclamation procedures and coordinate closely with the contractors to ensure proper installation and maintenance of BMPs and reclamation procedures.

3.0 Construction Procedures to Aid Reclamation

3.1 Clearing and Grading

Reclamation begins with preserving as much vegetation as possible while keeping a safe and functional construction area. In some cases, the existing vegetation can be mowed using a brush-hog or hydro-axe and full grading may not be needed if the terrain is level enough for safe construction. Trees will be felled inside the approved right-of-way boundaries. Tree limbs and brush will be windrowed for use in final reclamation. Stumps will be left in place except over the trench line or removed as necessary to create a safe and level workspace. The EI will coordinate with the appropriate agency or landowner to locate areas for stump disposal. Greencore will acquire the appropriate timber sale agreement/permits from BLM prior to cutting or removing trees. Grading will not occur over historic trails, drainages, or wetlands. These areas should be flagged/staked prior to clearing and grading. Additional Temporary Workspace (ATWS) would not be graded.

3.2 Topsoiling

Where grading is needed to create a safe, level, working area, approximately 4" – 6" of topsoil will be stripped from the full construction right-of-way prior to cut fill or grading operations. There may be some areas where the contractor would not need to grade and topsoil. For example, level fields or pastures may not need to be graded for construction. In these cases, the contractor can avoid topsoiling, except over the trench line, which would preserve the root system and increase

reclamation success. Available topsoil and consistency will vary across the project. No matter the amount of topsoil removed, topsoil will be stockpiled separately from subsoil and will not be used to pad the trench or construct trench breakers. Topsoil will be used as the final layer of soil during the reclamation process.

In wetlands, only the topsoil on the trench line would be removed (dug) and segregated before digging and removing the subsoil (double-ditching method). The wetland boundaries will be flagged prior to construction. Topsoil removal in wetlands can range between 12-18 inches. In floodplains, the topsoil depth can range from 6-12 inches. Dry drainages or washes that cross the right-of-way will not be blocked with topsoil piles. Topsoil will be placed on the banks of the drainage so natural flows are not impeded and topsoil is not washed away.

4.0 Reclamation Procedures

After the final installation of the pipeline, disturbed portions of the construction workspace (including the right-of-way, travel lane, and temporary use areas) will be returned to pre-construction grades and contours as close as possible. Topsoil will then be replaced over the right-of-way from the approximate area in which it was stripped. Reseeding and mulching will usually be completed as soon as possible, but may be dependent upon permit stipulations, weather conditions, and guidance from the agencies and fee-landowners. Revegetation will be the primary method to stabilize soils and ensure permanent erosion control over the long term. BMPs as described in the SWPPP (Appendix E of the POD) will be utilized throughout the project to protect soil and limit sediment transport. The following sections outline the reclamation procedures for the various situations on the project.

4.1 Agricultural Fields

Irrigation ditches, cattle guards, fences, and artificial and natural livestock and wildlife water sources impacted by construction will be repaired as close as possible pre-construction conditions or as negotiated with the landowner. Topsoil removal will be limited to the trench line wherever possible. Seeding and mulch will not be applied in agricultural fields unless previously negotiated by the land owner. In some cases, special seeding requirements may apply as negotiated with the landowner. Negotiated terms should be identified before reclamation.

4.2 Wetlands and Waterbodies

All work in wetlands and waterbodies will be conducted per the Army Corps of Engineer permit stipulations included in Appendix A of the POD. BMPs will be installed as stipulated in the SWPPP (Appendix E, POD).

These areas should be reclaimed as soon as possible to protect water quality. Any material that has accumulated in an intermittent/ephemeral stream will be removed and all drainages will be returned as close as possible to pre-construction form. Unless otherwise required by permit, wetlands will not be reseeded. Seed will come from the wetland topsoil that has been segregated for reclamation. However, stream banks that contain upland vegetation shall be reseeded. Certified weed free mulch can be applied to wetlands that are temporarily dry. Stream banks and slopes leading directly to waterbodies and wetlands will be reseeded and natural ground matting will be installed if the slopes are steep to limit erosion and promote seed germination. The EI will determine the appropriate reclamation measures and BMP installation based on site characteristics.

4.3 Rock Disposal

Excess rock is defined as rock that cannot be returned to the existing rock profile in the trench or graded cuts and is not needed to restore the right-of-way surface to a condition comparable to that found adjacent to the right-of-way. Excess rock will be randomly distributed across the right-of-way to present a natural look. Rock can also be piled to create wildlife habitat or spread in a fashion to block illegal access by ATVs and other motorized vehicles, especially at road crossings. The disposal of excess rock in agricultural fields will be negotiated with individual landowners.

