

**AGRICULTURAL IMPACT  
MITIGATION PLAN**

for

**THE SOUTH MIST PIPELINE  
EXTENSION PROJECT**



NW Natural

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## **Introduction**

The measures described in this Plan are intended to mitigate or provide compensation for agricultural impacts that may occur due to construction of the NW Natural (NWN) South Mist Pipeline Extension Project (Phase IV-V South Mist Feeder Pipeline Project). This Plan is intended to provide a basis for NW Natural's discussions with owners of property where the final pipeline will be sited. The mitigation measures described in this Plan are intended to supplement the materials that are included in the Project application to the Energy Facility Siting Council (EFSC) of the Oregon Department of Energy. This plan shall not be construed as establishing any contractual obligations or representations between NWN and any party, and shall not create any third party beneficiary rights between NWN and any party.

## **Conditions**

Unless an easement agreement specifically provides to the contrary, NWN will implement the mitigation measures described in this Plan in accordance with the conditions listed below:

- A. The mitigation measures and conditions described in this Plan apply only to construction activities occurring partially or wholly on privately owned agricultural land. They do not apply to construction activities on public right-of-way, railroad right-of-way, publicly owned land, or private land that is not agricultural land, except where agricultural structures such as drainage tile and irrigation systems that are associated with privately owned agricultural land pass through or extend into these areas.
- B. NWN will provide a copy of this Plan to any landowner or landowner's designate and tenant prior to obtaining an easement.
- C. NWN may negotiate with landowners or landowner's designates to carry out the mitigative actions that landowners wish to perform themselves.
- D. NWN will implement the mitigative actions contained in this Plan to the extent that they do not conflict with the requirements of any applicable federal, state and local rules and regulations, and other permits and approvals that are obtained by NWN for the Project.
- E. NWN will implement the mitigative actions contained in this Plan to the extent that they are consistent with the mitigative actions approved by, or other requirements of, the EFSC Site Certificate for the Project. This Plan shall impose requirements upon NWN only to the extent such requirements are imposed as conditions of the EFSC Site Certificate.
- F. Certain provisions of the Plan require that NWN consult with and/or obtain agreement with the landowner and the tenant of a property. NWN will make a good faith effort to secure the agreement of both landowner and tenant in such cases. In the event of a disagreement between the landowner and tenant, NWN will secure the landowner's agreement unless the tenant can demonstrate a superior legal right in the matter at issue.
- G. Nothing in this document is intended to grant or suggest EFSC jurisdiction over remedies for property compensation resolved in accordance with Oregon law.

## **Definitions**

Agricultural Land	Annually cultivated or rotated cropland; land in perennial field crops, orchards, or vineyards; land used for small fruit, nursery crops, greenhouses, or Christmas trees; improved pasture, hayfields, land in the Conservation Reserve Program; and previously cultivated land in government sponsored environmental or conservation programs, not including land converted to wetlands.
Landowner	Person(s) holding legal title to property on the pipeline route from whom NWN is seeking or has obtained a temporary or permanent easement.
Landowner's Designate	Any person(s) legally authorized by a landowner or court of law to make decisions regarding the mitigation or restoration of agricultural impacts to such landowner's property. Any landowner's designate shall provide NWN with a written document signed by the landowner or a court with jurisdiction authorizing the designate to discuss, negotiate, and reach agreements with NWN.
Non-Agricultural Land	Any land that is not "Agricultural Land" as defined above.
Pipeline	Includes the natural gas pipeline(s) and its related appurtenances as described in the NWN application to the EFSC.
Tenant	Any person lawfully residing on or in possession of property, and who is the farm operator and has a lease or pays rent on the property that NWN is seeking or has obtained a temporary or permanent easement from the landowner.
Tile	Any artificial subsurface drainage system.
Topsoil	The uppermost part of the soil including the plow layer (Ap horizon) and other A horizons (A1, A2, etc.), but not including transition horizons (AB, AC, BA, E, etc.). It is the surface layer of the soil that generally has the darkest color and the highest content of organic matter.

