TransCanada Maine Wind Development Inc.

Kibby Wind Power Project

Erosion and Sedimentation Control Plan

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1.0 INTRODUCTION

TransCanada has prepared this Erosion and Sedimentation Control Plan (E&S Plan) as part of its application for development of the 115 kilovott (kV) transmission line for the Kibby Wind Power Project. The proposed transmission line route is 27.7 miles long and extends from the proposed Kibby Substation (Milepost 0.0) at the base of the Kibby Range in Kibby Township to the existing CMP Bigelow Substation (Milepost 27.7) located just east of Route 27 in Carrabassett Valley. The proposed route consists of two segments. The first segment extends from milepost 0.0 to 21.7 and is virgin right-of-way (ROW) located predominantly within working forest. The second segment is approximately 6 miles long and parallels an existing 115 kV electric transmission line ROW. The majority of this segment is also within working forest.

This E&S Plan contains erosion and sedimentation control requirements, standards, and methods that will be used to protect soil and water resources during construction of the proposed transmission line. This E&S Plan is largely based on Land Use Regulation Commission (LURC) standards in Chapter 10.25 and 10.27; the Maine Department of Environmental Protection's (DEP) *Maine Erosion and Sediment Control Best Management Practices* (BMPs), dated March 2003; and specific BMPs appropriate for electric transmission line construction.

The primary goals of any erosion and sedimentation control plan are to minimize soil movement and loss, preserve the integrity of environmentally sensitive areas, and maintain existing water quality. This document will supply TransCanada personnel and their representatives and contractors with a single, cohesive set of erosion control specifications for the 115 kV transmission line associated with the Kibby Wind Power Project. This document is designed to provide specifications for the installation and implementation of soil erosion and sedimentation control measures while allowing adequate flexibility for application of the most appropriate measures based on site-specific conditions. All bid packages and contracts for work performed on the 115 kV transmission line for the Kibby Wind Power Project will include these specific guidelines to ensure the work is completed in an environmentally sensitive manner. TransCanada personnel and their representatives will ensure that the procedures contained in this E&S Plan are followed by regularly inspecting all work and requiring corrective action when necessary.

Implementation of the following objectives is required to achieve the goals of this plan:

- Minimize the extent and duration of disturbance;
- Protect exposed soil by diverting runoff to stabilized areas;
- Install temporary and permanent erosion control measures (including site restoration); and
- Establish an effective inspection and maintenance program.

The remainder of this E&S Plan is organized as follows:

- Section 2.0 describes the planning and design considerations that are utilized to minimize the potential for soil erosion and sedimentation into protected natural resources during construction of the project;
- Section 3.0 provides the general construction sequence for the project, including the implementation of erosion and sedimentation control measures;
- Section 4.0 describes the typical construction techniques used to minimize the potential for erosion and sedimentation;
- Section 5.0 provides the specific types of wetland and waterbody crossing methods to be used during construction;
- Section 6.0 describes the specific water diversion structures to be used, primarily water bars;
- Section 7.0 includes detailed descriptions of the types and proper installation of structural methods for erosion and sedimentation control;
- Section 8.0 provides detailed descriptions of the types and proper application of nonstructural erosion and sedimentation control measures;
- Section 9.0 describes the modified techniques and application of control measures to be used during winter time construction (November 1 through April 15 of any given year);
- Section 10.0 summarizes restoration procedures for the 115 kV transmission line ROW;
- Section 11.0 provides details of the multiple levels of supervision and inspection for compliance with environmental requirements that will be implemented during construction; and
- Section 12.0 describes the environmental training program for construction contractors and subcontractors.

This document includes appendices that contain: definitions of scientific and technical terms; a list of project contact personnel; illustrations of proper application of erosion and sedimentation control techniques along with illustrations of improper application as a basis for comparison; site-specific erosion and sedimentation control drawings; and other generic and specific references to ensure the proper and adequate implementation of erosion and sedimentation control methods during construction activities. All scientific and technical terms used in this document are defined in Appendix A. This is the preliminary E&S Plan and it will be updated and finalized to reflect the final project design and issues identified through the course of project review prior to approval.

2.0 PLANNING AND DESIGN CONSIDERATIONS

2.1 Resource Identification

Sensitive natural areas that will receive priority treatment include:

- Streams and rivers;
- Wetlands;
- Waterbody and wetland buffers;
- Significant Wildlife Habitat; and
- Habitat for rare species.

Sensitive natural areas that may receive priority treatment, depending upon the specific construction activities and timing of the project, include:

- Steep slopes;
- Unstable soil conditions; and
- Areas that have high potential to be prehistoric sites (e.g., well-drained soils on terraces overlooking streams and rivers).

Wetland delineation efforts, vernal pool surveys, and inventories of other sensitive natural resources have been completed and sensitive natural areas that require priority treatment have been identified. Procedures for avoiding or crossing sensitive natural areas will be incorporated into construction planning to ensure that the E&S Plan is properly implemented. Construction plans are designed and drawn to provide contractors and inspectors with a comprehensive reference guide that includes, but is not limited to, locations of sensitive natural areas, access, and abutter and landowner information. If modifications to the plans need to be made in the field, the TransCanada project environmental manager (identified in Appendix B) will make necessary changes and will notify all necessary personnel.

Copies of the construction plans will be provided and explained to construction foremen and equipment operators to ensure that construction practices meet the intent of avoiding or minimizing impacts to the identified sensitive natural areas. In addition to the plans, the proposed access ways and water/wetland crossing locations, as well as other environmentally sensitive areas where activities will be restricted or prohibited, will be flagged and/or will have signs posted in the field.

Prior to any clearing or construction work in or near any sensitive natural areas, a "walk-through" will be conducted. Typically, "near" a sensitive area is defined as within 100 feet of the closest edge of the resource, although more distant resources may be considered where steep slopes or easily eroded soils are present. Attendees at the walk-through will include: 1) the contractor; 2) TransCanada personnel and/or any designated representative(s); and may include 3) agency representatives (e.g., LURC staff, DEP project manager, U.S. Army Corps of Engineers [USACE] personnel). The purpose of the walk-through is to achieve the following objectives:

- Review available or alternate points of access;
- Review sensitive natural areas within or adjacent to the transmission line ROW and project access;
- Review wetland and stream locations in order to confirm appropriate crossing methods (mats, frozen ground, tracked equipment) where unavoidable;
- Review the locations of rare plants;
- Review appropriate methods to be used to protect sensitive areas in accordance with the specifications in this plan;
- Identify future "No-Access" areas and buffers;
- Review color designation for all flagging used;
- Establish the Communication Chain of Command (Contact Point); and
- Identify routes and flag within ROW construction roads.

In order to minimize impacts to sensitive natural areas, the above objectives will continually be evaluated throughout the construction process. Project superintendents, foremen, and inspectors will also monitor weather conditions and reports on an on-going basis. Knowledge of changing or anticipated wet weather will allow time to plan for and address erosion control needs. In this way, TransCanada and its contractors will be prepared to respond to changing environmental conditions (e.g., unusually wet or dry weather) and other unknowns that are inherent in any construction project.