4.4 Trees and Shrubs

Trees and shrubs removed during clearing shall be utilized for reclamation. The spreading of this material will help limit erosion and promote revegetation. These materials should also be utilized for wildlife habitat and can be arranged to deter illegal use of ATVs and other motorized vehicles on the right-of-way.

4.5 Seeding Procedures

The reclamation contractor will be responsible for the final seeding the right-of-way, temporary use areas, and off-right-of-way ancillary sites. Seed will be applied at the appropriate rate described in Table 1. The EI will coordinate closely with the contractor during these phases and collect seed bag labels and document when and where seeding takes place.

4.5.1 Seed Mixes

Seed mixes will be purchased from commercial seed vendors and must be state-certified weed-free mixtures. Seed bag tags will be collected and submitted to the BLM to confirm that the seed was purchased from a commercial seed vendor and was tested and certified. Seeding rate will be listed as pounds per acre of pure live seed (PLS).

Unless otherwise requested by private landowner or the BLM, the following seed mix has been recommended based on three major soil types (Table 1). Distribution of the different seed types will be indicated on drawings provided to the reclamation contractor. The EI will coordinate with the reclamation contractor to ensure the correct seed mix is used in the correct area.

TABLE 1—SEED MIXES

Loam Soils Seed Mix		
Name	Common Name	Rate
Elymus Trachycaulus SSP. Trachycaulus VAR. Pryor	Slender wheatgrass	5
Oryzopsis Hymenoides VAR.	Indian Ricegrass	3
Pascopyrum Smithii VAR. Rosanna	Western Wheatgrass	5
Pseudoroegneria Spicata SSP. Spicata VAR. Goldar	Bluebunch Wheatgrass	1.5
Stipa Viridula VAR. Lodorm	Green Needlegrass	1.5

Sandy Soils Seed Mix		
Name	Common Name	Rate
Elymus Lanceolatus SSP. Dasustachyum VAR. Critana, Bannock	Thickspike Wheatgrass	2.5
Elymus Trachycaulus SSP. Trachycaulus VAR. Pryor	Slender Wheatgrass	2.5
Oryzopsis Hymenoides VAR. Nezpar	Indian Ricegrass	3
Pascopyrum Smithii VAR. Rosanna	Western Wheatgrass	5
Stipa Comata	Needle-and-Thread	3
Alkaline / Saline Soil Mix		
Name	Common Name	Rate
Elmus Elymoides	Bottlebrush Squirreltail	2.5
Elymus Lanceolatus SSP. Dasustachyum VAR. Critana, Bannock	Thickspike Wheatgrass	2
Leymus Cinereus VAR. Trailhead	Great Basin Wildrye	2
Oryzopsis Hymenoides VAR. Nezpar	Indian Ricegrass	3
Pascopyrum Smithii VAR. Rosanna	Western Wheatgrass	5
Sporobolus Airoides VAR. Salado	Alkali Sacaton	0.5
Artemisia tridentata	Big Sagebrush	0.5
Atriplex Gardneri	Gardner Saltbush	0.5

4.5.2 Seedbed Preparation

Final compaction of disturbed areas will be returned to approximate pre-construction conditions. Any heavily compacted areas, such as the travel lane, will be de-compacted with a disc, ripper, or similar implement prior to topsoil replacement and seeding. After compacted areas are prepared, the topsoil should be spread back over the impacted areas. The topsoil should not be graded smooth. Those sites where seedbed preparation is not practical (e.g., steep slopes, rocky areas, etc.) will be left with adequate roughness following topsoil replacement to create micro-environments for seed germination and growth, and to reduce the potential for soil movement.

Final BMPs as described in the SWPPP and indicated on the alignment sheets should be installed at this time. Examples of final BMPs that would be installed during this phase would include water-bars and berms. They should be constructed in way that they can still be driven over by a tractor and seeder where this seeding method will be employed.

4.5.3 Seed Application Rate and Viability

All disturbed areas will be reseeded unless they are designated access roads or parking areas at a facility. Seeding rates indicated in Table 1 are approximate and can be adjusted. Broadcast seeding rates will be twice the drill rate. Wetlands will not be seeded. Successful revegetation by wetland species is generally related to effective topsoil salvage methods and sources of seed and rhizomes in adjacent areas.

4.5.4 Seeding Methods and Timing

The seeding schedule will be determined in coordination with Greencore's EI, the BLM, and fee-landowners. Ideally, seeding would take place immediately after construction. However, if freezing conditions or snow cover exists after the construction phase is completed, the right-of-

way may be temporarily stabilized and some or all of the final seeding and reclamation may be postponed to the following fall to increase seeding success. Stabilizing the right-of-way until final seeding may include measures such as seeding with an annual rye and applying straw mulch to areas prone to erosion. BMPs would be maintained and inspected during this interim as described in the SWPPP (Appendix E, POD).