## **Mitigation Measures**

### **1) Agricultural Specialists**

NWN will retain qualified Agricultural Specialists on each work phase of the project including construction planning, pipeline construction, restoration, post-construction monitoring and follow-up restoration. During construction and initial restoration, NWN will designate a Project Inspector to serve as an Agricultural Inspector. An important role of the

Agricultural Inspector will be to provide technical assistance to Construction Managers, other Project Inspectors and NWN Land Representatives to facilitate the effective implementation of agricultural mitigation measures.

## **2) Landowner Relations**

Prior to the construction of the pipeline, NWN will provide to each landowner, landowner's designate and/or tenant the name, telephone number and mailing address of the NWN representative or agent responsible for the liaison activities on behalf of NWN both during construction and subsequent operational-related activities. NWN will respond promptly to any landowner and/or tenant issues or concerns both during the construction and long-term operational activities.

## **3) Determining Construction-Related Damages**

- a) Prior to any construction, NWN or their agent together with the landowner, the landowner's designate and/or the tenant will examine each affected property to inventory crops, livestock, fences, irrigation systems, drain tiles, etc.
- b) The landowner and/or tenant will be compensated for 100 % of the damages caused to crops as a result of the construction activities during the year of construction.
- c) Farm improvements such as fences, drain tiles, irrigation systems and related structures that are damaged as a result of construction activities will be replaced or restored to the pre-construction condition as nearly as possible, or to better condition. In some cases, where NWN and the landowner, landowner's designate and/or tenant agree, NWN may provide compensation for construction-related damage to farm improvements in lieu of repair or restoration.
- d) Agricultural production will resume on the construction area, including the permanent easement, following construction. Crops that can cause damage to the buried pipeline such as orchards trees and other deep rooted crops may be restricted within a ten-foot wide area directly over the installed pipeline.
- e) NWN and the landowner will seek a mutual agreement concerning post-construction claims for damages or crop deficiencies. In the event NWN and the landowner are unable to reach a mutually satisfactory agreement, such claims will be assessed on an individual basis by a qualified agricultural specialist. The qualified agricultural specialist will be selected on a claim-by-claim basis by agreement of a representative designated by NWN and a representative designated by the party Farm Bureaus (or the landowner, at the election of the landowner). NWN shall pay the cost of retaining the qualified agricultural specialist. The agricultural specialist will review and evaluate claims of damages. If the agricultural specialist approves the claim, NWN will pay compensation for the claim in the amount determined by the agricultural specialist. Claims will be evaluated in a timely manner following notification of such damages or deficiencies from the landowner and/or tenant

## **4) Ingress and Egress Routes**

- a) Prior to pipeline installation, should access to the construction easement not be practical or feasible from adjacent segments of the construction easement or from public rights-of-

way, NWN will seek a mutually acceptable agreement with the landowner on the route that will be utilized for entering and leaving the construction easement.

- b) Where access ramps or pads are required from a road or highway to the construction area in agricultural fields, an underlayment of durable, geotextile matting will be placed over the soil surface prior to the installation of temporary rock access fill material. The geotextile matting will be sufficiently strong to prevent rock from becoming embedded in the soil and to withstand removal of the rock without tearing. Rock and geotextile matting will be completely removed upon completion of the project.

#### **5) Temporary Roads**

- a) The location of temporary roads to be used for construction purposes will be negotiated with the landowner and tenant.
- b) NWN will attempt to identify existing farm lanes as preferred temporary access roads for construction.
- c) Temporary roads will be designed so proper drainage is not impaired and will be built to minimize soil erosion on or near the temporary roads.
- d) NWN will restore temporary access roads to pre-construction condition or better, unless otherwise specified in the landowner easement agreement.
- e) Upon abandonment, temporary access roads may be left intact through mutual agreement of the landowner, the tenant and NWN, unless located in flood areas or drainage hazard areas, or otherwise restricted by federal, state or local regulations.
- f) If temporary access roads are to be removed, the land upon which the roads are constructed will be returned to the previous use and restored to equivalent condition as existed prior to their construction as nearly as possible.

