

# Agricultural Area Plan

Hoffman Falls Wind Project

Towns of Fenner, Nelson, Eaton, and Smithfield

Madison County, New York

Prepared for:



90 State Street

Albany, New York 12207

Contact: Meg Lee

[mlee@liberty-renewables.com](mailto:mlee@liberty-renewables.com)

Prepared by:



Environmental Design & Research,

Landscape Architecture, Engineering & Environmental Services, D.P.C.

217 Montgomery Street, Suite 1100

Syracuse, New York 13202

[www.edrdpc.com](http://www.edrdpc.com)

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## 1.0 INTRODUCTION

The following Agricultural Plan (the Plan) was developed by Hoffman Falls Wind LLC (the “Applicant” or “Hoffman Falls Wind”) to avoid, minimize, and mitigate impacts on existing agricultural lands associated with the Hoffman Falls Wind Project (the Facility), a proposed up to 100-megawatt (MW) wind energy generating facility in the Towns of Fenner, Nelson, Eaton, and Smithfield, in Madison County, New York. The Plan covers the following stages of the Facility’s life: 1) Construction, 2) Post-Construction Restoration, and 3) Monitoring and Remediation, and shall be limited to active agricultural lands (i.e., land in active agricultural production defined as three of the last five years within New York State Agricultural Land Classified Mineral Soil Groups 1 through 4 [MSG 1-4]). This plan complies with the New York State Department of Agriculture and Markets (NYSAGM) *Guidelines for Agricultural Mitigation for Wind Power Projects* (Revision 4/19/2018) (herein referred to as the NYSAGM Guidelines, see Attachment A).

The Applicant will hire or designate a third-party independent Agricultural Monitor (AM) to oversee construction and restoration in active agricultural lands and to assure compliance with this Plan during the construction, restoration, and follow-up monitoring of agricultural land within the Facility Site.<sup>1</sup> The AM will have a confident understanding of typical agricultural practices and will be able to identify how construction of the Facility may affect agricultural lands and applicable agricultural practices. The AM will be on site whenever construction or restoration work is occurring on agricultural land and will ensure that contact occurs with impacted farmers and the NYSAGM. The purpose of the agency coordination is to assure that the impact avoidance and mitigation measures proposed in this Plan are implemented to the maximum extent practicable.

This Plan will guide the Facility’s development, construction, and operation on active agricultural lands. The AM will contact the NYSAGM, Division of Land and Water Resources if farm resource concerns, management matters pertinent to the agricultural operation, and site-specific implementation conditions found in these guidelines cannot be resolved.

## 2.0 CONSTRUCTION

The Applicant has located Facility infrastructure in such a way that avoids and minimizes impacts to agricultural lands within MSGs1-4 to the maximum extent practicable. See Exhibit 15 for a discussion of the impact avoidance and minimizations measures taken by the Applicant during the Facility design process.

The surface of access roads constructed through agricultural fields will be level with the adjacent field surface. If a level road design is not feasible, all access roads will be constructed to allow crossing by farm

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<sup>1</sup> The Applicant understands that the Office, in consultation with the NYSAGM, shall verify and approve the qualifications required to fulfill the role of the agricultural monitor have been met. In accordance with 16 NYCRR §900-6.4(s), if the independent third-party monitor is qualified on agricultural issues, one monitor can act as both the general environmental monitor as well as the agricultural-specific environmental monitor.

equipment and culverts and/or water bars will be installed as necessary to maintain or improve natural drainage patterns.

All topsoil will be stripped from agricultural areas used for vehicle and equipment traffic and parking. All vehicle and equipment traffic and parking will be limited to the access road and/or designated work areas (e.g., wind turbine sites, laydown areas). No vehicles or equipment will be allowed outside the work area in agricultural fields without prior approval from the landowner and the AM.

In areas where three or more buried collection line cables are installed in the same area or where open-cut trenching is proposed, topsoil will be stripped from the entire work area. At least 50 feet of temporary workspace will be available along open-cut electric cable trenches for proper topsoil segregation.