Drill Seeding

Drill seeding is the preferred seeding method and will be employed wherever soil characteristics and terrain allow effective and safe operation of a rangeland seed drill. Seed will be placed in direct contact with the soil at an average depth of 0.5 inches, covered with soil, and firmed to eliminate air pockets around the seeds. Seed will be applied using a rangeland seed drill with a seed release and agitation mechanism sufficient to allow seeds of various sizes and densities to be planted at the proper seeding depth.

Broadcast Seeding

Broadcast seeding will be employed only in areas where drill seeding is unsafe or physically impossible. Seed will be applied using manually operated cyclone-bucket spreaders, mechanical spreaders, or blowers. Seed will be uniformly broadcast over disturbed areas. Broadcast application rates will be twice that of drill rates. Immediately after broadcasting, the seed will be uniformly raked, chained, dragged, or cultipacked to incorporate seed to a sufficient seeding depth.

4.5.5 Mulching

The primary mulch will be certified weed-free straw. This will be applied directly after seeding. In accessible areas, this would be applied with a straw sprayer and then crimped with a tractor pulled implement. On steep slopes where a straw sprayer can not reach, the straw will be spread out by hand and crimped by hand. Mulch will be applied everywhere that has been seeded. This may not include agricultural fields (Section 4.1). Where ground matting has been installed, for example stream banks, straw will not be applied because the matting material provides the mulch. In certain conditions, a hydro mulch may be utilized with a tackifier. This spray on mulch could be utilized on very steep slopes and around sensitive areas with high wind erosion potentials. These areas will be designated by the EI and the BLM representative.

4.5.6 Slash and Debris

The Contractor will randomly distribute any windrowed trees, slash, and natural debris over the right-of-way after the area has been mulched. When at all possible, this should be done by hand to limit impact to seeded areas. The spreading on this material will provide additional mulch, help deter motorized traffic, provide a more natural appearance, and help prevent straw from being blown away.

4.5.7 Erosion Control

Seeding and mulching is the primary method for controlling long term erosion. Final BMPs as described in the SWPPP (Appendix E, POD) and alignment sheets should be inspected during this reclamation phase to ensure proper working order. Slash, rocks, and other natural debris should also be utilized in drainages and steep slopes to slow runoff and trap sediment. The EI should be consulted for proper placement and location.

4.5.8 OHV Deterrence

The illegal use of ATVs and other motorized vehicles on the right-of-way is one of the primary reasons for increased erosion. Tires ruts destroy vegetation and provide channels for erosion. Spreading natural debris including trees and rocks across the right-of-way, especially at road crossings, will help deter motorized traffic. In some cases, the installment of sign and/or fences may be required. The devices will be installed as required by the BLM or as negotiated with the private landowner.

4.5.9 Grazing

Greencore will inform grazing allotment permittees on Federal lands and private land ranchers of the construction schedule to allow ample time to move livestock away from construction. Deferring grazing until grass has become established is vital for reclamation and in limiting the spread of noxious weeds. Temporary fencing may be authorized by the BLM to protect Federal grazing allotments until approximately 80% of the pre-disturbed basal cover has returned (Appendix X, Casper Resource Management Plan, Dec. 2007). In sensitive areas, such as wetlands, the right-of-way may also be temporarily fenced until revegetation is deemed successful.

5.0 Monitoring and Documentation

As described in Roles and Responsibilities (Section 2.0) the construction and reclamation contractor will install BMPs and perform the reclamation procedures and the Greencore EI will ensure implementation is consistent with this plan and the Wyoming BLM Reclamation Policy (Section 6.0). Monitoring during construction and reclamation will be performed daily by the EI and the EI will keep daily reports on when/where BMPs were implemented and when/where reclamation was implemented. The EI will coordinate with the construction or reclamation contractor to ensure all measures are implemented correctly.

Post reclamation monitoring will be conducted as described in the SWPPP. Greencore will designate a qualified SWPPP inspector and this inspector will follow the monitoring and reporting requirements as described in the SWPPP (Appendix E, POD). These inspections will focus on the following:

- percent total adjacent herbaceous cover (seeded species plus desirable volunteers),
- new or expanded populations of noxious weeds,
- areas with erosion issues, and
- areas impacted by OHV use.

