STATE OF MAINE
DEPARTMENT OF AGRICULTURE, CONSERVATION & FORESTRY
LAND USE PLANNING COMMISSION
106 HOGAN ROAD, SUITE 8
BANGOR, MAINE 04401

WALTER E. WHITCOMB
COMMISSIONER

PAUL R. LEPAGE
GOVERNOR

NICHOLAS D. LIVESAY
EXECUTIVE DIRECTOR

PERMIT

DEVELOPMENT PERMIT DP 4966

The staff of the Maine Land Use Planning Commission (LUPC or Commission), after reviewing the application and supporting documents submitted by Somerset Wind, LLC (Applicant or Somerset Wind) for Development Permit DP 4966, finds the following facts:

1. *Applicant.* Somerset Wind, LLC
Attn: James Cassida
129 Middle Street, 3rd Floor
Portland, Maine 04101

2. *Landowner.* Plum Creek Maine Timberlands, LLC
PO Box 89
Fairfield, Maine 04937

3. *Agent.* Stantec Consulting Services, Inc.
Attn: Thomas Tetreau
30 Park Drive
Topsham, Maine 04086

4. *Date of Completed Application.* July 29, 2015

5. *Location.* Johnson Mountain Township, Somerset County, Maine
Maine Revenue Service Map SO014, Plan 01, Lot 1.1
Somerset County Registry of Deeds: Book 4864, Page 90 (Easement)
MET Tower SOMMET8E (45.461639 Latitude; -70.019049 Longitude)
SODAR Unit SOMSOD8G (45.462147 Latitude; -70.018519 Longitude)

6. *Zoning.* General Management Subdistrict (M-GN)

7. *Proposed Structures.* One Temporary Meteorological Testing Equipment Tower (MET Tower)
One Sonic Detections and Ranging Unit (SODAR Unit)

PROPOSAL SUMMARY

8. Somerset Wind has submitted an application seeking permit approval to construct and operate one (1) temporary 197-foot meteorological tower and one (1) temporary associated SODAR unit in Johnson Mountain Township, Somerset County, Maine. The tower would support and elevate monitoring equipment that would be used to collect wind and weather data for assessing wind speed, direction and other related factors to determine the viability of wind power in the area.

SUMMARY OF KEY STANDARDS

9. Under the provisions of Section 10.22,A,3,a,(6) of the Commission's *Land Use Districts and Standards* (Standards or *Ch. 10.*…), surveying and other resource analysis shall be uses allowed without a permit from the Commission within an M-GN subdistrict.

10. Other structures, uses, or services that are essential to the uses listed in Section 10.22,A,3,a through c may be allowed within an M-GN subdistrict upon issuance of a permit from the Commission pursuant to 12 M.R.S. §685-B, and subject to the applicable requirement set forth in Sub-Chapter III *(Ch. 10.22,A,3,c,(26)).*

11. For structures set back at least 500 feet from the normal high water mark of a body of standing water 10 acres or greater or tidal water, "the maximum structure height shall be: 100 feet for commercial, industrial, and other non-residential uses involving one or more structures" (*Ch. 10.26,F,1*). Features of structures which contain no floor area such as chimneys, towers, ventilators and spires, and freestanding towers and turbines may exceed the maximum height with the Commission's approval *(Ch. 10.26,F,3).*

12. *Evaluation of the Visual Impact, and Alternative Locations and Designs.*

    A. The design of proposed development shall take into account the scenic character of the surrounding area. Structures shall be located, designed and landscaped to reasonably minimize their visual impact on the surrounding area, particularly when viewed from existing roadways or shorelines (*Ch. 10.25,E,1,a*).

    B. To the extent practicable, proposed structures and other visually intrusive development shall be placed in locations least likely to block or interrupt scenic views as seen from traveled ways, water bodies, or public property (*Ch. 10.25,E,1,b*).

    C. If a site includes a ridge elevated above surrounding areas, the design of the development shall preserve the natural character of the ridgeline (*Ch. 10.25,E,1,c*).

    D. The Commission may not approve an application, unless: "Adequate provision has been made for fitting the proposal harmoniously into the existing natural environment in order to ensure there will be no undue adverse effect on existing uses, scenic character, and natural and historic resources in the area likely to be affected by the proposal" *(12 M.R.S. § 685-B(4)(C), which is incorporated into Ch. 10.24,C).*

SUMMARY OF PROPOSAL INFORMATION

13. *Current Site Conditions*. The proposed site is over 200 feet east of Mountain Brook Road and over 200 feet west of Cold Stream Mountain Road in an area that shows evidence of timber harvesting. The site is currently dominated by regenerating 10 to 20-foot red spruce (*Picea rubens*), balsam fir (*Abies balsamea*), and red maple (*Acer rubrum*). The topography is relatively flat and gently sloping downhill to the southeast.

14. *Description, Design and Setbacks*. The MET Tower is proposed to be a 60 meters (197 feet) tall, 8-inch diameter gray, pole-style tower. The tower would be situated on an approximately 7.7 square foot base plate that would be supported by four sets of guy wires each having six levels and anchors. The base of the tower, at an elevation of 1,822 feet, would be set back at least 210 feet from Mountain Brook Road, greater than 197 feet from Cold Stream Mountain Road, 7,400 feet from the nearest property boundary line, 7,000 feet from the nearest lake or pond, 1,200 feet from the nearest river or stream, and 315 feet from the nearest mapped wetland.

15. *Technical and Financial Capacity (Ch. 10.25,C).* Somerset Wind is an indirect wholly owned subsidiary of First Wind Holdings, LLC. First Wind Holdings, LLC would finance the total cost, estimated to be approximately $60,000, for permitting, installation, operation, maintenance and decommissioning of the tower site. Stantec Consulting Services, Inc. has been retained to complete permitting of the project.

16. *Vehicular Circulation, Access and Parking (Ch. 10.25,D).* Access to the proposed MET tower would be directly from Mountain Brook Road, a land management road open to the public, via an existing cleared area; no new permanent roads or parking areas would be constructed to or at this site.

17. *Lighting (Ch. 10.25,F,2).* The Applicant has submitted an evaluation for the proposed MET tower by the Federal Aviation Administration (FAA) using the FAA's *Online Notice Criteria Tool*. No additional notification or lighting would be required by the FAA, subsequently, no tower lighting or structure lighting is proposed in connection with the installations.

18. *Soil Suitability, Erosion and Sedimentation Control, Wetland Alterations, Vegetation Clearing, and Soils Disturbance (Ch. 10.25,G, M and P, and Ch. 10.27,B and F).*

    A. Soil Suitability. Soil map unit data were obtained and reviewed using the U.S. Department of Agriculture's (USDA) National Resource Conservation Service's (NRCS) Soils Survey Geographical database for Somerset County, Maine. The soils are mapped as Elliottsville-Monson complex (EMC) which is comprised of well drained to somewhat excessively drained soils derived from subglacial till, 5 to 15 percent slopes. Onsite investigation indicated very shallow soils with rocky till less than 6 inches below the soil surface.