All topsoil stripped from work areas (e.g., wind turbine sites, parking areas, electric cable trenches, along access roads) will be stockpiled separate from other excavated material (i.e., rock and/or subsoil). All topsoil will be stockpiled immediately adjacent to the area where stripped/removed and shall be used for restoration at that site. Topsoil stockpile areas will be clearly designated in the field and on the construction drawings.

Electric collection, communication, and transmission lines installed above ground can create long-term interference with equipment operation on agricultural lands. Therefore, collection lines will be buried in agricultural fields. All buried collection lines associated with the Facility will be installed at a minimum depth of 48 inches below ground surface, including in cropland, hayland, and improved pasture. In areas where the depth of soil over bedrock ranges from 0 to 48 inches, the electric cables will be buried entirely below the top of the bedrock or at the depth specified for the particular land use, whichever is less. At no time will the depth of soil cover be less than 24 inches below ground surface.

Within or adjoined to agricultural areas where the installation of the buried electric cables alters the natural stratification of soil horizons and natural soil drainage patterns, the Applicant will rectify the effects with measures such as subsurface intercept drain lines. The AM, in consultation with the Project's construction manager and NYSAGM, will select the type of intercept drain lines to install to prevent surface seeps and seasonally prolonged saturation of the cable installation zone and adjacent areas. Drawings of such drain locations will be provided to NYSAGM by the Applicant during monitoring and follow-up remediation. All drain lines will be installed according to Natural Resource Conservation Service (NRCS) standards and specifications and will meet or exceed the AASHTO M252 specifications.

All excess subsoil and rock will be removed from the Facility Site. On-site disposal of such material may be allowed if approved by the landowner with appropriate consideration given to any possible agricultural or environmental impacts. With cooperation of the landowner, the Applicant will obtain any permits necessary for the disposal of such material under local, state, and/or federal laws and regulations. Additionally, all pieces of wire, bolts, and other unused metal objects will be picked up and properly disposed of as soon as practical after the unloading and packing of turbine components so that these objects will not be mixed with any topsoil.

In pasture areas, it may be necessary to construct temporary fencing around work areas to prevent livestock access to active construction areas and areas undergoing restoration. All temporary fencing will be consistent with landowner agreements.

Excess concrete will not be buried or left on the surface in active agricultural areas, and concrete trucks will be washed outside of active agricultural areas to the maximum extent practicable.

### **3.0 POST-CONSTRUCTION RESTORATION**

In all agricultural areas disturbed by Facility construction, soil compaction will be tested using a soil penetrometer prior to site restoration. Where representative soil compaction exceeds 250 pounds per square inch (PSI), decompaction will be required to a depth of 18 inches with a tractor mounted deep ripper or heavy-duty chisel plow. In areas where the topsoil was stripped, subsoil decompaction will be conducted prior to topsoil replacement.

Following decompaction, all rocks 4 inches and larger in size will be removed from the surface of the subsoil prior to replacement of the topsoil. The topsoil will then be replaced to its original depth and the original contours will be reestablished wherever possible. All encountered rocks 4 inches and larger will be removed from the surface of the topsoil. Subsoil decompaction and topsoil replacement will be avoided after October 1, 2023, unless approved on a site-specific basis by the landowner. All parties involved will be cognizant that areas restored after October 1 may not obtain sufficient growth to prevent erosion over the winter months. If areas are to be restored after October 1, necessary provisions will be made to restore any eroded areas and replant in the springtime.

All access roads will be regraded to allow for farm equipment crossing to the maximum extent practicable. In addition, original surface drainage patterns will be restored. All damaged, severed, or relocated fences shall be repaired or replaced in consultation with the landowner.

All restored agricultural areas will be seeded with a seed mix specified by the landowner to maintain consistency with the surrounding areas. The Applicant will comply with the NYSAGM *Fertilizing, Lime, and Seeding Recommendations for Restoration of Construction Projects on Farmland in New York State* (Attachment 2).

All surface or subsurface drainage structures damaged during construction will be repaired in accordance with the Facility's approved Drainage Remediation Plan. Any surface or subsurface drainage problems resulting from construction of the Facility will be corrected with the appropriate mitigation, as determined by the AM, the NYSAGM, and the landowner.