#### **6) Landowner and Tenant Access Across Construction Areas**

- a) Where feasible, NWN will coordinate with landowners and tenants to provide access for farm equipment and livestock to fields isolated by the pipeline trench or other construction activities.
- b) NWN will construct temporary fences and gates across the construction area, as necessary.

#### **7) Depth of Pipeline Cover**

- a) Except for piping facilities such as mainline block valves, tap valves, meter stations, etc., and except as otherwise stated in this Plan, the pipeline will be buried with a minimum of 5 feet of topcover where it crosses agricultural land.
- b) NWN will install the pipeline under existing and planned drain tiles, unless existing or planned drain tiles are located deep enough to allow the pipeline to be installed above the drain tile with at least 5 feet of topcover over the pipeline and a 12-inch clearance between the tile and the pipeline. Installation of the pipeline with more than 5 feet of

topcover may require a construction width of more than 80 feet to allow adequate room for the extra trench spoil.

- c) Where feasible and practicable, NWN will install the pipeline with greater than 5 feet of topcover in agricultural land where specifically requested by the landowner to allow for certain site-specific conditions or practices. Installation of the pipeline with more than 5 feet of topcover will require a construction width of more than 80 feet to allow adequate room for the extra trench spoil.
- d) NWN will install plastic warning ribbon approximately 18 to 24 inches above the buried pipeline to provide a greater level of safety for potential excavation activities in the area of the pipeline.
- e) On lands subject to soil erosion, NWN will patrol the pipeline with reasonable frequency to detect erosion of topcover. Whenever NWN discovers that the loss of cover due to erosion creates a safety hazard, NWN will take corrective action.

#### **8) Topsoil Protection**

- a) NWN will strip and segregate topsoil from over the trench and from the trench spoil storage area in agricultural lands.
- b) NWN shall strip and segregate topsoil to the "A" horizon.
- c) Where topsoil depth is less than 12 inches in agricultural land, the entire topsoil layer will be stripped to a depth where the topsoil color changes to the color of the underlying soil horizon or to where an otherwise distinct underlying soil horizon is encountered.
- d) On agricultural land, in the portions of the construction area where grading or cut and fill will occur or where excavations are made beyond the typical trench width, NWN will strip and segregate the topsoil layer up to 18 inches deep. To the extent practicable, the topsoil will be stockpiled on the up-slope edge of the construction area.
- e) Topsoil will generally not be stripped and segregated on public right-of-way areas, except for the portions utilized for agriculture.
- f) During construction in areas where the topsoil is segregated, the stripped topsoil will be stored separately to reduce further disturbance to the stripped topsoil. The stripped topsoil will not be allowed to mix with trench spoil, cut-and-fill materials, rock, construction debris, excavated materials or other subsoil. In areas where topsoil is segregated, subsoil will not be stored on topsoil and the topsoil will not be used to pad the pipe, for constructing trench breakers, or for any other purpose that would result in the loss or degradation of the stripped topsoil.
- g) Topsoil will be stored in a manner that minimizes an increase in water content by leaving gaps in topsoil piles where surface drainage and ditches occur. Gaps will be left in topsoil piles where livestock and farm machinery crossings are located.
- h) On excessively wet soils on the portion of the construction work area in agricultural land where the topsoil is not stripped, NWN will restrict the operation of vehicles and heavy

equipment, or will take other appropriate action, so that deep rutting does not result in mixing of topsoil and subsoil.

- i) Following backfilling, grading and subsoil decompaction, the stripped topsoil will be returned to its original position.
- j) Original soil contours will be restored, with allowance for settling as necessary. Trench crowns will be constructed where NWN determines that trench crowning is necessary to allow for trench settlement.

#### **9) Construction in Wet Conditions**

- a) On excessively wet soils, NWN will restrict certain construction activities such as the operation of heavy equipment, as feasible; or will take other appropriate action, so that soil productivity is preserved or so that soil productivity can be restored.
- b) As feasible, NWN will schedule most pipeline construction activities to avoid the months of greatest precipitation.