    B. Erosion and Sedimentation Control. Erosion control best management practices would be implemented in accordance with the Commission's Standards and the Maine Department of Environmental Protection's, *Maine Erosion and Sediment Control BMP's*. The Applicant would use standard construction techniques and erosion and sediment controls such as mulch, hay bales and silt fence to stabilize disturbed soils and prevent sediment from leaving the site.

C. Wetland Alterations. A wetland reconnaissance found that the site has no wetlands or streams located within the clearing limits. A 10-foot buffer strip would be retained between the upland edge of any wetland boundary and the site or access clearing. In addition, no S1 or S2 species or communities were located within the vicinity of the site.

D. Vegetation Clearing. Approximately 4.86 acres of vegetation would be removed for the installation and operation of the site; the clearing would extend approximately 200 feet in all directions from the base of the tower pole and from the SODAR unit. The vegetative clearing would be set back 0 feet from Mountain Brook Road, greater than 50 feet from Cold Stream Mountain Road, and at least 7,100 feet from the nearest property boundary line, 6,600 feet from the nearest lake or pond, 975 feet from the nearest river or stream, and 110 feet from the nearest wetland.

E. Filling and Grading. The Applicant anticipates that anchoring each set of guy wires would be achieved by using rock or screw anchors; however, site conditions may require buried dead-man anchors which would require a 4 foot by 4 foot by 1 foot deep hole, each. New or expanded soil disturbance would be less than 100 square feet; the filling and grading would be in the (M-GN) General Management Subdistrict.

19. *Subdivision and Lot Creation and Title, Right and Interest (Ch. 10.25,Q and 12 M.R.S. § 685-B(2)(D), which is incorporated into Ch. 10.24).* On December 22, 2014, the Applicant entered into an Amended Wind Energy Easement with Plum Creek Maine Timberlands, LLC for multiple tracts in Somerset County which includes the location of the proposed tower site. The Applicant also submitted a 20-year land division history and stated that there have been no non-exempt divisions on the contiguous parcels of land in the past 20 years.

20. *Period of Use*. The Applicant anticipates that the proposed meteorological towers would be in place for no more than seven years.

21. *Visual Impact Assessment.* The tower would be located in a rural forest landscape which is surrounded by regenerating forest management lands consisting of numerous logging roads, skidder trails, log yards, and laydown areas. The Applicant indicated that the tower would be more than 0.35 miles from the proposed Cold Stream Forest and snowmobile trail ITS 87. Cold Stream Falls, located within Cold Stream Forest, would be 0.67 miles to the north northwest of the tower site. Additionally, there are a few campsites along the Cold Stream Forest area and adjacent to the small ponds in the northwest portion of Johnson Mountain Township. Further, the nearest public roads would be State Route 201 (the Old Canada Road Scenic Byway), at 1.8 miles from the site, and State Route 6, at more than 9.5 miles from the site. Capital Road, a major land management road, would be located 0.83 miles from the site. Mountain Brook Road and Cold Stream Mountain Road, land management roads, would be adjacent to the tower site. No structures were identified within 1 mile of the site.

    The Applicant indicated that the roads, snowmobile trail, falls, and campsites are in lower lying areas and are typically surrounded by trees and topography that would likely block views, or give intermittent views, of the tower. Regardless, because of the distance of the tower from these sites,

the vegetation buffer, the topography of the landscape, the gray color and thin profile tower design, and the lack of required FAA lighting, the Applicant stated that it is expected that view of the tower would be temporary in nature, minimally visible, and that when viewed the tower would be perceived as a minor element on the larger landscape. The Applicant stated that the temporary tower is not anticipated to impact the scenic character or natural or historic features.

SUMMARY OF AGENCY COMMENTS

22. The Maine Natural Areas Program reviewed the proposal and searched the Natural Areas Program's Biological and Conservation Data System files for rare or unique botanical features in the vicinity of the proposed site and indicated that according to their current information there are no rare botanical features that would be disturbed within the project site.

23. The Maine Historic Preservation Commission reviewed the proposal and indicated that the project area is not considered sensitive for archaeological resources and concluded that there are no National Register listed or known National Register eligible properties in the area of potential effects for this project.

24. The Department of Agriculture, Conservation and Forestry's Bureau of Parks and Lands, Leases, Conservation Easements and Acquisitions reviewed the proposal and indicated that they had no comments on the proposal.

25. The Maine Department of Inland Fisheries and Wildlife (MDIFW) reviewed the proposal and in consideration of the proposal's probable effect on the environment and on the agencies programs and responsibilities, provided concerns and recommendations. The Applicant subsequently responded to the concerns, followed by MDIFW restating its recommendations. *The comments, concerns and recommendations are summarized below:*

    A. Wildlife Considerations.

        1) *Bats*.

            a) MDIFW comments that seven out of eight species of bats in Maine are currently listed as Species of Special Concern by MDIFW: eastern small-footed bat (*Myotis leibii*), little brown bat (*Myotis lucifugus*), northern long-eared bat (*Myotis septentrionalis*), red bat (*Lasiurus borealis*), hoary bat (*Lasiurus cinereus*), silver-haired bat (*Lasionycteris noctivagans*), and tri-colored bat (*Perimyotis subflavus*). However, the three species of *Myotis* are currently the subject of the legislative process for protection under Maine's list of Threatened and Endangered species. While a comprehensive statewide inventory for bats has not been completed, it is likely that several of these species occur within the project area during migration and/or the breeding season. MDIFW is currently considering guidelines to avoid or minimize impacts to habitat and habitat components (e.g. maternity roosts) for these species, particularly from forestry clearing operations associated with the construction of projects; however, as of this writing these guidelines have not been finalized. Therefore, the agency defers to guidance and recommendations provided from the U.S. Fish and Wildlife Service's Maine Field Office, as the northern

long-eared bat is being proposed for listing as an Endangered or Threatened Species under the Federal Endangered Species Act. As the likelihood that the data collected from these structures may lead to subsequent windpower development in this area, the agency recommends that the applicant contact MDIFW as soon as possible to discuss windpower pre- and post-construction studies for windpower development.

b) In response to MDIFW's concerns related to bat species, the Applicant responded stating: the MDIFW comments stated concerns that several species of bats likely utilize the project area during migration and/or breeding season. The Applicant understands that if proposed state and federal threatened and endangered species listing is enacted then there will likely be additional considerations regarding siting and clearing for wind projects and any associated met tower sites, however, no such guidelines currently exist. Our understanding is that this listing process will not affect these permit applications for the MET tower and SODAR sites. However, the Applicant intends on meeting with MDIFW biologists within the next month to discuss pre- and post- development bat data collection in the project area.

