nationalgrid

# Lockport-Batavia Line #112
# Rebuild Project

## Appendix T

## Agricultural Guidelines

**NEW YORK STATE**
**DEPARTMENT OF AGRICULTURE AND MARKETS**

## Guidelines for Electric Transmission Right-of-Way Projects

The following Guidelines apply to linear Right-of-Way (ROW) construction projects on agricultural land. The project sponsor should coordinate with the New York State Department of Agriculture and Markets (NYSDAM) to develop an appropriate schedule for inspections to assure that the goals of these Guidelines are being met. National Grid agrees in the Joint Proposal to monitor the agricultural fields for two growing seasons in order to identify any additional impacts requiring mitigation and remediation and to address such impacts. The Joint Proposal requires National Grid to retain an Agricultural Inspector on a part-time basis, at a minimum, to perform monitoring and remediation of agricultural impacts. It also requires National Grid to employ at least four additional inspectors (or fewer at National Grid's discretion), as follows:

(a) at least one environmental inspector employed full-time.
(b) at least one contractor construction inspector employed full-time.
(c) at least one contractor safety inspector who will inspect the work site; and
(d) at least one quality assurance inspector, part time as needed, who will inspect the work site.

The Project crosses active agricultural lands designated in the State's Agricultural Districts (Segments 2, 3, 5, and 7). These districts promote the use of such lands for production of food and other products. Agriculture is the most prevalent land use within approximately one-third of the Project's affected land area. The Joint Proposal notes that the Project's construction activities may result in disruption of one growing season. Permanent impacts would be realized from changes to access roads in or near agricultural fields.

**Agricultural Monitoring**

The Project Sponsor should retain the services of a qualified Agricultural and Soil Conservation Specialist/Inspector (Agricultural Inspector) for each project phase: project design and development, construction, initial restoration, post-construction monitoring and follow-up restoration. The Agricultural Inspector should be available to provide site-specific agricultural information as necessary for project development through field review and direct contact with affected farm operators, County Soil and Water Conservation Districts, the Department of Agriculture and Markets (NYSDAM) and others. The Agricultural Inspector should maintain regular contact with the Environmental Inspector and appropriate on-site Project Inspectors throughout the construction phase. The Agricultural Inspector also should maintain regular contact with the affected farmers and County Soil and Water Conservation Districts concerning farm resources and management matters pertinent to the agricultural operations and the site-specific implementation of agricultural resource protection measures. The Project Sponsor should consult with NYSDAM whenever construction changes occur on agricultural lands.

**Siting Goals**

National Grid should design the Project to the extent possible to avoid or limit the placement of structures and guying wires on crop fields or other active agricultural land where the structures may significantly interfere with normal agricultural operations or activities. Where the location of a structure or guying wires on such sites is unavoidable, the Project Sponsor should make reasonable attempts to site structures in locations which minimize impacts to normal farming operations. Pole structures should be located along field edges and in nonagricultural areas where possible. When transmission lines must cross farmland, the Project Sponsor should minimize agricultural impacts by using taller pole structures that provide longer spanning distances and locate pole structures on field edges to the greatest extent practicable. ROW centerline location and pole placement should be reviewed with the Department and the Agricultural Monitor prior to final design.

Avoid dividing larger fields into smaller fields, which are more difficult to farm, by locating access roads along the edges of agricultural fields (hedgerows and field boundaries) and in nonagricultural areas where possible.

All existing drainage and erosion control structures such as diversions, ditches, and tile lines should be avoided, or appropriate measures taken to maintain the design and

effectiveness of the existing structures. Any structures disturbed during construction should be repaired to as close to original condition as possible, as soon as possible, unless such structures are planned to be eliminated based on a new design.

**Construction Requirements**

Where construction entrances are required from public roadways to the ROW in agricultural fields, select fill over geotextile fabric should be placed over the exposed subsoil. Culverts and other drainage structures may be required at construction entrances.