2.2 "Walk-Through" Mechanics

2.2.1 Use of Flagging and Signs

Flagging of no-access areas and travel ways will be conducted at the time of the walk-through in order to identify visually select features or construction methods to be used. All wetlands and streams crossed by the transmission line were flagged earlier as part of the wetland delineation effort; where replacement flagging is required, it will be provided. During the walk-through it is especially important to identify areas with water that are not protected resources (i.e., not wetlands or streams), as such areas are common in the project area during rain events or snow melt. These can be problematic areas for equipment access and, unless identified and crossed properly, may pose erosion and sedimentation problems. Signs will also be installed following the walk-through to direct construction to approved access routes and away from "no-access" areas. The Kibby Wind Power Project flagging color-code is as follows:

- ***Glow-pink*** with the printed words "Wetland Delineation," "Wetland Boundary" or "Wetlands" denotes the edge of wetlands. Each flag has a field team, wetland identification, and flag sequence number noted as designated during the delineation and can be cross-referenced to field notes, photos, and wetland impact data.
- ***Yellow*** without printed words denotes the location of a stream or river channel and will have a stream designation written on each as with the wetland delineation flags. The yellow flags were tied at the centerline of each stream or on the banks of larger streams and rivers. For each of these resources, specific vegetation management buffers are required that restrict vegetation removal and will require environmental measures such as water bars, erosion control mulching, or silt fence.
- ***Red*** with or without the printed words – "Do Not Cross" – denotes a No-Access Area where no equipment is allowed.
- ***Glow-green*** with no printed words denotes approved travel ways. This is typically flagged on each side of the access-way to denote the designated travel lane for all access.
- ***Glow-pink with black stripes***, or otherwise printed with the words *"Waterbody Buffer"* or *"Stream Buffer,"* denotes a setback from a water resource and will be treated the same

as a No-Access Area. It also designates the area where special clearing and vegetation maintenance requirements apply at designated waterbodies and streams (Section 4.3).

2.2.2 Identification and Use of Access

TransCanada will utilize existing public roads, maintained logging roads, or dormant logging roads to access the ROW. These roads provide access for equipment to travel back and forth to the ROW for clearing and construction activities. The access roads were selected to avoid natural resource impacts to the greatest extent practicable. Improvements to these access roads will be limited to trimming overhanging vegetation, replacing damaged or malfunctioning culverts, and installing temporary mats or bridges over wetlands and streams as needed to allow safe, reliable passage of construction equipment and materials. In a limited number of areas, additional gravel may need to be added to logging road surfaces to improve the road for passage of construction equipment. This will help prevent rutting and off-road sedimentation. Any new gravel and grading will be limited to that necessary to maintain a safe and reliable road surface and will not be placed in protected resources such as wetlands. Temporary access roads are depicted on the Construction Access Roads map (Figures 1A – 1D). Temporary points of access to the ROW are also shown on the project Plan and Profile drawings, provided in Volume V (Exhibit V-D) of the Kibby Wind Power Project LURC application (the LURC Application).

The movement of equipment and materials within the transmission line ROW will be confined as much as possible to a single road or travel corridor. Construction equipment will utilize the off-ROW access roads to the maximum extent practicable to cross or bypass large wetlands and waterbodies. Wetland and waterbody crossings within the ROW will be kept to the minimum number and length, as determined during the preconstruction walk-through. Wetland and waterbody crossings will be sited to minimize the span of a wetland or stream crossing, and to avoid the more environmentally sensitive portions of a wetland or stream. These crossings will be done on temporary bridges or equipment mat bridges, and no permanent crossings will be established.

In all cases, TransCanada and its contractors will avoid and minimize impacts to sensitive natural areas to the greatest extent practicable. As a result of this planning and preconstruction walk-through process, wetland and stream crossings, steep slopes, unstable soils, and other sensitive natural areas will be avoided to the extent possible and adverse impacts minimized.

3.0 GENERAL CONSTRUCTION SEQUENCE

3.1 Transmission Line

Construction of the proposed 115 kV transmission line will consist of two main stages. The first stage is the clearing of vegetation, followed by the installation stage. Implementation of these two stages will be done by section (e.g., Mile 0 to Mile 1.5), according to site conditions. An on-site project manager will dictate the day to day activities during both stages. The project manager's responsibilities include ensuring compliance with all applicable environmental standards and conditions of agency permits.

The 115 kV transmission line will consist of a 150-foot-wide ROW cleared of overstory vegetation through the working forest. For the portions of the proposed transmission line route adjacent to existing ROW, a clearing 125 feet wide is necessary. All clearing will be done in accordance with the Vegetation Management Plan (Appendix V-B of the LURC Application).

Pole structure construction work areas will not be grubbed or cleared of brush, unless leveling of the area is required. The only soil disturbance will be associated with the drilling/excavation of a hole for the installation of poles and, in some cases, due to the need to level the work area or for access along and adjacent to the ROW. Appropriate erosion and sedimentation control measures will be installed prior to ground disturbance, as determined during the site walk-through.

After clearing and preparation of the ROW, the first step in line construction is to erect the poles. The primary pole structure will be wooden H-frames which consist of two in-ground poles connected by cross members. Some poles will be erected by drilling a hole with an auger, placing the pole in the hole and backfilling around the pole with any excess soil material. This backfill is tamped in (or packed down) to provide a firm base. Other poles will be erected using a small excavator to excavate approximately 5.5 cubic yards of material, allowing each pole to be placed up to 10 feet deep. The excavated area around the poles will then be backfilled. This backfill is also tamped in to provide a firm base. The use of heavy earth moving equipment such as bulldozers will not be required. In all cases, poles are buried to a depth equaling 10 percent of their length, plus two feet (for example, an 80-foot pole would be buried 10 feet [8 feet plus 2 feet]). Specific locations of poles within the ROW are depicted on the project Plan and Profile Drawings (see Exhibit V-D of the LURC Application). Note that the majority of these

structures are made up of two or three poles, but the locations on the Plan and Profile are depicted as single points.

It will likely be necessary to blast ledge and large rocks at a number of locations during construction of the 115 kV transmission line. Blasting will be limited to pole locations where bedrock is exposed or shallow, and may be necessary to move or break up large boulders in order to provide access to pole locations. Sample blasting specifications are provided in Appendix 5-C of the LURC Application.

On occasion, it may be necessary to create level work pads for the equipment in order to allow for proper (vertical) and safe installation of pole structures. In most cases appropriate topography exists. However, in locations where the terrain is not level, it is expected that a level working area will need to be created by pulling material (rocks and soil) from the area immediately adjacent to the pole location to create level and safe working conditions. These activities will be limited to only those places where the topography is too steep to allow equipment to level itself. All necessary erosion and sedimentation control measures will be installed at areas requiring leveling and will be left in place until the area is restored to original contours and stabilized.

Guy wires will be anchored in the ground and attached to angle pole structures to off-set any tension that is transferred from the conductor (electrical wire) to each angle pole. Anchors are generally screwed into the ground or buried and attached to steel cables, which are attached directly to the poles. All necessary erosion and sedimentation control measures will be installed at anchor locations and will be left in place until the area is stabilized.

The horizontal insulators which hold the conductors are installed prior to placement of the poles and do not require any onsite work. The next step involves running a pull line (a rope known as a “p-line”) along pulleys attached to each insulator. In all sensitive areas, the p-line will be pulled across the resource by construction personnel “walking” the line across, to avoid unnecessary crossing of the resource by construction equipment and to minimize impacts. This is particularly true along streams and larger wetlands. The p-lines are then connected to the conductors, which are pulled from pole to pole until they are run the entire length of the line. The last step involves attaching the conductors into each insulator.