2) *Significant Vernal Pools.*

a) MDIFW comments that it is unclear from the application if surveys for Significant Vernal Pools have been undertaken. Surveys for vernal pools in areas to be cleared within the project boundaries will need to be conducted prior to final project design to determine whether there are Significant Vernal Pools, or the critical terrestrial habitat from any adjacent pools, present in the area. Once surveys are completed, our Department will need to verify vernal pool data sheets prior to final determination of significance.

b) In response to MDIFW's concerns related to Significant Vernal Pools, the Applicant's agent responded stating: vernal pool surveys were performed at the proposed met tower sites using the Maine Association of Wetland Scientists (MAWS) Vernal Pool Survey Protocol. No vernal pools were identified in or near the clearing limits and access roads. The standard protocol is to document the location of a feature that could be a Significant Vernal Pool with a mapping grade GPS unit as a Potential Significant Vernal Pool (PSVP) point. The agent would then provide that data to the Applicant and recommend that the edge of clearing be moved at least 250 feet away from the edge of the PSVP. This occurs during the initial siting and evaluation for proposed met towers. As noted above, no vernal pools or potential vernal pools were identified within the clearing limits nor does the clearing limits contain PSVP habitat.

3) *Reduction of Bird/Bat Collision and Wildlife Entanglement.*

a) MDIFW states that there is potential for increased bird collisions with the construction of tall meteorological and telecommunication towers. While it appears that the tower will be less than 200 feet in height, should any lighting be required in the future, or should height of the towers need to be modified, we recommend that any tower lighting, if installed, be flashing white strobe lights with a maximum off period between flashes. This type of lighting is far less attractive to migratory birds than continuous or pulsating, incandescent

red or white lights. In general, avoidance of guy wires is preferable, even if it requires a slightly larger footprint for the tower. If guy wires must be used, the proposed diverters should be placed at the manufacturer's suggested rate and spacing for each guy wire. During placement of these diverters, the technician should stagger them on the guy wires so they are not directly under the prior one.

MDIFW also recommends placement of some type of sleeve over the guy wires from the ground level up to approximately 12-15 feet in height. The intent is to make sure that there is plastic sleeve on the guy wire up to a vertical height of 12-15 feet from the ground/snowpack to help reduce entanglement. This height is to accommodate ungulates under variations in terrain and snow pack-depending on topography, average annual snow depth, and angle of the wires this could mean upwards of 30 feet or more of length of sleeve up the wire. All loops of excess wire should be eliminated, but if excess wire is required for future removal of the tower then loops of excess wire should be tied off at a height of 20-25 feet above the ground (well above snowpack) instead of near ground level to isolate it from wildlife. These recommendations are made to aid wildlife in detection of wires and help to prevent or reduce entanglement of mammalian wildlife, especially ungulates. Similarly, we recommend that all construction materials (i.e., cable, rope, loose fencing) is either cleaned up and removed from the site, or adequately stored and secured to prevent/reduce entanglement of wildlife. Ultimately, the burden of securing the wire and preventing mortality belongs to the applicant, who is put on notice to ensure that the taking of a big game species or a listed species, such as Canada lynx (Special Concern in Maine and also federally-protected), does not occur.

b) In response to MDIFW's concerns related to Reduction of Bird/Bat Collisions and Wildlife Entanglement, the Applicant responded stating: if MDIFW requests that bat detectors be deployed in the met tower guy wires, then considerations for if and how guy wires are marked will be required. These considerations relate to how diverters can impact the effective implementation of a detector study as well as how, when covered in ice during winter conditions, the diverters create off-balanced loading of the met tower guy wire arrays.

   First, diverters cannot be installed to manufacturer specifications in parts of the guy wire array where the detector ropes will be located. Passing these ropes in close proximity to the diverters has resulted in the ropes becoming entangled in the diverters. This renders the detector irretrievable by biological staff, can result in damage to the detectors or loss of data, and requires costly efforts like lowering and re-raising the tower. Additionally, it is not recommended to mark only those sets of guy wires (three of the four sets) that will not be used to deploy a bat detector, while leaving the set with the detector un-marked. This creates a high risk for tower failure/damage due to an off-balance loading of guy wires that can occur during icing conditions (guy wires with diverters hold more ice than those without diverters). If detectors are located in the met towers, the guy wires should not be marked with diverters. The Applicant is prepared to discuss these concerns with MDIFW and deploy the met towers, marked or un-marked, according to those discussions.

With respect to wildlife entanglement, although the Applicant expects entanglements to be unlikely, they take extra precautions to avoid these potential events. The Applicant is not aware of wildlife being hurt by walking into a plain, single strand of guy cable that is under load while supporting a standing met tower. Rather, the Applicant understands that potential entanglement in the past has involved the tag ends of the cables that, historically, were coiled into loops and placed near the anchor of each set of guy wires (where disturbed soil was typically stabilized with hay). The Applicant's current methods to protect against wildlife entanglement are to tape the tag ends to the guy wire and to cover that taped grouping of cable with two 10-foot plastic sleeves. This eliminates the chance that a bull moose will get its antlers caught in the loops while feeding on hay mulch (if hay is used for soil stabilization) and that those loops would tighten around the antlers when the animal raises its head. The Applicant also uses straw, rather than hay, for soil stabilization, because straw appears to have no to very little attraction as forage for moose and other ungulates. The Applicant believes that this revised approach for guy cables is more than sufficient at protecting large mammals from entanglement and that the two sleeves at the base of each guy cable provides an appropriate level of visibility marking for snowmobile and ATV users.

Additionally, the Applicant will conduct inspections of each met tower site following installation. That inspection will confirm that these procedures were implemented and that construction debris is removed from the site when construction is complete. The inspection forms will be provided to the Commission following inspection and installation.

c) MDIFW reviewed the Applicants responses and concerns outlined above and reiterated the same recommendations commenting that:

In relation to guy wires and entanglement: MDIFW has been largely consistent with this language for a long time, although MDIFW did revise the entanglement language recently to further clarify. MDIFW has had problems with some developers not following recommendations which resulted in a healthy bull moose becoming entangled last fall at a MET tower in Aroostook County, which subsequently died as a result. Therefore, we are making it very clear to all companies installing towers, whether they are MET towers or telecommunication towers that the burden of securing the wire and preventing mortality belongs to the Applicant. Also, the Applicant is put on notice to ensure that the taking of a big game species or a listed species does not occur. Finally, while it is possible that hay could be an attractant, not all mortalities from entanglement are from food attractants.

In relation to diverters and detectors: MDIFW was unaware that there was potential for the detector ropes to get tangled in the coil diverters; however, there are other options which include securing the ropes more tightly, or to attaching the detector to a separate nearby structure (e.g. install a large pole, like a telescoping flagpole). There are other options which could likely be explored, but to not install diverters to manufacturer specifications should not be considered.

B. Fisheries Considerations. MDIFW state there are no inland fisheries concerns associated with these projects.

26. The Forest Society of Maine (FSM) reviewed the proposal and indicated that this proposal falls outside the Moosehead Region Conservation Easement therefore, FSM has no comments in relation to this project.