Segments of farm roads utilized for access should be improved as required following consultation with the farm operator and NYSDAM prior to use. Such improvements should include the installation of geotextile fabric and crushed stone.

Where repeated temporary access is necessary across agricultural portions of the ROW and agricultural fields are utilized for access, timber mats should be utilized as an alternative to topsoil stripping. The mats should be layered where necessary to provide a level access surface. Once access is no longer required across agricultural areas, the mats should be removed, and the Agricultural Inspector should use a soil penetrometer to determine if soil compaction has occurred as a result of construction activities. All compacted areas should be remediated as specified below.

Where repeated temporary access is necessary across agricultural portions of the ROW, and where mats are not utilized, topsoil should be removed, including all of the "A" horizon down to the beginning of the subsoil "B" horizon, generally not to exceed a maximum of 12 inches. Topsoil removal up to a depth of 16 inches may be required in specially-designated soils. All topsoil should be stockpiled and separated from other excavated materials. The Agricultural Inspector should determine the depth of topsoil stripping on each affected farm during Project development by means of the County Soil Survey and on-site soil augering, if necessary. All topsoil material should be stripped, stockpiled, and uniformly returned to restore the original soil profile during restoration. During the clearing/construction phase, site specific depths of topsoil stripping should be monitored by the Agricultural Inspector. Topsoil stripping in lieu of heavy timber matting should be conducted under the direction of a qualified Agricultural Inspector.

Temporary workspace in agricultural areas should be of sufficient size to allow for positioning conductor reels, tensioners, pullers, wire spools and other mechanized equipment required during pulling activities.

Excavated subsoil material and stockpiled topsoil should be used to restore the original soil profile at new structure locations. All holes created by structure installation should be filled to the same level as the adjacent area, plus 6 to 12 inches of additional soil to allow for settling. Excess subsoil material not used for backfill should be removed from agricultural areas.

The Project Sponsor should provide all farm owners/operators with a telephone number to facilitate direct contact with the Project Sponsor and the Agricultural Inspector(s) through all the stages of the project. The farm owner/operators should also be provided with a telephone phone number to facilitate direct contact with the Project Sponsor's Project Manager for the Project during operation and maintenance of the transmission line. In pasture areas, work areas will be fenced to prevent livestock access, consistent with landowner agreements.

The Agricultural Inspector(s) should coordinate with the farm operators during the planning phase to develop a plan to delay the pasturing of livestock within the restored portion of the ROW, following construction until pasture areas are fully re-vegetated. The Project Sponsor should be responsible for maintaining the temporary fencing on the ROW until the Agricultural Inspector determines that the vegetation on the ROW is established and able to accommodate grazing. At such time, the Project Sponsor should be responsible for removal of the fence.

**Restoration Requirements**

In all agricultural sections of the ROW disturbed during construction, the Project Sponsor should break up the soil compaction to a minimum depth of 18 inches (unless bedrock is encountered at a depth of less than 18 inches) with deep tillage by such devices as a deep-ripper (subsoiler). Soil compaction results should be no more than 250 pounds per square inch (PSI) as measured with a soil penetrometer. Following deep ripping, all stone and rock material four inches and larger in size which has been lifted to the surface should be collected and taken off site for disposal. The topsoil that has been temporarily removed for the period of construction should then be replaced. Finally, deep subsoil shattering should be performed with a subsoiler tool having angled legs. Stone removal should be completed, as necessary, to eliminate any additional rocks and stones brought to the surface as a result of the final subsoil shattering process. In the event that subsequent construction or clean-up activities result in additional compaction, additional deep tillage should be performed to alleviate such compaction.