The time needed for the installation of each pole structure (including excavating, placing the pole, backfilling, seeding, and mulching) is less than one day. To the extent possible, work within inundated or saturated wetlands will be limited to the winter months to take advantage of frozen ground conditions. All work areas will be restored and stabilized after construction work in those areas is completed.

3.2 Erosion and Sedimentation Control Implementation Schedule

The best method to limit erosion and sedimentation is to prevent it from occurring by protecting exposed soils or sensitive areas. The location of the limits of work and sensitive resource areas along the ROW are shown on the project Plan and Profile drawings (Exhibit V-D of the LURC Application). The placement and types of erosion control measures will be determined during the preconstruction walk-through. The following general sequence of work will be followed to mitigate the potential for erosion of exposed soils and/or discharge of sediment-laden water from the work area.

1. Conduct a walk-through of the ROW to establish limits of work for construction activity; identify and mark sensitive resources and the location of travel lanes.
2. Complete and stabilize with gravel any needed access road improvements.
3. Install and stabilize equipment crossings over wetlands and waterbodies, in accordance with Section 5.0 and the BMPs.
4. Clear timber and brush. No grubbing will be necessary unless the area requires leveling.
5. Install silt fencing, stump grindings, composted erosion control mix, or other appropriate sedimentation control barriers in accordance with Section 7.0 and the BMPs.
6. Construct temporary or permanent water bars, if needed, and stabilize in accordance with Section 6.0 and the BMPs.
7. Level and stabilize construction areas and conduct any blasting, as needed.
8. Excavate for the poles. Pump excavation seepage and runoff to a temporary sedimentation trap, prior to discharge to a well-vegetated upland area. Control and direct runoff from the excavation areas using water bars, berms, or hay bales.
9. Monitor any paved public road, used for access, for signs of tracking and spilling of spoils on the roadway. Construct a stabilized construction entrance if required.
10. Complete pole and conductor installation.

11. Stabilize disturbed soils associated with temporary wetland and stream crossings in accordance with the Section 10.0 and the BMPs within 48 hours of removal of the temporary crossing.
12. Loam, seed, mulch, and anchor all exposed soils, as necessary, within 7 days of final grading in accordance with the Section 10.0 and the BMPs.

4.0 STANDARDS FOR CONSTRUCTION

4.1 Travel Lanes, Laydown, and Yarding Areas

The following six standards apply to the location of travel corridors and location and/or upgrade of all roads, yarding areas, and construction laydown areas or work pads.

1. Vegetated Buffers Between Work Areas and Water Resources. Where travel lanes or work areas will be located near water resources, such that material or soil may be washed into them, these disturbances will be set back from the edge of the water resource to maximize the amount of vegetated buffer between the disturbed area and the resource. These "filter strips" will consist of an area of undisturbed vegetation between the edge of disturbed area and/or silt fence/hay bale barriers placed to intercept any sediment load in runoff water before it can enter the resource area. Table 1 below provides the recommended widths for the filter strips according to the slope of land between the edge of the resource and any exposed soil.

TABLE 1. RECOMMENDED FILTER STRIP WIDTHS BETWEEN DISTURBED AREAS AND WATER RESOURCES

Slope of Land Between Disturbance and the Resource (Percent)	Width of Filter Strip* (Feet)
0	25
10	45
20	65
30	85
40	105
50	125
60	145
70	165

*Measured along surface of the ground

2. Safe Work on Steep Slopes. Wherever possible, construction equipment will either avoid steep slopes or proceed across the slope in a safe manner to avoid excessive disturbance of vegetation and soils. Equipment will not travel straight up or down any slopes with a grade steeper than 10 percent, except where necessary due to safety concerns and/or terrain and other access constraints.

3. Slope Stabilization. Where travel lanes or construction areas cross slopes, the area will be properly stabilized and maintained to retain the existing surface drainage.

4. Finish Grade Slope Restrictions. Slopes of leveled areas will be no steeper than 2 horizontal to 1 vertical (2:1).

5. Minimize Wetland and Water Resource Crossings. Rivers, streams, and wetland areas will be crossed, where necessary, at right angles to the channel and/or at points of minimum impact. To ensure that natural drainage patterns will not be altered or restricted as a result of construction activities, crossings will be designed and constructed according to specific standards outlined below.

6. Limit, Monitor and Restore Work in Waterbody Buffers. In cases where mobilized tree harvesting equipment (feller-buncher) is being used to remove trees, their limited reach may require access ways within waterbody buffers to enable cutting and removal of large trees across the entire ROW. Each of these situations will be reviewed on a case-by-case basis and the various options for vegetation cutting will be considered to minimize disturbance in the buffer zones. Plant species that are not capable of growing into the electric conductors (i.e., shrubs) will remain following the completion of clearing activities. Temporary erosion and sedimentation control measures will be implemented along the access ways, as required. As will be the case along the entire ROW, ground disturbance caused by the use of harvesting equipment will be repaired by returning the ground to its original contour, as needed, and seeding and mulching any bare ground.

4.2 Stream or Wetland Crossings

The following standards apply to all unavoidable stream, drainage way, or wetland crossings encountered while accessing the proposed work areas.

4.2.1 Types of Crossings Used

The type of crossing used for access is dependent on: the purpose and use of the crossing; the nature of the resource being crossed; ground conditions present at the time of construction; and construction materials available. Some planning guidance is provided below. The appropriate means and location of the crossing will be determined at the time of the formal walk-through.

- Permanent culverts will be used only where long-term, continued, and frequent access is required. No permanent culverts will be installed along the ROW.
- Temporary crossings will be used at all other locations. Temporary bridges or equipment mats must be used to cross any streams, drainage ways, or wetlands that contain: (1) flowing water; (2) standing water; (3) saturated soils; or (4) organic/mucky soils. No equipment will operate in or travel through the water or on soft or saturated wetland soils.
- The use of corduroy as crossing material will be limited to wetlands not anticipated to have flowing or standing water or saturated soils during the construction period. The use of corduroy will be limited and must be pre-approved by a TransCanada representative. Equipment mats may be used in wetland crossings to reduce soil disturbance, especially when saturated soils or standing water are present. Typically, equipment mats are removed when construction is complete, during final restoration.
- All temporary waterbody crossings must be temporarily stabilized upon installation and permanently stabilized, as needed, within 48 hours of removal, unless specified otherwise.

4.2.2 Construction in Wetlands

If schedule allows, construction will be conducted during the winter to take advantage of frozen ground conditions. Otherwise, wide tracked or balloon-tired equipment will cross or work in wetlands using timber equipment mats. Where structures are to be placed in wetlands, topsoil will be excavated first, and stockpiled separate from subsoil. Soils will be replaced into the excavated area in the opposite order they were removed. After pole installation, topsoil will be restored to the original surface grade, except where mounding around a structure is necessary for structure stability.

4.3 Construction in Buffer Areas

Vegetative buffers of 100 feet (as measured from the top of both banks) will be established and maintained on perennial streams and rivers crossed by the 115 kV transmission line. Structures will only be located within these buffers as engineering standards require. Minimal soil disturbance will occur in the buffers. No vehicular traffic will be allowed in the buffers other than that necessary to remove trees and construct and utilize temporary equipment crossing bridges authorized during the walk-through. As described in Section 4.1, three access ways may be

required within these buffers during initial clearing to enable tree harvesting equipment to reach all trees that need to be removed. Each of these situations will be reviewed on a case-by-case basis and the various options for vegetation cutting will be considered to minimize disturbance in the buffer zones. All appropriate erosion and sedimentation controls will be implemented and maintained along these access ways during and following construction.