Agricultural restoration practices will only be conducted when favorable (i.e., workable, relatively dry) topsoil/subsoil conditions exist. Restoration will not be conducted while soils are in a wet or plastic state. Stockpiled topsoil will not be regraded, and subsoil will not be decompacted until plasticity, as determined by the Atterberg field test is significantly reduced. No Facility restoration activities will occur in agricultural fields between the months of October through May unless favorable soil moisture conditions exist. The AM

shall advise the NYSAGM of tentative restoration planning. Potential schedules will be determined by conducting the Atterberg field test at appropriate depths into topsoil stockpiles, and below the subsoil surface for a mutual determination of adequate field conditions for the restoration phase of the Facility.

Following restoration, all construction debris will be removed from the Facility Site.

#### **4.0 MONITORING AND REMEDIATION**

Following restoration of active agricultural lands (i.e., land in active agricultural production defined as three of the last five years within New York State Agricultural Land Classified Mineral Soil Groups 1 through 4), the Applicant will conduct monitoring for at least two years to identify any remaining agricultural impacts associated with construction that need mitigation and to implement the follow-up restoration. This two-year period will allow for the effects of climatic cycles (e.g., frost action, precipitation, and growing seasons) to occur.

Impacts will be identified by the AM through on-site monitoring of all agricultural areas impacted by construction, and through contact with affected farmland operators and NYSAGM. General conditions to be monitored at the Facility Site will include:

- Topsoil thickness and trench settling – Topsoil deficiency and trench settling will be mitigated with imported topsoil that is consistent with the quality of topsoil on the affected site.
- Relative content of rock and large stones – 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 construction area. All excess rocks and large stones will be removed and disposed of by the Applicant.
- Crop production – When the subsequent crop productivity within affected areas is less than that of the adjacent unaffected agricultural land, the Applicant, as well as other appropriate parties, will help to determine the appropriate rehabilitation measures that need 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 remediation period will not obviate the Applicant's responsibility to fully redress all Facility impacts.
- Drainage repair – Any surface or subsurface drainage structures that do not function properly due to damage sustained during construction or inadequate restoration/repair will be repaired as close to preconstruction conditions as possible.

As part of post-restoration monitoring, soil compaction will 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 soil 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 low soil moisture to ensure the desired mitigation and to prevent additional subsoil compaction. Oversized stone/rock material which is uplifted to the surface as a result of the deep shattering will be removed.

## **Attachment A**

NYSAGM Guidelines for Agricultural Mitigation for Wind Power Projects



## **Attachment A**

NYSAGM Guidelines for Agricultural Mitigation for Wind Power Projects

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

**Guidelines for  
Agricultural Mitigation for Wind Power Projects  
(Revision 4/19/2018)**

The following guidelines apply to construction areas for wind power construction projects impacting agricultural land. The project sponsor shall coordinate with the New York State Department of Agriculture and Markets, Division of Land and Water Resources to develop an appropriate schedule for inspections to assure that the goals of these guidelines are being met. The project sponsor shall hire an Environmental Monitor to oversee the construction and restoration in agricultural fields. The Environmental Monitor shall be on site whenever construction or restoration work is occurring on agricultural land. Frequent contact with impacted farmers and the Department is encouraged.

In all cases, the Environmental Monitor shall contact the New York State Department of Agriculture and Markets, Division of Land and Water Resources, if farm resource concerns, management matters pertinent to the agricultural operation, and site-specific implementation conditions found in these guidelines, cannot be resolved.