On affected farmland, any restoration practices should be postponed until favorable (workable, relatively dry) topsoil/subsoil conditions exist. Restoration should not be conducted while soils are in a wet or plastic state. Topsoil should be removed and stockpiled directly adjacent to the travel way on the ROW. Stockpiled topsoil should not be re-graded until plasticity, as determined by the Atterberg field test is significantly reduced. No Project restoration activities should occur in agricultural fields between the months of October through May unless favorable soil moisture conditions exist. The Project Sponsor should coordinate with NYSDAM and the landowner regarding tentative restoration planning. Potential schedules will be determined by conducting the Atterberg field test at appropriate depths into topsoil stockpiles, and below the traffic zone for a mutual determination of adequate field conditions for the restoration phase of the Project.

Topsoil stockpiles on agricultural areas left in place prior to October 31 should he seeded with Aroostook Winter Rye or equivalent at an application rate of 3 bushels (168 #) per acre and mulched with straw mulch at rate of 2 to 3 bales per 1000 Sq. Ft. Topsoil stockpiles left in place between October 31 and May 31 should be mulched with straw at a rate of 2 to 3 bales per 1000 Sq. Ft. to prevent soil loss.

After topsoil replacement, seedbed preparation (final tillage, fertilizing, liming) and seeding should follow NYSDAM recommendations as contained in *New York State Farmland: Seeding,* Fertilizing *and Lime Recommendations for Gas Pipeline Right-of-Way Restoration In Farmlands* (revised 6-15-2005) or as specified by the landowner.

When all existing structures (guy anchors, concrete foundations, steel structures) are removed from agricultural fields, the removal will be to a minimum depth of 48 inches; the immediate area will be restored to be compatible with agricultural production; and the debris associated with the removal of existing structures and the installation of new structures will be thoroughly cleared and removed. All holes created by the removal of the old facilities should be filled to the same level as the adjacent area, plus 6 to 12 inches of additional soil to allow for settling. All material used for fill should be similar to native soil. All fill material will be slightly mounded to accommodate for settling.

Wherever existing structures are removed from agricultural fields, the immediate area will be restored to allow agricultural production. Such restoration should include the removal of concrete foundations and steel structures down to a minimum of 48” below the ground surface, removal of all vegetation from the structure area and grading of the ground surface to match the adjacent field. All rocks 4 inches and greater in size should

be removed from the surface.

At the end of all construction, the ROW and respective work areas, including guying wire assembly and disassembly sites, and wire pulling areas should be thoroughly cleared of debris such as nuts, bolts, spikes, wire, pieces of steel, and other assorted items.

All surface or subsurface drainage structures damaged during construction should be repaired to as close to preconstruction conditions as possible, unless said structures are to be removed as part of the project design. Any surface or subsurface drainage problems resulting from construction of the Project will be corrected with the appropriate mitigation as determined by the Agricultural Monitor, The NYSDAM and the Landowner.

**Monitoring and Remediation**

National Grid will provide a monitoring and remediation period of no less than two years immediately following the completion of initial restoration. The two-year period allows for the effects of climatic cycles such as frost action, precipitation and growing seasons to occur, from which various monitoring determinations can be made. The monitoring and remediation phase will be used to identify any remaining agricultural impacts associated with construction that are in need of mitigation and to implement the follow-up restoration.

The Certificate Holder shall identify Black Cherry trees located on the ROW near active livestock use areas during EM&CP development. During the clearing phase, such vegetation shall be disposed of in a manner which prevents access by livestock.

As part of the line-location surveys conducted during the preparation of the EM&CP, the Certificate Holder shall locate all commercial sugarbushes maintained for maple syrup production within the ROW. The Certificate Holder shall attempt to adjust the centerline location within the ROW to avoid such operations.

General conditions to be monitored include topsoil thickness, relative content of rock and large stones, trench settling, crop production, drainage, and repair of severed fences, etc. Impacts will be identified by the Agricultural Monitor through on site monitoring of all agricultural areas impacted by construction and through contact with respective farmland operators and NYSDAM.

Topsoil deficiency and trench settling should be mitigated with imported topsoil that is consistent with the quality of topsoil on the affected site. Excessive amounts of rock

and oversized stone material will be determined by a visual inspection of disturbed areas as compared to portions of the same field located outside the ROW construction area. All excess rocks and large stones will be removed and disposed of by the Project Sponsor.