Construction activities within these waterbody buffers will be limited to the cutting of only species capable of growing into the electric conductors and large snags that are greater than 8 to10 feet tall (Figure 1, Appendix C). Cutting of these trees will be done by hand or by a feller-buncher reaching into the buffer from outside the zone, if possible, and from the three access ways as needed. Erosion control barriers will be established and maintained along the access ways within the buffers and along the approach to all stream crossings and will be supplemented, as appropriate, by water bars and/or erosion control barriers extending outside the buffer zone. The use of herbicides in waterbody buffers will not be allowed.

5.0 INSTALLATION OF CROSSINGS

5.1 Bridges

5.1.1 Materials

Typically bridge construction will entail the use of log stringers or equipment mats as construction materials covered by decking planks or equipment mats.

5.1.2 Sizing

Table 2 illustrates the log sizing requirements depending on the span and anticipated loads.

TABLE 2. LOG BRIDGE STRINGER REQUIREMENTS

Span	Minimum Log Diameter* (80,000 lb. Load)	(40,000 lb. Load)
8 ft.	16 in.	12 in.
12 ft.	18 in.	14 in.
16 ft.	20 in.	16 in.

Wheel guards: 10” diameter
- Size of deck planks: 4” x 12” x 12’
* Assume 6 stringers at 24” centers

5.1.3 Positioning

Figures 2 and 3 in Appendix C illustrate the proper use and installation of crossing bridges.

- Temporary bridges will cross streams at right angles to the channel at a location with firm banks and level approaches whenever possible.
- At the crossing location, the ends of the stringers will extend at least two feet onto firm banks or several feet into the upland edge of a wetland to ensure a dry, firm approach onto the bridge.
- Mats, corduroy logs or a stone pad installed on top of geotextile fabric will be used, where necessary, to provide a smooth transition for equipment travel from the adjacent ground or temporary road onto the bridge.
- Temporary bridges for the Kibby Wind Power Project will not require vertical support piers or abutments in a stream or inundated wetland.

5.1.4 Maintenance

Bridges will be continually monitored to ensure that they are stable and functioning correctly. Bridges will be kept clean and any accumulated soil materials will be removed and disposed of and stabilized in an upland location. The material will not be scraped and shoveled into the water resource. The contractor will replace timbers or decking in poor condition as soon as deterioration is observed. At a minimum, the contractor will be responsible for inspecting all bridges once per week and will keep a log of all changes, improvements, and other maintenance performed.

5.1.5 Removal

Bridges will not be removed until their use is no longer necessary. Tree cutting and final restoration work on and around the stream banks will be completed prior to removing the bridge from the crossings. The banks of streams and drainage ways will then be graded back to original conditions. Exposed soils on the banks and within 100 feet of the crossing will be stabilized using seed and mulch. Banks of drainage ways (excluding streams and rivers) that are expected to receive high flows will be stabilized with seed and curlex or jute matting (Figure 4, Appendix C). All bridges will be removed from the ROW upon completion of construction.

5.2 Culverts

No permanent culverts will be required for equipment access within the ROW. Temporary culverts may be installed as a means of equipment mat support for wide or deep stream crossings. Permanent culverts may be installed to replace existing damaged or malfunctioning culverts along existing access roads.

5.2.1 Materials

Permanent culverts will be either corrugated metal or plastic pipe. Temporary culverts will be corrugated metal, plastic pipe, or lumber ties. Chemically-treated wood will be not used.

5.2.2 Sizing

Culvert size will be determined by the largest pipe diameter equal to the undisturbed cross sectional area of the bank full condition of the stream. It should fit into the existing channel without major excavation of the waterway channel or without major approach fills. If a channel width exceeds 3 feet, additional pipes may be used until the cross sectional area of the pipes approaches that of the existing channel. The minimum size culvert that may be used is an 18-

inch diameter pipe. The maximum flow capacity of the culvert(s) ("bank full") will be determined at highest flows or will be approximated during periods of lower flows using the apparent natural high water marks remaining on the stream banks.

5.2.3 Positioning

The following guidelines will be used for the positioning of all permanent and temporary culverts:

- Culverts will be placed to allow for the crossing to take place at right angles to the channel to ensure that natural drainage patterns will not be altered.
- Culverts will be placed at the point of narrowest crossing and where firm banks and level approach slopes are available. Slopes should not exceed 1.5 to 1.

5.2.4 Installation

The following guidelines will be used for the installation of all permanent and temporary culverts:

- Culverts will be of sufficient length to allow both ends to extend at least one foot beyond the toe of any fill used to cover the culvert.
- Culverts will be bedded on firm ground. Supplemental use of geotextile with gravel can be used to create this firm base. Permanent culvert installation will include firm compaction of the foundation and the fill around the sides of the culvert. Compaction will be done in no less than 8-inch lifts.
- Both the inlet and outlet ends of the culverts will be set at or slightly below the natural stream bottom to allow passage of fish and other aquatic life at all levels of flow. At no point will either end of an installed culvert be positioned in the air out of the water.
- Multiple culverts must be offset in order to concentrate low flows into the culvert within the natural channel.
- Fill used to bury the culvert will be compacted at least half-way up the side of the culvert for its full length to ensure that flowing water will not undermine the culvert.
- Culverts will be covered with fill to a depth of at least one foot or one-half the culvert diameter, whichever is greater.
- Road fill at the upstream (headwall) and downstream (outfall) ends of culverts will be armored with rock rip-rap to protect the road fill from being eroded by the action of water or road traffic. This material will be installed up to the level of anticipated high water.

- In areas where the streambed appears highly susceptible to erosion, the streambed at the outlet end of the culvert will be lined with riprap to prevent erosion and potential streambed scour. Table 3 indicates the distances away from the culvert to install such riprap. Figures 5 and 6 in Appendix C illustrate possible culvert installation options for the Kibby Wind Power Project 115 kV transmission line with inlet and outlet protection.

TABLE 3. CULVERT SIZE - LENGTH OF ROCK PROTECTION

Culvert Diameter (Inches)	Length of Rock Protection From Culvert (Feet)
12 – 20	7
21 – 24	9
30	11
36	13
42 – 48	18
54 – 60	24
66 – 78	32

5.2.5 Removal

Temporary culverts used to support bridge spans will be removed from the stream channel and ROW at the same time the span is removed. Where damaged or malfunctioning culverts were replaced, the new culverts will be left in place.

5.3 Mats (Timber, Construction, or Equipment Mats)

TransCanada will require the contractor to ensure that adequate equipment mats (both in terms of quantity and quality) are present at the project site prior to construction. Additional sources of equipment mats will be identified should the effort require more mats than originally anticipated.

5.3.1 Materials

A number of differently sized and constructed equipment mats are typically available and the appropriately sized mats will be used for the each crossing. For example:

- Longer mats will be used for spanning the wider crossings. This practice avoids the need to install additional mats within the crossing area in order to support the “span” mats.