SUMMARY OF PUBLIC COMMENTS

27. The Natural Resources Council of Maine (NRCM) noted that its organization is aware of the proposed met towers and a potential wind energy project west of Moosehead Lake and raised a preliminary concern about the prospect for a major wind energy project in an area that is surrounded by lands subject to a conservation easement and close to a number of lakes, rivers and public lands of high conservation value, including Moosehead Lake (*summarized*).

28. The facts are otherwise as represented in Development Permit application DP 4966 and supporting documents.

ANALYSIS AND CONCLUSIONS

Based upon the above FINDINGS and the following ANALYSIS, the Commission CONCLUDES:

1. The MET tower and SODAR unit are allowed uses within the M-GN subdistrict in which they are proposed. The MET tower structure is necessary to support and elevate the wind and weather data collection and surveying equipment, and as such, is a structure essential to an allowed use (*Ch. 10.22,A,3,a,(6) and Ch. 10.22,A,3,c,(26)).*

2. The MET tower may exceed the Commission's maximum 100-foot structure height restriction because the proposed tower does not contain floor area and is not attached to another structure (*Ch. 10.26,F,1 and Ch. 10.26,F,3).*

3. *Impact to Scenic and Natural Character.* In the case of a MET tower proposal, components with the potential to impact scenic and natural character may include tower location, color, type, width, height, lighting and setbacks, and project vegetative clearing and setbacks. The potential undue adverse impacts to the scenic and natural character for this proposal have been minimized with: the rural setting of the proposal inside a forest management landscape consisting of numerous logging roads, skidder trails, cleared log yards, and laydown areas; a neutral, gray colored tower with a thin profile which will allow the tower to blend with the hilly topographic landscape; the lack of daytime or nighttime lighting due to a height under 200 feet; and the setbacks from, and subsequent limited opportunity for clear tower views from, recreational resources, the nearest property lines, State Routes 6 and 201, and Capital Road. While visibility is unavoidable, the MET tower is temporary in nature and when viewed is expected to be perceived as a subordinate element against a backdrop of trees, mountains, forest clear cuts, and forested areas. Therefore, the proposal meets the scenic and natural character requirements set forth in Ch. 10.25,E,1,a; Ch. 10.25,E,1,b; Ch. 10.25,E,1,c; and the scenic character portion set forth in 12 M.R.S. § 685-B(4,C), which are incorporated into Ch. 10.24, C.

4. *With regard to the statutory criteria for approval in 12 M.R.S. § 685-B(4,C), which is incorporated into Ch. 10.24,C.* The Applicant's visual impact assessment on recreational resources and nearby development, in combination with the MET tower location, design, height, setbacks and temporary nature, supports the conclusion that the proposal will not have an undue adverse impact on scenic character (*see Conclusion #3, above*). Additionally, timber harvesting, the current use of the area, will continue such that the proposal will not have an undue adverse impact on existing uses. Further, the Applicant will install bird and bat diverters per manufacturer specifications and secure loose wires with sleeves to prevent ungulate entanglement mortality as requested by the Maine Department of Inland Fisheries and Wildlife. No wetlands, streams, or significant vernal pools will be impacted by the proposal and there are no rare or unique botanical features which would be disturbed in the area. Therefore, as long as the wildlife considerations are completed and maintained, the project will not have an undue adverse impact on natural resources. Lastly, the proposal was reviewed by the State Historic Preservation Office which indicated no concerns regarding sensitive archaeological resources and it has been concluded that the proposal will not have an undue adverse impact on historic resources. In conclusion, the Applicant has made adequate provision for fitting the proposal harmoniously into the existing natural environment in order to ensure there will be no undue adverse effect on existing uses, scenic character, and natural and historic resources in the area likely to be affected by the proposal, satisfying 12 M.R.S. §685-B(4)(C).

5. The proposal complies with all other applicable and relevant standards contained in Ch. 10.25, Ch. 10.27, and the Commission's Statute, specifically: Ch. 10.25,C, D, F.2, G, M, P, and Q; Ch. 10.27,B and F; and12 M.R.S. § 685-B(2)(D), which is incorporated into Ch. 10.24.

Therefore, the Commission APPROVES Development Permit DP 4966, submitted by Somerset Wind, LLC for a 197-foot temporary Meteorological Tower and associated temporary SODAR unit, as proposed with the following CONDITIONS.

1. The Standard Conditions for Development Permits, version 04/2004, a copy of which is attached.

2. Notwithstanding Standard Conditions for Development Permits, Condition #3, prior to seven years from the date of issuance of this permit (the permit expiration), if the MET tower and SODAR unit are proposed to remain on site, and if no permanent meteorological reference tower associated with a commercial wind energy development has been proposed, the permittee shall submit a new permit application and obtain approval from the Commission to extend the time period to the expiration date of this permit.

3. Should the easement or lease expire or be terminated, should the tower be vacant or abandoned for more than two years, should the data collection period end, or should the permit expire, the permittee shall lower the MET tower and remove it and all other associated equipment from the parcel. All solid waste and other debris shall be disposed of in accordance with Maine Solid Waste Disposal Rules.

4. Excluding areas actively use for forest management activities or existing access roads or skidder trails, where soil is proposed to be disturbed, erosion and sedimentation control structures, including but not limited to silt fences, must be installed prior to commencement of construction. Measures to

control erosion during and after construction, including but not limited to hay mulch, re-seeding and water bars, must be employed. Once implemented or put in place, erosion control devices and measures must be maintained to insure proper functioning. Disturbed areas reseeded and stabilized with mulch, shall achieve and maintain 85% vegetative cover; in areas where re-vegetation is not initially successful, additional measure to control erosion and sedimentation must be undertaken as often as necessary to be effective.

5. If weather permits, the clearing must be conducted when the ground is frozen. Installation of the MET tower, and SODAR unit must be avoided when the soil is saturated; or if unavoidable, slash, wood chips, or mats must be used to drive heavy equipment over where the soil is soft enough to rut. However, work that will disturb soils must not be conducted if conditions are such that significant erosion and sedimentation with the potential to damage a stream, vernal pool or wetland will occur. For the development proposed, no clearing or other disturbance may occur within any wetland areas, vernal pools, or streams. Should any erosion or sedimentation impacting wetland areas, vernal pools, or streams occur during construction, the permittee shall contact the Land Use Planning Commission staff immediately, or as soon as possible if the event occurs outside of regular business hours, notifying staff of the problem and describing all proposed corrective measures.

6. Except as provided for in this permit, all activities shall be in conformance with the Standards for: *Erosion and Sedimentation Control (Ch. 10.25,M)*; *Vegetation Clearing,* (*Ch. 10.27,B*); *Filling and Grading, (Ch. 10.27,F)*; and the *Guidelines for Vegetative Stabilization*, Appendix B of the Commission's Standards, revised July 24, 2015, copies of which are attached.