The SWPPP inspector will identify areas that require maintenance or additional reclamation efforts and appropriate remedial measures will be undertaken. The reclamation contractor will be responsible for remediating any problem areas identified by the SWPPP inspector and Greencore for the first growing season following reclamation. Thereafter, Greencore will be responsible for obtaining a reclamation contractor to perform any necessary work. Reclamation success will be based on the revegetation to 70% of the background cover as stipulated in the SWPPP and the construction discharge permits obtained from the Wyoming and Montana DEQs. After these permit stipulations are satisfied and the permits are terminated, Greencore will continue to monitor the project and address issues as they arise.

6.0 WY BLM Reclamation Policy

1. Manage all waste materials.
 - a. Segregate, treat, and/or bio-remediate contaminated soil material.
 - b. Bury only authorized waste materials on site. Buried material must be covered with a minimum of three feet of suitable material or meet other program standards.
 - c. Ensure all waste materials moved off-site are transported to an authorized disposal facility.
2. Ensure subsurface integrity, and eliminate sources of ground and surface water contamination.
 - a. Properly plug all drill holes and other subsurface openings (mine shafts, adits etc.).
 - b. Stabilize, properly back fill, cap, and/or restrict from entry all open shafts, underground workings, and other openings.
 - c. Control sources of contamination and implement best management practices to protect surface and ground water quality.
3. Re-establish slope stability, surface stability, and desired topographic diversity.
 - a. Reconstruct the landscape to the approximate original contour or consistent with the land use plan.
 - b. Maximize geomorphic stability and topographic diversity of the reclaimed topography.
 - c. Eliminate highwalls, cut slopes, and/or topographic depressions on site, unless otherwise approved.
 - d. Minimize sheet and rill erosion on/or adjacent to the reclaimed area. There shall be no evidence of mass wasting, head cutting, large rills or gullies, down cutting in drainages, or overall slope instability on/or adjacent to the reclaimed area.
4. Reconstruct and stabilize water courses and drainage features.
 - a. Reconstruct drainage basins and reclaim impoundments to maintain the drainage pattern, profile, and dimension to approximate the natural features found in nearby naturally functioning basins.
 - b. Reconstruct and stabilize stream channels, drainages, and impoundments to exhibit similar hydrologic characteristics found in stable naturally functioning systems.
5. Maintain the biological, chemical, and physical integrity of the topsoil and subsoil (where appropriate).
 - a. Identify, delineate, and segregate all salvaged topsoil and subsoil based on a site specific soil evaluation, including depth, chemical, and physical characteristics.
 - b. Protect all stored soil material from erosion, degradation, and contamination.
 - c. Incorporate stored soil material into the disturbed landscape.
 - d. Seed soils to be stored beyond one growing season, with desired vegetation.
 - e. Identify stockpiles with appropriate signage.

6. Prepare site for revegetation.
 - a. Redistribute soil materials in a manner similar to the original vertical profile.
 - b. Reduce compaction to an appropriate depth (generally below the root zone) prior to redistribution of topsoil, to accommodate desired plant species.
 - c. Provide suitable surface and subsurface physical, chemical, and biological properties to support the long term establishment and viability of the desired plant community.
 - d. Protect seed and seedling establishment (e.g. erosion control matting, mulching, hydro-seeding, surface roughening, fencing, etc.)
7. Establish a desired self-perpetuating native plant community.
 - a. Establish species composition, diversity, structure, and total ground cover appropriate for the desired plant community.
 - b. Enhance critical resource values (e.g. wildlife, range, recreation, etc.), where appropriate, by augmenting plant community composition, diversity, and/or structure.
 - c. Select genetically appropriate and locally adapted native plant materials based on the site characteristics and ecological setting.
 - d. Select non-native plants only as an approved short term and non-persistent alternative to native plant materials. Ensure the non-natives will not hybridize, displace, or offer long-term competition to the endemic plants, and are designed to aid in the re-establishment of native plant communities.
8. Reestablish complementary visual composition
 - a. Ensure the reclaimed landscape features blend into the adjacent area and conform to the land use plan decisions.
 - b. Ensure the reclaimed landscape does not result in a long term change to the scenic quality of the area.
9. Manage Invasive Plants
 - a. Assess for invasive plants before initiating surface disturbing activities.
 - b. Develop an invasive plant management plan.
 - c. Control invasive plants utilizing an integrated pest management approach.
 - d. Monitor invasive plant treatments.
10. Develop and implement a reclamation monitoring and reporting strategy.
 - a. Conduct compliance and effectiveness monitoring in accordance with a BLM (or other surface management agency) approved monitoring protocol.
 - b. Evaluate monitoring data for compliance with the reclamation plan.
 - c. Document and report monitoring data and recommend revised reclamation strategies.
 - d. Implement revised reclamation strategies as needed.

- e. Repeat the process of monitoring, evaluating, documenting/reporting, and implementing, until reclamation goals are achieved.