- Mats will be in good condition to allow for their "clean" installation and use. Using mats with timbers and cables in good condition minimizes the potential for breakage during installation. Furthermore, using materials in good condition helps to prevent mats from becoming imbedded in mud and reduces the need to drag them in or out of the resource versus carrying them above the resource.
- Mats with partial/short timbers joined end to end will not be used to cross stream channels.

5.3.2 Installation

Illustrations of the proper use and installation of mats are depicted in Figures 7 and 8 of Appendix C.

- Whenever possible, mats will be carried and not dragged. Dragging mats creates more soil disturbance, which can result in additional erosion control or final restoration work.
- At the crossing location, the ends of the timber mats will extend at least two feet onto firm banks or several feet into the upland edge of a wetland to ensure a dry, firm approach onto the mats.
- For wetland crossings that require multiple mats, mats will be oriented with their longest dimension perpendicular to the direction of travel. This configuration reduces the potential for the mats to work into the wetland soils as vehicles cross, thus reducing disturbance of the wetland surface.
- Mats used as temporary bridges for the Kibby Wind Power Project will not require support piers or abutments to cross a stream or inundated wetland. The contractor will use appropriately sized and spaced timbers (Table 2) to span the resource and support the mats. In certain instances, a culvert may be used to provide midstream support if more than one mat is required to cross a long span. Support culverts will be oriented parallel to the direction of flow and fish passage maintained.
- At "dry" crossings where no water is present or anticipated during project construction, the mats may be placed directly onto the sensitive natural area in order to prevent excessive rutting, provided stream banks and bottoms are not altered.

5.3.3 Maintenance

Matted crossings will be continually monitored to ensure that they are in good condition. Mats will be kept clean and any accumulated soil materials will be removed and disposed of and stabilized in an upland location. The material will not be scraped and shoveled into the water

resource. Mats which become imbedded will be reset or layered to prevent mud from covering them or water passing over them. The contractor will replace mats as soon as deterioration is observed. At a minimum, the contractor will be responsible for inspecting all matted crossings once per week and will keep a log of all changes, improvements, and other maintenance performed.

5.3.4 Removal

Mats will not be removed until their use is no longer necessary. Specifically, all final restoration work along the adjacent ROW will be completed prior to removing the mats from the crossings. All mats will be removed from the ROW upon completion of construction. Exposed soils within 100 feet of the crossing will be stabilized.

5.4 Corduroy

Corduroy crossing use should be limited to those situations when there are no other readily available options, and only in consultation with TransCanada and agency staff (LURC or DEP, as applicable, and USACE).

5.4.1 Materials

Corduroy material will consist of de-limbed trees or logs. The logs must have a diameter greater than three inches at the small end and lengths greater than 18 feet. Shorter length material may be used only as described below. In general, corduroy crossings will only be used when the use of equipment mats is not practical.

5.4.2 Positioning

The use of corduroy as crossing material will be limited to wetlands which are not anticipated to have flowing or standing water or saturated or soft soils during the construction period. Corduroy will be placed perpendicular to the direction of travel. Corduroy will be placed at the point of narrowest crossing and where firm ground and level approach slopes are available. Corduroy may also be used to help stabilize and level the approaches to a bridge crossing. Illustration of the proper use and installation of corduroy logs is depicted in Appendix C, Figure 9.

5.4.3 Installation

Corduroy will be placed with the longer length pieces laid down first. Once a thick base of corduroy has been laid, pieces shorter than 18 feet can be used to fill gaps and raise the elevation of the corduroy to provide for a more stable crossing.

5.4.4 Maintenance

Corduroy will be continually monitored to ensure that it is functioning correctly. Corduroy logs will be kept clean to the maximum extent practical and when possible, accumulated soil material will be removed and disposed of and stabilized in an upland location. The material will not be scraped and shoveled into the water resource. Corduroy that becomes imbedded in mud will be replaced by timber mats or other more suitable crossing materials as soon as significant surface disturbance is observed. At a minimum, the contractor will be responsible for inspecting all corduroy logs once per week and will keep a log of all changes, improvements, and other maintenance performed.

5.4.5 Removal

Removal is the reverse of the installation process. Once the corduroy has been removed from the crossing, it will be moved off the right-of-way and burned, chipped, or cut into smaller pieces consistent with state and local laws. If cut or chipped, the material may be spread and distributed in upland areas. If this approach is taken, all materials will be disposed of in accordance with the Maine Slash Law (Appendix F).

6.0 SURFACE WATER DIVERSION STRUCTURES (WATER BARS)

A number of above-ground structures or techniques are available to divert water out of travel ways and work areas in order to prevent subsequent runoff and erosion. Water bars, also called slope breakers, may be required in a limited number of locations along the Kibby Wind Power Project 115 kV transmission ROW to redirect water moving down a prolonged steep slope with disturbed soils, into adjacent vegetated upland areas (i.e., filter strips).

6.1 Materials

Water bars will be constructed by excavating or moving and shaping soil from within the ROW to form a shallow cross-drainage swale. The excavated material will be used to form an elevated bar immediately downslope of the swale.

6.2 Positioning

Water bars will be installed immediately above and along steep pitches in the ROW or travel corridor, and below seepage areas on natural or cut banks, as determined during the preconstruction site walk-through. They will be sited to take advantage of existing vegetation for filtering and slope away from the areas susceptible to erosion. The interval for installing diversion structures depends on the slope of the area, the soil permeability of the soils, and saturated soils. Generally, steeper slopes require shorter distances between water bars in order to control the higher volume and velocity of surface water flow. Water bars will be sized in anticipation of greater flows resulting from snow melt, spring runoff, and storm rains. Table 4 contains typical recommended distances between installed structures depending on slope.

TABLE 4. RECOMMENDED DISTANCES BETWEEN WATER DIVERSION STRUCTURES

Slope (Percent)	Spacing (Feet)
0 – 2	500 – 300
3 – 5	250 – 180
6 – 10	167 – 140
11 – 15	136 – 127
16 – 20	125 – 120
21+	100

6.2.1 Installation

Water bars will be installed at 30 degrees angled down grade. The shape of the backside portion of the structure will have a reverse slope of about 3 percent. Use of a pop-level is recommended to ensure that drainage is away from the areas susceptible to erosion. Water bars will be constructed with rounded mounds and dips to allow for firm compaction and to allow re-vegetation. Illustrations of the proper installation of water bars are provided in Appendix C, Figures 10 and 11.

The inlet end of water bars will extend beyond the edge of the area susceptible to erosion, so that it fully intercepts water flows that may flow onto the area. The outlet end of the structure will extend out far enough to prevent water from flowing around and re-entering the work area. The discharge ends will outlet into a vegetated filter strip. Where heavy flows are encountered or anticipated, the outlet end of the water bar will incorporate an apron of rock and/or geotextile fabric to reduce water velocities and prevent erosion.

Where the water bar is within 100 feet of a stream or wetland, a small, excavated settling basin or ditch turnout will be incorporated to reduce the velocity of flows and the continued movement of sediment downslope. In addition, stone check dams, silt fencing or staked hay bales will be installed at the outlet of the diversion structure, where vegetated filter strips are narrow or sparsely vegetated, in order to prevent sediment from entering water resources. Additionally, a temporary mulch liner (anchored erosion control blanket) will be installed immediately upslope of the sediment barrier to reduce the erosion potential of the concentrated flow. The proper installation of stone check dams and other swale stabilization measures is shown in Appendix C, Figure 12.