When the subsequent crop productivity within affected areas is less than that of the adjacent unaffected agricultural land, the Project Sponsor as well as other appropriate parties, will help to determine the appropriate rehabilitation measures to be implemented. Because conditions which require remediation may not be noticeable at or shortly after the completion of construction, the signing of a release form prior to the end of the monitoring and remediation period will not obviate the Project Sponsor's responsibility to fully redress all project impacts.

Soil compaction should be tested using an appropriate soil penetrometer or other soil compaction measuring device. Compaction tests will be made for each soil type identified on the affected agricultural fields. The soil compaction test results within the affected area will be compared with those of the adjacent unaffected portion of the farm field/soil unit. Where representative subsoil density of the affected area exceeds the representative soil density of the unaffected areas, additional shattering of the soil profile will be performed using the appropriate equipment. Deep shattering will be applied during periods of relatively low soil moisture to ensure the desired mitigation and to prevent additional soil compaction. Oversized stone/rock material which is uplifted to the surface as a result of the deep shattering will be removed.

# FERTILIZING, LIME, AND SEEDING RECOMMENDATIONS FOR RESTORATION OF CONSTRUCTION PROJECTS ON FARMLAND IN NEW YORK STATE

Rev. 9-25-2012
NYS Dept. of Agriculture and
Markets Division of Land and
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# FERTILIZER, LIME AND SEEDING RECOMMENDATIONS FOR RESTORATION OF CONSTRUCTION PROJECTS ON FARMLAND IN NEW YORK

This paper supplements the Department of Agriculture and Markets' various guidance documents for construction projects that impact farmland. The fertilizer, lime and seeding information in this paper can be used for construction projects such as wind energy, natural gas transmission pipelines and electric transmission lines.

## A. Fertilizer for Reseeding of Disturbed Areas

The fertilizer rates listed below are approximations. Prior to construction, before the topsoil is stripped, representative soil samples should be obtained from the areas to be disturbed. The soil sampling should be consistent with Cornell University soil testing guidelines and samples should be submitted to a laboratory for testing of pH, % organic material, cation exchange capacity, Phosphorus/Phosphate (P), and Potassium/Potash (K). The results are used to determine the lime and fertilizer rate to apply for the respective soils and farms.

1. Establishment of legumes or legume and grass seed mixes - if soil test results are not available, apply 300 lbs. per acre of 10-20-20 (10 lbs. of nitrogen, 20 lbs. of phosphorus, and 20 lbs. of potassium per 100 lbs. of fertilizer) or 600 lbs. per acre of 5-10-10.

2. Establishment of grass hayland and grass pasture - if soil test results are not available, apply 400 lbs. per acre of 10-10-10.

## B. Fertilizer for Temporary Seeding of Exposed Subsoil Construction Work Surface

Fertilizer is not recommended for temporary seed cover on the topsoil stockpile, but is strongly advised on the exposed subsoil surface. The surface of the exposed subsoil should be fertilized with 200 lbs. per acre of 10-20-20 prior to temporary seeding.

## C. Agricultural Lime

Apply a minimum rate of 3 tons agricultural lime per acre for most permanent seedings in naturally low-lime soils (Southern Tier/northern Allegheny Plateau). A heavier amount will be applied if so indicated from pH test results. Use lower lime rate on naturally high-lime soils based on site specific soil pH test and farm record of recent lime application (Central Plains/northern half of Finger Lakes Region).

Application rates for pelletized and agriculture lime are the same in tons per acre; however, pelletized lime is easier to handle and reacts to the soil quicker (do not use "liquid lime" on agricultural land).