**Construction Requirements**

- The surface of access roads constructed through agricultural fields shall be level with the adjacent field surface.
- Culverts and waterbars shall be installed to maintain natural drainage patterns.
- All topsoil must be stripped from agricultural areas used for vehicle and equipment traffic and parking. All vehicle and equipment traffic and parking shall be limited to the access road and/or designated work areas such as tower sites and laydown areas. No vehicles or equipment will be allowed outside the work area without prior approval from the landowner and, when applicable, the Environmental Monitor.
- The area of impact from the installation of electric cables can vary depending on the installation method and number of cables. When 3 or more cables are installed in the same area or if an open trench is required for installation, topsoil stripping from the entire work area will be necessary. As a result, additional work space may be required.
- Topsoil stripped from work areas (tower sites, parking areas, electric cable trenches, along access roads) shall be stockpiled separate from other excavated material (rock and/or subsoil). At least 50 feet of temporary workspace is needed along "open-cut" electric cable trenches for proper topsoil segregation. All topsoil will be stockpiled immediately adjacent to the area where stripped/removed and shall be used for restoration on that particular site. Topsoil stockpile areas shall be clearly designated in the field and on the on-site "working set" of construction drawings.

- Electric interconnect cables and transmission lines installed above ground can create long term interference with agricultural land use. As a result, interconnect cables must be buried in agricultural fields wherever practicable. Interconnect cables and transmission lines installed above ground shall be located outside field boundaries wherever possible. When above ground cables and transmission lines must cross farmland, the project sponsor shall minimize agricultural impacts by using taller structures that provide longer spanning distances and shall locate poles on field edges to the greatest extent practicable. The line location and pole placements shall be reviewed with the Department and the Environmental Monitor prior to final design.
- In cropland, hayland and improved pasture a minimum depth of forty-eight inches of cover will be required for all buried electric cables. In unimproved grazing areas and land permanently devoted to pasture, a minimum depth of thirty-six inches of cover will be required. In areas where the depth of soil over bedrock ranges from zero to forty-eight inches, the electric cables shall be buried entirely below the top of the bedrock or at the depth specified for the particular land use whichever is less. At no time will the depth of cover be less than twenty-four inches below the soil surface.
- For lands disturbed within or adjoined to agricultural areas where the installation of the buried electric cables alters the natural stratification of soil horizons and natural soil drainage patterns, the Project Sponsor shall rectify the effects with measures such as subsurface intercept drain lines. The Environmental Monitor, in consultation with Ag. and Markets staff, shall select the type of intercept drain lines to install to prevent surface seeps and the seasonally prolonged saturation of the cable installation zone and adjacent areas. Drawings of such drain locations shall be provided by the Project Sponsor during monitoring and follow-up remediation. All drain lines shall be installed according to Natural Resource Conservation Service standards and specifications and shall meet or exceed the AASHTO M252 specifications.
- All excess subsoil and rock shall be removed from the site. On site disposal of such material may be allowed if approved by the landowner and the Environmental Monitor, with appropriate consideration given to any possible agricultural or environmental impacts.\*
- In pasture areas, work areas will be fenced to prevent livestock access, consistent with landowner agreements.
- All pieces of wire, bolts, and other unused metal objects will be picked up and properly disposed of as soon as practical after the unloading and packing of turbine components so that these objects will not be mixed with any topsoil.\*
- Excess concrete will not be buried or left on the surface in active agricultural areas. Concrete trucks will be washed outside of active agricultural areas.\*

(\*Any permits necessary for disposal under local, State and/or federal laws and regulations must be obtained by the contractor, with the cooperation of the landowner when required.)

## **Restoration Requirements**

Following construction, all disturbed agricultural areas will be decompacted to a depth of 18 inches with a deep ripper or heavy-duty chisel plow. Soil compaction results shall be no more than 250 pounds per square inch (PSI) as measured with a soil penetrometer. In areas where the topsoil was stripped, soil decompaction shall be conducted prior to topsoil replacement. Following decompaction, all rocks 4 inches and larger in size will be removed from the surface of the subsoil prior to replacement of the topsoil. The topsoil will be replaced to original depth and the original contours will be reestablished where possible. All rocks 4 inches and larger shall be removed from the surface of the topsoil. Subsoil decompaction and topsoil replacement must be avoided after October 1, unless approved on a site-specific basis by the landowner in consultation with Ag. and Markets. All parties involved must be cognizant that areas restored after October 1<sup>st</sup> may not obtain sufficient growth to prevent erosion over the winter months. If areas are to be restored after October 1<sup>st</sup>, necessary provision must be made to restore any eroded areas in the springtime, to establish proper growth.