6.2.2 Maintenance

Maintenance is critical to the effective functioning of the diversion structures due to repeated travel over them. The structures will be re-excavated or graded to ensure the interception and redirection of water runoff, as the structure becomes flattened or rutted. The outlet ends, sediment basins and sediment barriers will be maintained by clearing away any potential blockages and accumulated sediments. In areas where silt fence or hay bale barriers are used, the barriers will be replaced with stone check dams if inspections during construction indicate that channelized runoff is undercutting the barrier. The contractor will be responsible for

inspecting all diversion structures in active construction areas weekly and will keep a log of all changes, improvements, and other maintenance performed.

6.2.3 Removal

After the completion of the construction project, removal of these structures is not a requirement. Water bars can be left in place provided they have been suitably stabilized with seed and mulch. Hay bale or silt fence barriers at the outlet of the structure will be removed when these areas have vegetative cover.

7.0 SEDIMENT BARRIERS (STRUCTURAL MEASURES)

7.1 Introduction

The standards and procedures outlined in this section are meant to address a majority of the situations encountered during 115 kV transmission line construction activities. For additional information on sediment and erosion control methods and techniques, or to address a particularly problematic situation, the information in this section may be supplemented by the DEP's Maine Erosion and Sediment Control BMPs, dated March 2003.

The use of properly installed erosion and sediment control barriers is the most fundamental and critical component for stopping and controlling erosion on the Kibby Wind Power Project 115 kV transmission line installation. Erosion control barriers include silt fences, hay bales, and/or erosion control mix berms. In some cases, these barriers may be deemed unnecessary due to factors including slope and the presence of filter strips within project boundaries. Typically, earth work near water will require the use of at least one of these types of barriers or some combination of them to effectively prevent and/or control erosion near water resources. Installation and diligent maintenance of these barriers serves the following purposes:

- Ensures the environmental integrity of those upland and water resource areas not designated or permitted for disturbance. Specifically, it maintains the onsite vegetative community and water quality of the surface water within the watershed.
- Ensures compliance with all applicable federal, state, and local environmental and land use regulations or permit conditions.

Generally, silt fencing is a preferred barrier to hay bales because: it traps a higher percentage of suspended sediments than hay bales; it is generally easier to install, obtain, and transport; and is less costly. In addition, the structural longevity of silt fencing is 60 days or longer unlike straw or hay bales, which is 60 days or less.

7.2 Use of Silt Fence

7.2.1 Materials

Silt fencing is provided by a number of manufacturers and is generally a synthetic fabric pre-attached to wooden staking. The fabric must be pervious to water allowing a flow-through rate

of 0.3 gallon per square foot per minute. The fabric must contain stabilizers and ultraviolet ray inhibitors to allow it to sustain exposure of a minimum of 6 months. The height of the filter fabric must not exceed 3 feet above the ground surface.

7.2.2 Placement

Silt fencing may be utilized at the edge of any planned work area or area which will incur soil disturbance. It will be installed on slope contours to intercept sheet flow, maximize ponding, and detain sediment from entering water resources or leaving the project site. It will be installed prior to construction activity that results in exposure or disturbance of soil. The amount of silt fencing and placement must be selective given the length of the Kibby Wind Power Project 115 kV transmission line; however, it will be used in amounts sufficient to meet potential changing conditions in a proactive manner. The placement of silt fence along the ROW will be determined during the preconstruction walk-through. Silt fencing will be used, as appropriate, in the following locations:

- Along all access roads or work areas and at the end of water bars that are within 100 feet of water resources.
- Along all access roads or work areas in upland settings that encounter seepage moving across slope.
- Around all stockpiled soils.

In general, the placement of silt fencing is appropriate when:

- Serving a drainage area of no more than 0.25 acre per 100 feet of silt fence length.
- The maximum slope length behind the fence is 100 feet or less.
- The maximum gradient behind the fence is 50 percent or 2:1 horizontal/vertical.
- Where the filter strip is not able to meet the optimal width (as outlined in Table 1).

7.2.3 Installation

The following installation guidelines are the minimum which will be implemented; however, appropriate adjustments to silt fence installation will be made as conditions change during construction. Illustrations of the proper use and installation of silt fence are provided in Appendix C Figures 13 through 16.

Silt fencing will be placed an adequate distance (6 to10 feet) beyond the toe of the slope, where there is sufficient room to allow for sediment accumulation between the disturbed area and the down-gradient water resources. If there is not sufficient room to place the silt fence an adequate distance beyond the toe of the slope, the barrier will be installed along the contour, within reason. The goal is to slow and pool sediment-laden runoff to allow fine sediments to settle out before the runoff enters a water resource. The ends of the barrier will be turned up-slope to maintain the barrier volume.

A trench will be excavated approximately 6 inches wide and 6 inches deep on the up-slope side of the silt fence alignment. The lower edge of the silt fence fabric will be entrenched for a distance of at least 6 inches up-slope and then back-filled. Should frozen or rocky ground conditions prevent the effective or practical use of trenching, materials such as bark/wood chips, wood fiber mulch, or a soil erosion control mixture can be used. This material is to be mounded on top of at least 8 inches of filter fabric placed on the ground surface, which would otherwise be trenched.

Silt fence will be installed in a continuous roll to avoid a joint between different pieces of fence. If joints are necessary, filter fabric will be “spliced” together at a support post, securely sealed, and with a minimum of 6 inches of overlap. Splicing rolls of silt fence entails twisting end posts together, creating a continuous section of silt fence.

Support posts will be placed on the down-slope side or the side closest to or facing the water resource. The posts will be placed 6 feet apart (a maximum of 10 feet may be acceptable in some locations), and driven securely into the ground, typically about 18 inches deep. If ponded water behind the silt fence is anticipated or occurs, additional stakes will be added for support and attached to the fabric with staples or zip-ties.

Silt fence will not be installed in streams or drainageways where water flow is present or where concentrated flows that could undercut the barrier are anticipated.

7.2.4 Maintenance

Once a week, or after rainstorms producing at least ½ inch of rainfall, whichever is more frequent, the contractor will inspect all temporary erosion and sediment control barriers. During a prolonged rainfall, barriers will be inspected at least daily. Such inspection is necessary to ensure that the barriers are functioning properly as well as identifying new areas requiring

installation. A maintenance log will be kept of all erosion control changes, improvements, and maintenance performed.

If any barriers are not functioning properly, they will be repaired or replaced. A sediment control barrier is not functioning if:

- Water is flowing around the sides or under the barrier.
- Soil has built up behind the barrier to the point more than half-way up the fence.
- There is excessive sag in the fence.
- There is evidence of sedimentation such as gully erosion, slumping of banks, or the discoloration of water outside of the perimeter silt fence.

Corrective measures include removing accumulated sediment from behind the barrier, restaking, extending the ends of the fence, installing another fence further upslope, or replacing the fence with a stone check dam in areas of significant concentrated flow. Soil removed from behind a barrier will be spread in an upland area and will be stabilized with mulch.

7.2.5 Removal

Installed silt fence will be removed once it is evident that the soils have become stabilized and the potential for erosion no longer exists, generally reflected by a healthy growth of vegetation over at least 90 percent of the stabilized area (Section 10.0). In most cases, the silt fence will not be removed until at least one growing season has past. Removal of silt fence will be coordinated with TransCanada or its designated representative.