#### **10) Irrigation Systems**

- a) Prior to construction, NWN will contact landowners and tenants to identify the location of irrigation systems and wells. Identified underground irrigation water pipes and well systems that intersect the construction area will be marked to alert construction crews.
- b) NWN will maintain the flow of irrigation water during construction or will coordinate a temporary shut-off with affected parties.
- c) NWN will repair disrupted irrigation systems as soon as possible and will compensate affected parties for crop losses that result from irrigation system interruptions due to the construction of the proposed pipeline.

#### **11) Pumping of Water from Open Trenches**

- a) In the event it becomes necessary to pump water from open trenches, NWN will pump water into a constructed energy-dissipating structure in a manner that will minimize damage to adjacent agricultural land, drainage systems and crops.
- b) If water-related damages occur to agricultural land as a result of pumping water from open trenches, NWN will reasonably compensate the landowner and/or tenant for crop damages, and will either restore the land to the pre-construction condition or will reasonably compensate the landowner and/or tenant for damage to such land.
- c) Pumping of water from open trenches will comply with Project permits, existing drainage laws, local ordinances relating to such activities and provisions of the Clean Water Act.

#### **12) Repair of Damaged Drain Tile Systems**

If underground drainage tile is damaged by construction activities, it will be repaired to the former condition as nearly as possible in a manner that assures the proper operating condition of the tile line at the point of repair.

If underground drain tile lines on or adjacent to the construction area are adversely affected by the pipeline, NWN will take the necessary action to restore the function of the tile lines to the pre-construction condition or better. Such action may include the relocation, reconfiguration or replacement of the existing tile lines.

At the election of the landowner, NWN may negotiate a fair settlement with the affected landowner for the repair, reconfiguration or replacement of damaged drain tile. NW Natural will not assume liability for the proper function of drain tile repaired, reconfigured or replaced by the landowner or the landowner's agent.

NWN will conduct the repair, reconfiguration or replacement of damaged drain tile where the damaged drain tile is part of a drainage system that affects neighboring landowners or is shared by neighboring landowners.

On excessively wet soils, NWN will restrict the operation of vehicles and heavy equipment, or will take other appropriate action, where deep rutting might damage drain tile buried under the construction work area.

NWN will repair damaged drain tile in accordance with the following standards:

- a) NWN will contact affected landowners to locate drain tile lines prior to pipeline installation. Identified tile lines will be flagged prior to construction to alert construction crews. During construction, any tile line that is damaged, cut or removed will be distinctly marked. The marker will be maintained until the tile has been permanently repaired.
- b) If water is flowing through a damaged tile line, the tile line will be immediately and temporarily repaired until permanent repairs are made. The exposed opening of cut or damaged tile lines where water is not flowing will be covered with filter material to prevent the entry of soil or other foreign material.
- c) Permanent tile line repairs will be made within 30 days following the completion of construction on any affected landowners property, weather and soil conditions permitting. Where available, local tile contractors will be employed to make permanent repairs of affected tile lines.
- d) For permanent repairs where tile lines are severed by the pipeline trench:
  - i. The damaged section of drain tile line will be replaced by rigid, non-perforated material, unless otherwise directed by the Project Inspector. The replacement section will be approximately the same internal diameter as the existing tile line or larger. The replacement section will be of sufficient strength to withstand typical point loads from construction and farming equipment on the soil surface above the repaired tile line, or will be supported by a support member.
  - ii. A support member will be used to support the repaired tile line where directed by the Project Inspector. The support member will be of sufficient strength to support the drain tile and to withstand typical point loads from construction and farming equipment on the soil surface above the repaired tile line. Support member

materials, where necessary, may include plastic half pipe, non-metallic 90-degree angle support, steel channel iron, steel angle iron, or other suitable materials.