All access roads will be regraded to allow for farm equipment crossing and to restore original surface drainage patterns, or other drainage pattern incorporated into the design.

All restored agricultural areas shall be seeded with the seed mix specified by the landowner, in order to maintain consistency with the surrounding areas.

All surface or subsurface drainage structures damaged during construction shall 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 wind energy project will be corrected with the appropriate mitigation as determined by the Environmental Monitor, the Department and the Landowner.

On affected farmland, any restoration practices shall be postponed until favorable (workable, relatively dry) topsoil/subsoil conditions exist. Restoration shall not be conducted while soils are in a wet or plastic state. Stockpiled topsoil shall not be regraded and subsoil shall not be decompacted until plasticity, as determined by the Atterberg field test is significantly reduced. No Project restoration activities shall occur in agricultural fields between the months of October through May unless favorable soil moisture conditions exist. The Environmental Monitor shall advise Ag & Markets regarding tentative restoration planning. Potential schedules will be determined by conducting the Atterberg field test at appropriate depths into topsoil stockpiles, and below the subsoil surface for a mutual determination of adequate field conditions for the restoration phase of the Project.

Following restoration, all construction debris will be removed from the site.

## **Two Year Monitoring and Remediation**

The Project Sponsor 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.

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 Environmental Monitor through on site monitoring of all agricultural areas impacted by construction and through contact with respective farmland operators and the Department of Agriculture and Markets.

Topsoil deficiency and trench settling shall 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 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 remediation period will not obviate the Project Sponsor's responsibility to fully redress all project impacts.

Subsoil compaction shall 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 subsoil 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 subsoil 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 subsoil compaction. Oversized stone/rock material which is uplifted to the surface as a result of the deep shattering will be removed.

## **Attachment B**

NYSAGM Fertilizing, Lime, and Seeding Recommendations for Restoration of  
Construction Projects on Farmland in New York State

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

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Rev. 9-25-2012  
NYS Dept. of Agriculture and Markets  
Division of Land and Water Resources  
10-B Airline Drive  
Albany NY 12235-0001

## **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 approximately 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<sup>1</sup>**

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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<sup>1</sup> 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 brome grass 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 brome grass at the rate of 6 lbs. per acre.
- c. Red clover - 15 lbs. per acre and either: timothy, orchardgrass, or brome grass 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 brome grass (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.

**For More Information Contact:**

Matthew J. Brower  
Agricultural Resource Specialist  
10B Airline Drive  
Albany, NY 12235  
(518) 457-2851  
Email [matthew.brower@agriculture.ny.gov](mailto:matthew.brower@agriculture.ny.gov)

Michael Saviola  
Agricultural Resource Specialist  
1530 Jefferson Road  
Rochester, NY 14623  
(585) 427-0200  
Email [michael.saviola@agriculture.ny.gov](mailto:michael.saviola@agriculture.ny.gov)

## **Attachment B**

NYSAGM Fertilizing, Lime, and Seeding Recommendations for Restoration of  
Construction Projects on Farmland in New York State

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

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Rev. 9-25-2012  
NYS Dept. of Agriculture and Markets  
Division of Land and Water Resources  
10-B Airline Drive  
Albany NY 12235-0001

## **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 approximately 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<sup>1</sup>**

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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<sup>1</sup> 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 brome grass 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 brome grass at the rate of 6 lbs. per acre.
- c. Red clover - 15 lbs. per acre and either: timothy, orchardgrass, or brome grass 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 brome grass (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.



**For More Information Contact:**

Matthew J. Brower  
Agricultural Resource Specialist  
10B Airline Drive  
Albany, NY 12235  
(518) 457-2851  
Email [matthew.brower@agriculture.ny.gov](mailto:matthew.brower@agriculture.ny.gov)

Michael Saviola  
Agricultural Resource Specialist  
1530 Jefferson Road  
Rochester, NY 14623  
(585) 427-0200  
Email [michael.saviola@agriculture.ny.gov](mailto:michael.saviola@agriculture.ny.gov)