Any ridges or mounds of soil or caught sediment remaining in place after the silt fence has been removed will be leveled-off to conform to the existing grade. Any newly exposed soil that may erode will be seeded and mulched. All removed silt fence will be properly disposed of at a licensed solid waste facility.

7.3 Use of Hay and Straw Bales

7.3.1 Placement

Like silt fence, hay bale barriers can be utilized at the edge of any planned work area or areas where soil disturbance has occurred or will occur. Hay bale barriers are installed to intercept sheet flow of water and detain sediment from entering water resources or leaving the project

site. As is the case with silt fence, the amount of hay bale barrier placement must be selective, but in amounts sufficient to meet potential changing conditions in a pro-active manner. Hay bale barriers will be used, as appropriate, in the following locations:

- Along all access roads or work areas and at the end of water bars that are within 100 feet of a water resource area.
- Along all access roads or work areas in upland settings that encounter seepage moving across slope.
- In ditch lines as check dams.
- Around all stockpiled soils.

In general, the placement of hay bales is appropriate when:

- Serving a drainage area of no more than 0.25 acre per 100 feet of barrier length.
- The maximum slope length behind the barrier is 100 feet or less.
- The maximum gradient behind the barrier of 50 percent or 2:1 horizontal/vertical.
- Where the filter strip is not of an adequate width (see Table 1).
- Weed-free straw bales will be used in place of hay bales, when installation is required in a wetland.

7.3.2 Installation

The following installation guidelines are the minimum which will be implemented; however, appropriate changes to hay bale installation will be made as conditions change during the construction operation. Illustrations of proper hay bale use and installation are provided in Appendix C, Figures 17 through 20.

The barrier will be placed an adequate distance (6 to10 feet) beyond the toe of the slope (if there is sufficient room) to allow for sediment accumulation between the disturbed area and the down-gradient sensitive areas. If there is not sufficient room to place the hay bales an adequate distance beyond the toe of the slope, the barrier will be installed along the contour, within reason. The goal is to slow and pool sediment-laden runoff to allow fine sediments to settle out before the runoff enters a water resource. The ends of the barrier will be turned up-slope to maintain the barrier volume.

A shallow trench will be excavated the width of the bale and to a minimum depth of 4 inches in which to imbed the bale. The excavated soils will then be used to seal the lower inside (up-slope) edge of the barrier. The bales will be set tightly together and entrenched with the baling string oriented on the sides (i.e., not touching the ground) in order to prevent deterioration of the string.

Every bale will be staked using 2 stakes per bale. The stakes will be driven in at angles that facilitate binding, and forces abutting hay bales together. Gaps between bales will be packed with loose hay to prevent water from escaping between the bales. Hay bales will not be placed in streams where flow is present or anticipated or in drainage ways with concentrated flows that could undercut the barrier.

7.3.3 Maintenance

Once a week, or after rainstorms producing at least ½ inch of rainfall, whichever is more frequent, the contractor will inspect all temporary erosion and sediment control barriers. During a prolonged rainfall, hay bale barriers will be inspected at least daily. Such inspection is necessary to ensure the structures are functioning properly as well as identifying new areas requiring installation. A maintenance log will be kept of all erosion control changes, improvements, and maintenance performed. If any hay bale barriers are not functioning properly, they will be repaired or replaced. A hay bale barrier is not functioning if:

- Water is flowing around the sides or under the hay bale barrier.
- Soil has built up behind the barrier to the point more than half-way up the hay bale or where there is excessive lean to the barrier.
- There is evidence of sedimentation such as gully erosion, slumping of banks, or the discoloration of water outside of the hay bale barrier.

Corrective measures include removing accumulated sediment from behind the hay bale barrier, re-staking, extending the barrier at the ends, installing another barrier further up-slope, or replacing the hay bales with a stone check dam in areas of significant concentrated flow. Soil removed from behind a barrier will be spread in an upland area and will be stabilized with mulch. Straw or hay bales will not be used at locations where a sediment barrier is expected to be needed for more than a 60-day period.

7.3.4 Removal

Hay bales will be removed once it is evident that the soils have become stabilized and the potential for erosion no longer exists. In most cases, the hay bale barrier will not be removed until at least a healthy growth of vegetation is established on at least 90 percent of the disturbed area. Removal of hay bale barriers will be coordinated with TransCanada or its designated representative.

Any ridges, mounds of soil, or caught sediment remaining in place after the hay bales have been removed will be leveled off to conform with existing grade. Any newly exposed soil with the potential to erode will be seeded and mulched. All removed hay bales will be used as mulch on the bare soils near the barrier.

7.4 Use of Erosion Control Mix Berms

Erosion control mix berms are practical and effective in most situations, but are especially suited for frozen ground, outcrops of bedrock, and forested areas with many roots where silt fence or hay bales cannot be effectively anchored. Erosion control mix consists primarily of organic materials such as wood chips, waste wood, bark mulch or similar materials. Construction debris and reprocessed wood products are not acceptable for use in erosion control mix. Erosion control mix can be manufactured on or off site, and will contain a well-graded mix of particle sizes and may contain rocks up to 4 inches in diameter and some soil. Any erosion control mix used on the Kibby Wind Power Project 115 kV transmission line will have:

- organic matter content between 80 and 100 percent (dry weight),
- 100 percent of particles passing a 6-inch screen,
- the organic portion will be fibrous and elongated,
- only small proportions of silts, clays, or fine sands, and
- pH between 5.0 and 8.0.

When using erosion control mix, a continuous berm is placed between the earth work and the resource being protected as discussed below.

7.4.1 Installation

Illustration of a cross-section of a properly installed erosion control mix berm is provided in Appendix C, Figure 21. As with other barriers, to be most effective these berms must be placed along the contour of the slope. It will be necessary to cut tall grasses or woody vegetation to avoid creating voids and "bridges" that may enable runoff and sediment to wash under the barrier. For erosion control mix berms on slopes less than 25 percent (4:1), the barrier must be a minimum of one foot deep and a minimum of 2 feet wide. On longer or steeper slopes, the barrier must be wider to accommodate additional runoff.

Erosion control mix berms will not be used at low points of concentrated runoff, below culvert outlet aprons, around catch basins and closed storm systems, in areas of forceful winds, and at the bottom of steep perimeter slopes that have large watersheds.

7.4.2 Maintenance

Once a week, or after rainstorms producing at least ½ inch of rainfall, whichever is more frequent, the contractor will inspect all temporary erosion and sediment control barriers. During a prolonged rainfall, barriers will be inspected at least daily. Such inspection is necessary to ensure the berms are functioning properly as well as identifying new areas requiring installation. A maintenance log will be kept of all erosion control changes, improvements, and maintenance performed. If any of the erosion control mix berms are not functioning properly, they will be repaired or replaced. A sediment barrier is not functioning if:

- Water is flowing around the sides or under the barrier.
- Soil has built up behind the barrier to the point more than half-way up the barrier or where there is excessive lean to the barrier.
- There is evidence of sedimentation such as gully erosion, slumping of banks, or the discoloration of water outside of the barrier.

Corrective measures include removing accumulated sediment from behind the barrier, re-staking, extending the barrier at the ends, reshaping the erosion control mix berm, or installing another barrier further up-slope.