7. The MET tower must be placed at the identified location. The base of the tower must be set back at least one tower height from any public road, any private road open for public use, and any other property boundary line, 500 feet from all bodies of standing water 10 acres or greater in size, 150 feet from the nearest major flowing water, and 100 feet from the nearest minor flowing water and upland edge of wetlands designated as a (P-WL1) wetland of special significance.

8. The SODAR unit must be placed at the identified location and must be set back at least 75 feet from any public road and any private road open for public use, 150 feet from all bodies of standing water 10 acres or greater in size and the nearest major flowing water, 100 feet from the nearest minor flowing water and P-WL1 wetland of special significance, and 25 feet from the nearest property boundary line.

9. The total cleared area must not exceed 4.86 acres. The cleared area must not impact any area meeting the description of a (P-GP) Great Pond Protection Subdistrict, a (P-SL) Shoreland Protection Subdistrict or (P-WL) Wetland Protection Subdistrict.

10. Access to the temporary MET tower and SODAR unit must be by existing logging roads and skidder trails, or overland; no new access roads shall be created.

11. Bird and bat diverters must be secured and maintained on the guy wires at the manufacturer's recommended rate and spacing for the life of the project. Plastic sleeves to protect wildlife from becoming entangled in the guy wires must be securely installed and must extend up to 12-15 feet in vertical height above the ground. Loose ends of the guy wires and all loops of excess wire shall be

eliminated or, if needed to service the tower, shall be tied off at a height of 20-25 feet above the ground (well above snowpack) instead of near ground level.

12. The permittee shall secure and comply with all other applicable licenses, permits, and authorizations of all federal, state and local agencies including but not limited to: the Federal Aviation Administration, the US Army Corps of Engineers, and the Maine Department of Environmental Protection.

13. Once construction is complete, the permittee shall submit to LUPC staff photos of the site showing the completed work at each meteorological tower including: the wildlife protection techniques; the tower site; the SODAR unit site; and along the skidder trail, accompanied by a brief narrative of the erosion and sedimentation controls employed.

This permit is approved upon the proposal as set forth in the application and supporting documents, except as modified in the above stated conditions, and remains valid only if the permittee complies with all of these conditions. Any variation from the application or the conditions of approval is subject to prior Commission review and approval. Any variation undertaken without Commission approval constitutes a violation of Land Use Planning Commission law. In addition, any person aggrieved by this decision of the staff may, within 30 days, request that the Commission review the decision.

DONE AND DATED AT BANGOR, MAINE, THIS 11TH DAY OF AUGUST, 2015.

Karen E. Ballstadt

By: _____

for Nicholas D. Livesay, Executive Director

STATE OF MAINE
DEPARTMENT OF AGRICULTURE, CONSERVATION & FORESTRY
LAND USE PLANNING COMMISSION
22 STATE HOUSE STATION
AUGUSTA, MAINE 04333-0022

STANDARD CONDITIONS OF APPROVAL FOR ALL DEVELOPMENT PERMITS

1. The permit certificate must be posted in a visible location on your property during development of the site and construction of all structures approved by this permit.

2. This permit is dependent upon and limited to the proposal as set forth in the application and supporting documents, except as modified by the Commission in granting this permit. Any variation therefrom is subject to the prior review and approval of the Maine Land Use Planning Commission. Any variation from the application or the conditions of approval undertaken without approval of the Commission constitutes a violation of Land Use Planning Commission law.

3. Construction activities authorized in this permit must be substantially started within two (2) years of the effective date of this permit and substantially completed within five (5) years of the effective date of this permit. If such construction activities are not started and completed within this time limitation, this permit shall lapse and no activities shall then occur unless and until a new permit has been granted by the Commission.

4. The recipient of this permit ("permittee") shall secure and comply with all applicable licenses, permits, and authorizations of all federal, state and local agencies including, but not limited to, natural resources protection and air and water pollution control regulations and the Subsurface Wastewater Disposal Rules of the Maine Department of Environmental Protection and the Maine Department of Human Services.

5. Setbacks of all structures, including accessory structures, from waterbodies, roads and property boundary lines must be as specified in conditions of the permit approval.

6. In the event the permittee should sell or lease this property, the buyer or lessee shall be provided a copy of the approved permit and advised of the conditions of approval. The new owner or lessee must contact the Land Use Planning Commission to have the permit transferred into his/her name and to reflect any changes proposed from the original application and permit approval.

7. The scenic character and healthful condition of the area covered under this permit must be maintained. The area must be kept free of litter, trash, junk cars and other vehicles, and any other materials that may constitute a hazardous or nuisance condition.

8. The permittee shall not advertise Land Use Planning Commission approval without first obtaining Commission approval for such advertising. Any such advertising shall refer to this permit only if it also notes that the permit is subject to conditions of approval.

9. Once construction is complete, the permittee shall notify the Commission that all requirements and conditions of approval have been met. The permittee shall submit all information requested by the Commission demonstrating compliance with the terms of the application and the conditions of approval. Following notification of completion, the Commission's staff may arrange and conduct a compliance inspection.

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M. EROSION AND SEDIMENTATION CONTROL

The standards set forth below must be met for all development that involves filling, grading, excavation or other similar activities which result in unstabilized soil conditions.

1. General Standards.

a. Soil disturbance shall be kept to a practicable minimum. Development shall be accomplished in such a manner that the smallest area of soil is exposed for the shortest amount of time possible. Operations that result in soil disturbance shall be avoided or minimized in sensitive areas such as slopes exceeding 15% and areas that drain directly into water bodies, drainage systems, water crossings, or wetlands. If soil disturbance is unavoidable, it shall occur only if best management practices or other soil stabilization practices equally effective in overcoming the limitations of the site are implemented.

b. Whenever sedimentation is caused by stripping of vegetation, regrading, or other construction-related activities, sediment shall be removed from runoff water before it leaves the site so that sediment does not enter water bodies, drainage systems, water crossings, wetlands, or adjacent properties.

c. Soil disturbance shall be avoided or minimized when the ground is frozen or saturated. If soil disturbance during such times is unavoidable, additional measures shall be implemented to effectively stabilize disturbed areas, in accordance with an approved erosion and sedimentation control plan.

2. Design Standards.

a. Permanent and temporary erosion and sedimentation control measures shall meet the standards and specifications of the "Maine Erosion and Sediment Control BMPs" (Maine Department of Environmental Protection, March 2003) or other equally effective practices. Areas of disturbed soil shall be stabilized according to the "Guidelines for Vegetative Stabilization" (Appendix B of this chapter) or by alternative measures that are equally effective in stabilizing disturbed areas.

b. Clearing and construction activities, except those necessary to establish sedimentation control devices, shall not begin until all sedimentation control devices have been installed and stabilized.

c. Existing catch basins and culverts on or adjacent to the site shall be protected from sediment by the use of hay bale check dams, silt fences or other effective sedimentation control measures.

d. If streams will be crossed, special measures shall be undertaken to protect the stream, as set forth in Section 10.27,D.

e. Topsoil shall not be removed from the site except for that necessary for the construction of roads, parking areas, building excavations and other construction-related activities. Topsoil shall be stockpiled at least 100 feet from any water body.

f. Effective, temporary stabilization of all disturbed and stockpiled soil shall be completed at the end of each workday.

g. Permanent soil stabilization shall be completed within one week of inactivity or completion of construction.

h. All temporary sedimentation and erosion control measures shall be removed after construction activity has ceased and a cover of healthy vegetation has established itself or other appropriate permanent control measures have been implemented.