- iii. The drain tile replacement section, and the support member, where used, will extend a minimum of 2 feet (as measured perpendicular to the trench wall) into previously undisturbed soil on both sides of the trench. The drain tile replacement section will extend to undamaged tile line, and an appropriate connector will be installed between the replacement section and the existing drain tile line. Support members, where used, will be installed in a manner that will prevent overturning.
- iv. Where tile repairs involve clay tile, the support member will extend to the first joint beyond the minimum 2-foot distance.
- v. The trench will be backfilled under the each drain tile replacement section to obtain positive support that is not prone to settling. As necessary, clean sand will be used to backfill under sections of repaired tile line.
- vi. The span of the drain tile replacement section over the trench will not exceed 12 feet. If the span of the drain tile replacement section over the trench would exceed 12 feet, the replacement section will be relocated as feasible into undisturbed soil so the subsequent span over the trench is less than 12 feet.
- vii. The grade of tile lines will be maintained.
- e) Before completing permanent repairs, tile lines will be examined by suitable means on both sides of the trench for the entire length within the work area to check for tile that may have been damaged by construction equipment. If damaged tile is found, it will be repaired to the former condition or better as nearly as possible.
- f) Tile line repairs will be made with materials of the same or better quality as that which was damaged.
- g) ~~As feasible~~, There will be a minimum of 12 inches clearance between the tile line (including any support member) and the pipeline.
- h) Where an adjacent pipeline exists, NWN will install the proposed pipeline in agricultural areas with at least the same depth of cover as the existing, adjacent pipeline.
- i) Following completion of the pipeline, NWN will correct drainage tile line repairs that fail due to pipeline construction, provided those repairs were made by NWN. Tile line breaks or other damages to tile systems that occur on the permanent or construction easements will be corrected to the extent that such breaks are the result of pipeline construction. NWN will not be responsible for tile line repairs that the company paid the landowner or the landowner's agent to perform.

### **13) Installation of Additional Drainage Measures**

To properly drain wet areas in agricultural lands caused by construction or the existence of the pipeline, additional drainage tile or other drainage measures will be installed on the permanent easement and temporary workspace, as necessary, to restore these areas to pre-construction conditions as nearly as feasible.

#### **14) Soil Decomaction and Soil Surface Restoration**

- a) Where topsoil is stripped in agricultural lands, NWN will relieve compaction of the exposed subsoil prior to topsoil replacement. Subsoil compaction will be relieved utilizing an agricultural subsoiler or other appropriate implement. After decomaction and prior to topsoil replacement, a disc or harrow will be utilized, as necessary, to smooth the subsoil surface.
- b) Following final grading and topsoil replacement in agricultural lands, NWN will conduct deep tillage to relieve soil compaction in construction areas or will test soils for compaction at regular intervals. Where soil compaction is tested, construction areas will be compared to adjacent areas not disturbed by construction utilizing U.S. Army Corps of Engineers-style cone penetrometers or other appropriate devices or methods. Compacted agricultural lands will be treated utilizing a non-inversion, deep-tillage agricultural subsoiler specifically designed for soil decomaction and designed to minimize surface disturbance to minimize significant mixing of subsoil with topsoil.
- c) Weather and soil conditions permitting, NWN will conduct soil decomaction when soil moisture levels allow for effective soil shattering. Decomaction equipment will not be operated on soils that are too wet, such that a greater level of soil compaction might result.
- d) NWN will utilize agricultural subsoiling equipment with shank operating depth and shank spacing that is adequate to effectively relieve soil compaction.
- e) NWN will make multiple passes of decomaction equipment where necessary to effectively relieve soil compaction.
- f) NWN will restore rutted areas and leave the soil in the proper surface condition for planting.
- g) On agricultural land, NWN will make reasonable efforts to complete the soil restoration work and leave the construction area on each parcel in a condition ready for planting within 30 days of backfilling the trench on that parcel, weather and soil conditions permitting.