## D. Temporary Cover

1. Large construction projects that will likely result in one year of construction and one year of restoration.

    a. Topsoil stockpile — topsoil that is stripped and stockpiled in late spring to mid-summer should be seeded with either Oats (96 lbs. per acre) or Aroostook Winter Rye (100 lbs. per acre). A light to moderate application (1500 - 2000 lbs. per acre) of weed-free straw or hay mulch may be necessary to retain soil moisture. For large stockpiles, it may be necessary to grade the surface of the stockpile using small, light-weight equipment, to achieve a uniform seed application. Grading of the topsoil stockpile should be done on a limited basis and should be minimized to prevent compaction.

    b. Exposed construction surface (subsoil) — if seeding before the end of October, apply Aroostook Winter Rye at the rate of 150 lbs. per acre if a broadcast seeder is used or 100 lbs. per acre if a drill seeder is used. The surface of the exposed subsoil should be scarified, generally parallel to the slope's contours if possible, and fertilized prior to temporary seeding. Apply weed-free straw or hay mulch at a rate of approximateÏy 1000 lbs. per acre after seeding.

    c. Winterization — when construction activity is being suspended and the area is being stabilized for the winter with temporary seeding being applied between the middle of September and late October, any topsoil stockpiles and exposed work surfaces (subsoil) should be seeded with Aroostook Winter Rye at the rate of 150 lbs. per acre if using a broadcast seeder or 100 lbs. per acre if using a drill seeder.

## E. Permanent Seeding Mixtures[1]

The following seeding rates are slightly higher than the standard seeding rates to compensate for less than favorable conditions such as lower nutrient availability in the soil, due to disturbance of the topsoil and subsoil, and unfavorable timing of seed application. A favorable seedbed must be prepared to improve soil to seed contact. The seedbed should be firm but not compacted and should not be too wet (soil should not stick to seeder or tractor tires). Fresh inoculants must be mixed with all legumes (alfalfa, birdsfoot trefoil, and clover) at the time of planting.

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[1]All seeding rates are based on the use of a drill seeder, which is the preferred method. If a broadcast seeder is used, all seeding rates must be doubled.

1. Common hayland plantings

    a. Alfalfa — 20 lbs. per acre. If timothy, orchardgrass or bromegrass are being added to the alfalfa, they should be added at the rate of 8 lbs. per acre.

    b. Pardee birdsfoot trefoil — 16 lbs. per acre and either: timothy, orchardgrass, or bromegrass at the rate of 6 lbs. per acre.

    c. Red clover - 15 lbs. per acre and either: timothy, orchardgrass, or bromegrass should be added at the rate of 6 lbs. per acre.

2. Common pasture plantings

    a. Ladino white clover — 3 lbs. per acre and either: timothy (6 lbs. per acre), orchardgrass (8 lbs. per acre), or bromegrass (10 lbs. per acre).

Reed canarygrass can be seeded in wetter areas used for hay and pasture (with landowner approval) at a rate of 18 lbs. per acre. Do not seed reed canarygrass in wetlands.

Annual ryegrass can be added to seed mixtures above to provide quick erosion control while the other plants are becoming adequately established. Annual ryegrass should be seeded at the rate of 6-7 lbs. per acre if a drill seeder is used and 12-14 lbs. per acre if a broadcast seeder is used.

**F. Monitoring and Follow-up**

Restored construction areas must be monitored for no less than two full growing seasons after initial permanent seeding is completed. Surface soil moisture conditions may not be favorable at the time of seeding and during the early growth stage. As a result, seedings may be unsatisfactory due to low plant population, poor plant vigor, and overpopulation of weeds. Seedings are satisfactory if the plant density and plant vigor are equal to or better than adjacent undisturbed areas and weed population is less than the adjacent undisturbed areas. If an overpopulation of weeds exists, control measures should be implemented to minimize weed competition.

If it is necessary to topdress hayland and pasture with fertilizer to improve the plant stand, it is best to have the soil tested to determine the appropriate fertilizer application rate. If soil test information is not available, apply a minimum of 50 lbs. of nitrogen, 10-30 lbs. of phosphorus, and 50 lbs. of potassium per acre.

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