3. Erosion and Sedimentation Control Plan.

a. For development that occurs when the ground is frozen or saturated or that creates a disturbed area of one acre or more, the applicant must submit an erosion and sedimentation control plan for Commission approval in accordance with the requirements of Section 10.25,M,3,b,(2).

b. A Commission approved erosion and sedimentation control plan in conformance with these standards shall be implemented throughout the course of the project, including site preparation, construction, cleanup, and final site stabilization. The erosion and sedimentation control plan shall include the following:

(1) For activities that create a disturbed area of less than one acre:

(a) A drawing illustrating general land cover, general slope and other important natural features such as drainage ditches and water bodies.

(b) A sequence of construction of the development site, including clearing, grading, construction, and landscaping.

(c) A general description of all temporary and permanent control measures.

(d) Provisions for the continued maintenance of all control devices or measures.

(2) For activities that create a disturbed area of one acre or more:

(a) A site plan identifying vegetation type and location, slopes, and other natural features such as streams, gullies, berms, and drainage ditches. Depending on the type of disturbance and the size and location of the disturbed area, the Commission may require a high intensity soil survey covering all or portions of the disturbed area.

(b) A sequence of construction of the development site, including stripping and clearing; rough grading; construction of utilities, infrastructure, and buildings; and final grading and landscaping. Sequencing shall identify the expected date on which clearing will begin, the estimated duration of exposure of cleared areas, areas of clearing, installation of temporary erosion and sediment control measures, and establishment of permanent vegetation.

(c) A detailed description of all temporary and permanent erosion and sedimentation control measures, including, without limitation, seeding mixtures and rates, types of sod, method of seedbed preparation, expected seeding dates, type and rate of lime and fertilizer application, and kind and quantity of mulching for both temporary and permanent vegetative control measures.

(d) Provisions for the continued maintenance and inspection of erosion and sedimentation control devices or measures, including estimates of the cost of maintenance and plans for meeting those expenses, and inspection schedules.

4. Inspection.

a. For subdivisions and commercial, industrial or other non-residential development that occurs when the ground is frozen or saturated or that creates a disturbed area of one acre or more, provision shall be made for the inspection of project facilities, in accordance with Section 10.25,M,4,a,(1) or (2) below:

(1) The applicant shall hire a contractor certified in erosion control practices by the Maine Department of Environmental Protection to install all control measures and conduct follow-up inspections; or

(2) The applicant shall hire a Maine Registered Professional Engineer to conduct follow-up inspections.

b. The purpose of such inspections shall be to determine the effectiveness of the erosion and sedimentation control plan and the need for additional control measures.

c. Inspections shall be conducted in accordance with a Commission approved erosion and sedimentation control plan and the following requirements.

(1) Inspections shall be conducted at least once a week and after each rainfall event accumulating more than ½ inch of precipitation, until all permanent control measures have been effectively implemented. Inspections shall also be conducted (a) at the start of construction or land-disturbing activity, (b) during the installation of sedimentation and erosion control measures, and (c) at the completion of final grading or close of the construction season.

(2) All inspections shall be documented in writing and made available to the Commission upon request. Such documentation shall be retained by the applicant for at least six months after all permanent control measures have been effectively implemented.

d. Notwithstanding Section 10.25,M,4,a, development may be exempt from inspection if the Commission finds that an alternative, equally effective method will be used to determine the overall effectiveness of the erosion and sedimentation control measures.

B. VEGETATION CLEARING

Vegetation clearing activities not in conformance with the standards of this section may be allowed upon issuance of a permit from the Commission provided that such types of activities are allowed in the subdistrict involved. An applicant for such permit shall show by a preponderance of the evidence that the proposed activity, which is not in conformance with the standards of this section, shall be conducted in a manner which produces no undue adverse impact upon the resources and uses in the area.

The following requirements shall apply to vegetation clearing activities for any purpose other than road construction, road reconstruction and maintenance, wildlife or fishery management, forest management, agricultural management, public trailered ramps or hand-carry launches:

1. A vegetative buffer strip shall be retained within:

a. 50 feet of the right-of-way or similar boundary of any public roadway,

b. 75 feet of the normal high water mark of any body of standing water less than 10 acres in size, or any coastal wetland or flowing water draining less than 50 square miles, and

c. 100 feet of the normal high water mark of a body of standing water 10 acres or greater in size or flowing water draining 50 square miles or more.

2. Within this buffer strip, vegetation shall be maintained as follows:

a. There shall be no cleared opening greater than 250 square feet in the forest canopy as measured from the outer limits of the tree crown. However, a footpath is permitted, provided it does not exceed six (6) feet in width as measured between tree trunks, and, has at least one bend in its path to divert channelized runoff.

b. Selective cutting of trees within the buffer strip is permitted provided that a well-distributed stand of trees and other natural vegetation is maintained.

For the purposes of this section a "well-distributed stand of trees" adjacent to a body of standing water 10 acres or greater in size shall be defined as maintaining a rating score of 24 or more in a 25-foot by 50-foot rectangular area as determined by the following rating system.

Near other water bodies, tributary streams and public roadways a "well-distributed stand of trees" shall be defined as maintaining a rating score of 16 or more per 25-foot by 50-foot (1250 square feet) rectangular area as determined by the following rating system.

Diameter of Tree at 4-1/2 feet Above Ground Level (inches)	**Points**
2.0 to < 4.0	1
4.0 to < 8.0	2
8.0 to < 12.0	4
12.0 +	8

Table 10.27,B-1. Rating system for a well-distributed stand of trees.

The following shall govern in applying this rating system:

(1) The 25-foot x 50-foot rectangular plots shall be established where the landowner or lessee proposes clearing within the required buffer;

(2) Each successive plot shall be adjacent to but not overlap a previous plot;

(3) Any plot not containing the required points shall have no vegetation removed except as otherwise allowed by these rules;

(4) Any plot containing the required points may have vegetation removed down to the minimum points required or as otherwise allowed by these rules; and

(5) Where conditions permit, no more than 50% of the points on any 25-foot by 50-foot rectangular area may consist of trees greater than 12 inches in diameter.