#### **15) Removal of Excess Rock**

- a) The introduction of subsoil stones into the topsoil in agricultural lands will be minimized because NWN will segregate topsoil from the trench spoil. NWN will replace the segregated topsoil in agricultural lands after the pipeline is installed and the trench spoil is backfilled.
- b) Blasting in agricultural lands is anticipated to be minimal. In agricultural areas over shallow bedrock that require blasting, matting or controlled blasting will be used to limit the dispersion of blast rock fragments. Suitable precautions will be taken to minimize the potential for oversize rock from blasting or other trenching activities to become interspersed with soil that is placed back in the trench in agricultural areas and to prevent the introduction of rock into the topsoil. Landowners and/or tenants will be given timely notice prior to blasting on agricultural land.

- c) Excess rock, including blast rock, may be used to backfill the trench above the level of the pipe padding material up to the top of the existing bedrock profile.
- d) In agricultural land, the top 60 inches or the actual depth of topcover, whichever is less, within the pipeline trench, bore pits, or other excavations will not be backfilled with soil containing rocks of significantly greater concentration or size than existed prior to the pipeline's construction.
- e) Following backfilling and decompaction in agricultural lands, excess rock will be removed from the subsoil surface prior to the replacement of topsoil.
- f) Rock in excess of the rock content prior to construction will be removed to the extent practicable from the top 12 inches of soil in agricultural land.
- g) Following the final soil surface treatment, rocks will be removed as necessary so the size, density and distribution of rock in the construction area will be similar to adjacent areas not disturbed by construction.
- h) The rock removal provisions may be modified by mutual written agreement between NWN and the landowner.
- i) Excess rock will be removed from construction areas for disposal.
- j) Where additional soil is necessary to restore the original soil contours as a result of the removal of excess rock from the trench backfill, imported soil will be used. NWN will make reasonable efforts to obtain imported soil that is free of noxious weeds. Imported soil will be consistent in texture and quality with the existing soil in the soil horizon in which it is placed on the affected site.

#### **16) Repair of Damaged Soil Conservation Practices**

Soil conservation practices such as grassed waterways and terraces that are damaged by the pipeline construction will be restored to their pre-construction condition as nearly as possible.

#### **17) Dust Control**

- a) NWN will control excessive dust emissions generated during construction, as necessary, by the control of vehicle speed, by wetting the construction area or by other means.
- b) NWN will coordinate with farm operators to provide adequate dust control in areas where specialty crops are susceptible to damage from dust contamination.

#### **18) Prevention of Soil Erosion**

- a) NWN will implement erosion prevention and sediment control measures during construction in accordance with Project's DEQ Construction Stormwater Permit (1200-C) and other applicable Certificate conditions.

- b) The erosion control practices described in 18c) through 18f) below will be implemented in consultation with agricultural landowners and in accordance with the law.
- c) Following construction, cultivated cropland will generally be reseeded or replanted by the landowner. NW Natural will reseed and mulch non-cultivated agricultural land such as pastures and perennial grass hayfields in consultation with landowners, or will make arrangements with landowners that prefer to conduct the reseeding of these areas. NW Natural will reseed and mulch non-agricultural land in consultation with landowners.
- d) NWN will apply temporary mulch in the event of a seasonal shutdown, if construction or restoration activity is interrupted or delayed for an extended period, or if permanent seeding of non-cultivated areas is not completed during the recommended seeding period prior to the winter season. Temporary straw mulch will be applied to bare soil surfaces, including topsoil piles, at the rate of 4000 pounds per acre. Interim seeding of a cover crop may be used in lieu of temporary mulching in some areas.
- e) Following construction, NWN will work with landowners and tenants to prevent excessive erosion on cultivated agricultural lands disturbed by construction. Where the landowner or tenant will not plant the area disturbed by construction before the first winter season, NWN will plant a temporary cover crop and/or will apply mulch following construction area restoration. The cover crop may be an annual grain, other annual grass, annual legume, or other appropriate species.
- f) Slope breakers (also called waterbars or diversion berms) are intended to reduce runoff velocity and divert water off the surface of the area affected by construction. Slope breakers will typically be installed following construction as feasible on slopes steeper than 5 percent on non-cultivated agricultural land including pastures and on non-agricultural land. Slope breakers will generally not be installed on public rights-of-way.