For the purposes of this section, "other natural vegetation" is defined as retaining existing vegetation under 3 feet in height and other ground cover and retaining at least 5 saplings less than 2 inches in diameter at 4½ feet above ground level for each 25-foot by 50-foot rectangular area. If 5 saplings do not exist, the landowner or lessee may not remove any woody stems less than 2 inches in diameter until 5 saplings have been recruited into the plot. In addition, the soil shall not be disturbed, except to provide for a footpath or other permitted use.

c. In addition to Section 10.27,B,2,b above, no more than 40% of the total basal area of trees 4.0 inches or more in diameter, measured at 4½ feet above ground level, may be removed in any ten (10) year period.

d. Pruning of live tree branches is prohibited, except on the bottom 1/3 of the tree provided that tree vitality will not be adversely affected.

e. In order to maintain a buffer strip of vegetation, when the removal of storm-damaged, diseased, unsafe, or dead trees results in the creation of cleared openings in excess of 250 square feet, these openings shall be established with native tree species.

3. At distances greater than one hundred (100) feet, horizontal distance, from the normal high water mark of a body of standing water greater than 10 acres, no more than 40% of the total basal area of trees four inches or more in diameter, measured at 4½ feet above ground level, may be removed in any ten (10) year period. In no instance shall cleared openings exceed, in the aggregate, 10,000 square feet, including land previously cleared. These provisions apply to areas within 250 feet of all bodies of standing water greater than ten (10) acres, and to the full depth of the P-AL zone. This requirement does not apply to the development of uses allowed by permit.

4. Cleared openings legally in existence as of June 7, 1990 may be maintained, but shall not be enlarged except as permitted by these regulations.

5. When revegetation is required: (i) in response to violations of the vegetation standards set forth in Section 10.27,B,1 through 4; (ii) to address the removal of non-native invasive species of vegetation; (iii) as a mechanism to allow for development by permit that exceeds the vegetation standards of Section 10.27,B or the cleared opening standards of Section 10.27,Q,1,Table A,(4), including removal of vegetation in conjunction with a shoreline stabilization project; or (iv) as part of a mitigation plan for clearing associated with a recreational lodging facility, the revegetation must comply with the following requirements.

a. The property owner must submit a revegetation plan, prepared with and signed by a qualified professional (examples include: arborist, forester, landscape architect, U.S.D.A. Natural Resources Conservation Service), that describes revegetation activities and maintenance. The plan must include a scaled site plan depicting where vegetation was, or is to be removed, where existing vegetation is to remain, and where vegetation is to be planted, including a list of all vegetation to be planted.

b. Revegetation must occur along the same segment of shoreline and in the same area where vegetation was removed and at a density comparable to the pre-existing vegetation, except where a shoreline stabilization activity does not allow revegetation to occur in the same area and at a density comparable to the pre-existing vegetation, in which case revegetation must occur along the same segment of shoreline and as close as possible to the area where vegetation was removed. When part of a mitigation plan, revegetation must occur along the same segment of shoreline, road, or other resource affected by proposed uses or development, and at a density and configuration comparable to other naturally occurring forests on the site or in the vicinity.

c. Revegetation activities must meet the following requirements for trees and saplings:

(1) All trees and saplings removed must be replaced with native noninvasive species;

(2) Replacement vegetation must at a minimum consist of saplings;

(3) If more than three trees or saplings are planted, then at least three different species shall be used;

(4) No one species shall make up 50% or more of the number of trees and saplings planted;

(5) If revegetation is required for a shoreline stabilization project, and it is not possible to plant trees and saplings in the same area where trees or saplings were removed, then trees or sapling must be planted in a location that effectively reestablishes the screening between the shoreline and structures; and

(6) A survival rate of at least 80% of planted trees or saplings is required for a minimum five years period from the time of planting. Replanting of trees or saplings that did not survive does not trigger a new five year period.

d. Revegetation activities must meet the following requirements for woody vegetation and other vegetation under three feet in height:

(1) All woody vegetation and vegetation under three feet in height must be replaced with native noninvasive species of woody vegetation and vegetation under three feet in height as applicable;

(2) Woody vegetation and vegetation under three feet in height shall be planted in quantities and variety sufficient to prevent erosion and provide for effective infiltration of stormwater;

(3) If more than three woody vegetation plants are to be planted, then at least three different species shall be planted;

(4) No one species shall make up 50% or more of the number of planted woody vegetation plants; and

(5) Survival of planted woody vegetation and vegetation under three feet in height must be sufficient to remain in compliance with the standards contained within this chapter for a minimum of five years from the time of planting. Replanting of trees or saplings that did not survive does not trigger a new five year period.

e. Revegetation activities must meet the following requirements for ground vegetation and ground cover:

(1) All ground vegetation and ground cover removed must be replaced with native herbaceous vegetation, in quantities and variety sufficient to prevent erosion and provide for effective infiltration of stormwater;

(2) Where necessary due to a lack of sufficient ground cover, an area must be supplemented with a minimum four inch depth of leaf mulch and/or bark mulch to prevent erosion and provide for effective infiltration of stormwater; and

(3) Survival and functionality of ground vegetation and ground cover must be sufficient to remain in compliance with the standards contained within Section 10.27,B for a minimum of five years from the time of planting.

f. The applicant may propose, and the Commission may approve or require, variations from the standards in Section 10.27,B,5,c through e if necessary to achieve effective buffering. The Commission may exempt an individual, whether an applicant or violator, from the requirement that the revegetation plan be prepared by a qualified professional in accordance with Section 10.27,B,5,a, when the proposed revegetation is routine and would not affect a particularly sensitive resource.

F. FILLING AND GRADING

The following requirements for filling and grading shall apply in all subdistricts except as otherwise provided herein.

Filling and grading activities not in conformance with the standards of this section may be allowed upon issuance of a permit from the Commission provided that such types of activities are allowed in the subdistrict involved. An applicant for such permit shall show by a preponderance of the evidence that the proposed activity, which is not in conformance with the standards of this section, shall be conducted in a manner which produces no undue adverse impact upon the resources and uses in the area.

These standards do not apply to filling or grading activities which constitute forest or agricultural management activities, the construction, reconstruction and maintenance of roads, or the construction of public trailered ramps, hand-carry launches, or driveways. Such activities are separately regulated.

1. Within 250 feet of water bodies and wetlands, the maximum size of a filled or graded area, on any single lot or parcel, shall be 5,000 square feet. This shall include all areas of mineral soil disturbed by the filling or grading activity; and

2. Beyond 250 feet from water bodies and wetlands, the maximum size of filled or graded areas, as described above, shall be 20,000 square feet, except that there shall be no limit to the size of filled or graded areas in M-GN subdistricts which are greater than 250 feet from water bodies and wetlands. In such M-GN subdistrict areas, the provisions of Section 10.27,F,4 and 6 shall apply; and

3. Clearing of areas to be filled or graded is subject to the clearing standards of Section 10.27,B; and

4. Imported fill material to be placed within 250 feet of water bodies shall not contain debris, trash, rubbish or hazardous or toxic materials. All fill, regardless of where placed, shall be free of hazardous or toxic materials; and

5. Within 250 feet of major flowing waters, bodies of standing water and P-WL1 wetlands, the sustained slope between the normal high water mark or the upland edge of the resource and the soil disturbance shall be no greater than 20%. For the purposes of this standard, sustained slope means a change in elevation where the referenced percent grade is substantially maintained or exceeded throughout the measured area. The provisions of this paragraph apply only to a face sloping toward the water body or wetland; and

6. Where filled or graded areas are in the vicinity of water bodies or wetlands, such filled or graded areas shall not extend closer to the normal high water mark of a flowing water, a body of standing water, a coastal wetland, or the upland edge of freshwater wetlands identified as P-WL1 subdistrict than the following:

a. For a minor flowing water, body of standing water less than 10 acres in size, coastal wetland, or freshwater wetland: 75 feet; and

b. For a major flowing water and body of standing water 10 acres or greater in size: 100 feet.

7. All filled or graded areas shall be promptly stabilized to prevent erosion and sedimentation.

Filled or graded areas, including all areas of disturbed soil, within 250 feet of water bodies and wetlands, shall be stabilized according to the Guidelines for Vegetative Stabilization contained in Appendix B of this chapter.

APPENDIX B GUIDELINES FOR VEGETATIVE STABILIZATION

Areas of disturbed soil, including but not limited to areas that are filled, graded or otherwise disturbed during construction projects, should be stabilized according to the following guidelines. These guidelines do not apply to forest management activities and are not strict regulations, and therefore alternative methods of stabilizing soil may be used. However, whenever soil stabilization or stabilization of disturbed areas is required by regulation or by the terms of individual permits, individuals must assure that either these guidelines, or measures equally effective in stabilizing disturbed areas of soil are employed.

The goals to be achieved by proper stabilization are the avoidance of accelerated soil erosion and the avoidance of sedimentation or pollution of water bodies. All stabilization measures must be maintained so that grass or other vegetation remains intact and healthy, otherwise these measures will be ineffective.

In general:

1. Sterile soils such as sands and gravels should be covered with 2 to 4 inches of soil medium that will support vegetative growth.

2. Disturbed soil areas should be graded such that runoff water is either minimized or eliminated from running over the site.

3. Disturbed areas which can be seeded between May 1 and September 15 should be prepared and seeded during that period.

4. Disturbed areas which cannot be seeded between May 1 and September 15 should be mulched with hay, straw or some other suitable material to keep them as stable as possible over the winter, and particularly during spring runoff the following year. For over-wintering, mulch must be tacked down, as it is easily blown around on frozen ground, leaving areas of soil exposed. Mulch hay should be applied at a depth of 4 inches, or between 150 to 200 lbs. per 1,000 square feet, over the disturbed site. Mulched over-wintered areas should be prepared and seeded the following spring as soon as conditions allow.

   It is not recommended that disturbed areas be seeded after September 15th ("dormant seeding") for a number of reasons. Among the reasons, seeding rates are doubled, which is more expensive; timing is critical to ensure that germination does not occur before the following spring; there is an increased risk of sedimentation because sites are generally wetter in the fall; the thicker mulch must be removed in the spring in order to allow the germinating seed to survive; and the application of fertilizer during this time increases the risk of leaching or runoff loss of nutrients into water bodies.

5. Seeding preparation, in addition to providing a soil medium that will support vegetative growth if the site is sterile, includes the application of lime and fertilizer, which should be lightly raked prior to seeding. After the area is seeded, it should be lightly watered and then mulched with 70 to 90 lbs. (2 standard bales) per 1,000 square feet of weed free hay or straw to protect the seed. Keep the site stable and moist, and allow the seed to germinate and grow.

6. For accurate liming as well as fertilization, it is recommended that you have the soil analyzed to determine the specific nutrient requirements of your site.

   Lime should be applied at a rate of approximately 140 pounds to 1,000 square feet of area. This rate may vary depending on the natural conditions of the soil on the site. 10-5-20 fertilizer should be applied at a rate of 18.5 lbs. per 1,000 square feet of area. Following the establishment of vegetation, non-phosphorous fertilizer should be used in accordance with the Department of Environmental Protection's recommendations.

7. In shoreland areas in particular, fertilizers should be of the "quick release" low phosphorus type, such as 12-4-8 mixtures applied at a rate of 8 pounds per 1,000 square feet of area. If you are near water bodies, it is important not to apply more than approximately this amount of fertilizer, as excess may be washed into streams or lakes and contribute to lowering water quality and such things as algae blooms in lakes.

   Following the establishment of vegetation, non-phosphorous fertilizer should be used in accordance with the Department of Environmental Protection's recommendations.

   Fertilizers should never be applied right before thunder storms or before spring runoff, because the great amounts of water running over the land will wash the fertilizer, particularly phosphorus, into water bodies. However, a light watering after the fertilizer is applied will help bind the phosphorus to the soil.

8. There are many combinations of grasses that can be used. One combination particularly good for providing soil stability, generally referred to as the Soil Conservation Mixture, consists of: (Proportions, by weight)

Creeping Red Fescue	35%	Kentucky Bluegrass	25%
Annual Rye Grass	15%	Perennial Rye Grass	10%
Red Top	10%	White Dutch Clover	5%
* Oats - See Below			

   This seed would be applied at a rate of 1 pound per 1,000 square feet. These particular grasses do best if mowed no closer than 2-1/2 to 3 inches from the ground. Of course, other seed mixtures are available.

   It is important, in choosing a mixture, to choose one suitable for the site being stabilized. There are many different types of seeding mixtures designed for particular site conditions such as shade, sun, and drainage. Any mix should contain some seed which germinates rapidly to provide the quickest stabilization possible while awaiting the germination of the remaining types.

(*) For quick germination, oats are very good. They germinate in 7 to 10 days. They should be planted at a rate of approximately 1 to 1-1/2 bushels per acre, in addition to the basic grass mixture. Oats should be mowed when they reach knee height to allow the germinating grasses to receive sunlight.

Alternatives:

As indicated above, other stabilization programs may be used, provided they are equivalently effective in stabilizing disturbed areas and preventing accelerated soil erosion and sedimentation of water bodies. Further assistance may be obtained, including in some cases site-specific recommendations, as follows:

- Local Soil and Water Conservation Districts
- The USDA Natural Resource Conservation Service
- Maine Department of Environmental Protection, Lakes Program
- Landscaping Professionals
- Reputable Lawn and Garden Supply Dealers

The following documents may provide valuable assistance to those developing a soil stabilization plan:

Maine Erosion and Sediment Control Handbook for Construction: Best Management Practices (Cumberland County Soil & Water Conservation District and Maine Department of Environmental Protection, 1991)

Strategy for Managing Nonpoint Source Pollution From Agricultural Sources and Best Management Guidelines (NPS Agricultural Task Force, 1991)

Erosion and Sediment Control Handbook for Maine Timber Harvesting Operations, Best Management Practices (Maine Forest Service, 1991)