## **19) Weed Control**

- a) On permanent right-of-way areas where NWN has control of the surface use of the land such as above-ground valve sites and metering stations, NWN will provide for weed control in a manner that does not allow the spread of weeds to adjacent lands used for agriculture. Herbicide application on such areas will be conducted by an applicator licensed by the State of Oregon.
- b) NWN will consult with the Oregon Department of Agriculture and other appropriate agencies to determine the location of noxious weeds in the project area. NWN will take appropriate action to minimize the spread of noxious weeds in cooperation with the appropriate agency.
- c) To prevent the introduction of weeds from other geographic regions, NWN will require contractors to thoroughly clean each unit of construction equipment with high-pressure washing prior to the initial move of those units of construction equipment to the general project site.
- d) NWN will make reasonable efforts to obtain straw bales for erosion control and straw for mulch that are free of noxious and nuisance weed contamination.
- e) When available, NWN will use Oregon certified seed or equivalent for revegetation.

## 20) Post-Construction Monitoring and Follow-up Mitigation

NWN will actively monitor soil restoration, crop production, drainage and irrigation systems for two years following the completion of initial construction area restoration. During the monitoring period, NWN will identify remaining soil and agricultural impacts associated with construction that require mitigation and will implement follow-up restoration or appropriate mitigation measures. Follow-up repairs and restoration of damages that are the result of the pipeline construction will not be limited to the two-year monitoring period.

### a) Drain Tiles

- i. NWN will correct drainage tile line repairs that fail due to pipeline construction, provided those repairs were made by NWN. Tile line breaks or other damages to tile systems that occur on the permanent or construction easements will be corrected to the extent that such breaks are the result of pipeline construction. NWN will not be responsible for tile line repairs that the company, at the election of the landowner, paid the landowner or the landowner's agent to perform.
- ii. To properly drain wet areas in agricultural lands caused by construction or the existence of the pipeline, additional drainage tile or other drainage measures will be installed on the permanent easement and temporary workspace, as necessary, to restore these areas to pre-construction conditions as nearly as feasible

### b) Excess Rock

In agricultural land, where cultivation or soil settling results in excess surface rock compared to the adjacent area not disturbed by construction, NWN will remove and dispose of the excess rock from the permanent and temporary easements.

### c) Trench Settlement

NWN will repair trench settlement, as necessary. In agricultural lands where trench settling is excessive and cannot be repaired with minor surface grading, imported topsoil will be used. NWN will make reasonable efforts to obtain imported topsoil that is free of noxious weeds. Imported topsoil will be consistent in texture and quality with the existing topsoil on the affected site.

### d) Irrigation Systems

NWN will correct problems with irrigation systems resulting from pipeline construction. NWN will not be responsible for irrigation system repairs that the company, at the election of the landowner, paid the landowner or the landowner's agent to perform.

### e) Crop Monitoring

- i. NWN will conduct on-site monitoring of growing crops at least two times during each growing season during the two-year monitoring period.
- ii. The growth of the crop on the construction area (permanent and temporary easement) will be compared with the adjacent area not disturbed by construction or

to a comparable area of the field outside the construction area. Visual observations of crop plant vigor, density, height, color, and uniformity will be made.

- iii. Where significant visual crop deficiencies occur on the construction area compared to the adjacent or comparable area not disturbed by construction, a Project Agronomist will determine the need for additional restoration measures.
- iv. NWN will implement additional restoration or mitigation measures, as necessary, in cooperation with affected landowners and tenants.

f) Noxious Weeds

NWN will monitor the construction areas for noxious weed infestations in conjunction with the crop monitoring described above. NWN will take appropriate measures to control new noxious weed infestations that were not identified in the construction area prior to or during construction. Weed control will be conducted in cooperation with appropriate agencies and with landowners and farm operators.