8.0 NONSTRUCTURAL EROSION CONTROL MEASURES

8.1 Nonstructural Measures Defined

Nonstructural measures are temporary or permanent methods used to cover exposed soil areas to prevent erosion from occurring. Often these techniques and materials are used on slopes along roads, areas where soil has been regraded, and generally areas where the soil has been exposed. Their purpose is to cover the entire area of exposed soil to prevent initial erosion of soil from a construction site. Examples of nonstructural measures include hay or straw mulch, erosion control blankets, brush-slash-tops, matting, or seeding. There are two types of nonstructural measures: temporary and permanent. Temporary measures are typically used during construction, while permanent measures are usually applied after construction is complete (i.e., restoration).

8.2 Importance of Nonstructural Measures

Nonstructural measures are important because they provide both temporary and permanent protective cover to exposed soils. Generally, they provide the first line of protection against erosion, and can be the most effective means of erosion prevention. This protection is important because exposed soils are easily eroded by wind or water. Some soils such as silts can easily be removed from a construction site by rainwater. The impact of individual raindrops on exposed soils can loosen soil particles, and these particles can then be carried off the work site by runoff and deposited into water resources including streams, rivers, wetlands, ponds, and lakes. Silt particles stay suspended in water for prolonged period and siltation can pollute surface waters and harm aquatic creatures such as insects and fish.

Dry soil conditions and high winds can also cause siltation. When small particle soils such as silts become dry, they have a powder-like texture and can easily be swept away by winds. Nonstructural measures help prevent wind erosion because they hold moisture next to the soil, keep the soil from drying out due to wind exposure, and prevent winds from carrying away dry soil particles.

8.3 Placement of Nonstructural Measures

Nonstructural measures will be used whenever there is a possibility that exposed soils on a construction site could wash into adjacent sensitive water resources, and where a barrier will not protect exposed soil from rain and runoff. Temporary nonstructural measures such as hay or straw mulch will be spread on all exposed soils within 100 feet of water resources within 48 hours of initial soil disturbance, or before any predicted storm event. Mulch will also be applied immediately to areas that have been seeded. All mulch materials will receive periodic inspection by the contractor (especially after rainstorms) to be sure that they are covering the soil they are meant to protect and are functioning properly. Mulches that are removed by excessive flow or wind will be replaced or reinstalled.

8.3.1 Temporary Measures

Temporary, nonstructural erosion control measures are summarized in Table 5 and include the following:

- Hay or straw mulch (unanchored on slopes less than eight percent, anchored on slopes greater than eight percent) on exposed soil areas and soil stockpiles in the construction area. Appendix C, Figure 22 illustrates proper mulch anchoring using netting.
- Between April 16 and October 31, temporary seeding covered by hay or straw mulch on soil stockpiles or areas of exposed soil within 100 feet of sensitive resources that are not scheduled for final restoration for 30 days. Temporary seeding is not required during the winter construction season; however, daily mulching is required on all exposed soils, including those exposed during winter, followed by temporary or permanent seeding, as appropriate, as soon as growing conditions allow. (See Section 9.0 and Table 6 for details of winter construction.)
- Erosion control mix (as described in Section 7.4) can be used as slope reinforcement or mulch on slopes that are 4:1 or less, on frozen ground or forested areas, and at the edge of gravel parking areas and active construction areas. Erosion control mix will be applied 2 inches thick plus an additional 1/2 inch per 20 feet of slope up to 100 feet (e.g., 3 inches thick for 60 feet of slope; 4 inches thick for 100 feet of slope). For slopes between 3:1 and 2:1, erosion control mix will be applied 4 inches thick plus an additional 1/2 inch per 20 feet of slope up to 100 feet (e.g., 5 inches thick for 60 feet of slope; 6 inches thick for 100 feet of slope).

- Erosion control mix must be spread evenly and must provide 100 percent soil coverage.
- Erosion control mix will not support grass, but will support clover and other legumes and woody vegetation. Vegetation can be promoted by seeding, or it can be left to occur naturally.
- Curlex or jute matting (also known as erosion control blankets) can be used on areas of high wind exposure, slopes steeper than eight percent grade, unstable soils, and stream/river bank restoration areas. Matting is typically anchored with large staples, as recommended by the manufacturer (Appendix C, Figure 23). Although this type of material is usually used during final restoration, it is considered a temporary measure because it generally deteriorates within two years.
- Brush-slash-tops include woody pieces removed from trees that are otherwise unusable. These items can be placed on skidder trails as the machines cut and remove timber. This debris reduces the opportunity for skidder tires to sink into soft soil when they are spread out along the skidder trail.

TABLE 5. TEMPORARY NONSTRUCTURAL EROSION CONTROL MEASURE SUMMARY

Mulch on slopes less than 8%	Within 100 feet of wetlands or waterbodies apply hay and/or straw mulch at a minimum of 70 lbs./1,000 square feet of exposed soil (about 2 bales). Must be done within 48 hours of initial soil disturbance and before storm forecasted events, unless specified otherwise.
Mulch on slopes greater than 8%	Hay or straw mulch can be applied without being anchored, unless specific site conditions may require use of anchoring.
Temporary seeding in uplands	Within 100 feet of wetlands or waterbodies, apply annual ryegrass at 1 lb./1,000 square feet. Mulch with hay or straw. Must be done if final restoration is not scheduled within 30 days.
Temporary seeding in wetlands	If required, apply annual ryegrass at a rate of 1 lb./1,000 square feet and cover with only **straw** mulch. Do not add lime or fertilizer to wetlands. When in doubt, ask the TransCanada representative.
Temporary seedbed preparation	Apply limestone and fertilizer (uplands only) according to soil test data. If soil test is not possible, 10-10-10 fertilizer may be applied at a rate of 600 lbs./acre and limestone at 3 tons/acre.

8.3.2 Permanent Measures

Permanent measures included the following:

- Permanent grass and/or legume seeding covered by hay or straw mulch on all areas that have been restored to final grade. This is required to establish permanent, perennial, vegetative cover on exposed soils. This seeding generally applies between April 16 and October 31. Permanent seeding is not required during the winter

construction season, although dormant seeding may be performed (See Section 9.0 and Table 6).

- Seeding covered by anchored Curlex or jute matting in areas of high wind exposure, on slopes steeper than eight percent grade, unstable soils, and stream/river bank restoration areas. Generally the matting provides temporary protection while the vegetation becomes established.
- Proper soil preparation before any seed is placed on the ground, as necessary. Soil preparation may include addition of lime and fertilizer in areas that have not been tested, or in areas that have been tested and are found to be deficient in plant nutrients. Lime and fertilizer will only be used in designated upland areas and never within waterbody buffer zones.

Summary information regarding proper permanent seed mix, application rates, locations, and mulching requirements is provided in Section 10.0 and Table 7.

9.0 WINTER CONSTRUCTION CONSIDERATIONS

Properly conducted winter construction provides a unique opportunity to complete work in sensitive resources with a minimum of environmental impact. For instance, construction of the Kibby Wind Power Project 115 kV transmission line in wetlands is anticipated to be completed during frozen ground conditions as much as possible.

Construction activities conducted between November 1 and April 15 will follow the erosion and sediment control BMPs that were developed by the DEP for winter construction, as applicable (BMP A-3 in the DEP *Maine Erosion and Sedimentation Control BMPs*). More frequent, heavier application of temporary mulch, increased dormant seeding rates, the substitution or additional use of erosion control mix berms in erosion control barriers and other supplemental erosion controls will be used, as required.

However, it is important to note that following the winter construction BMPs may not be necessary at all times during winter construction, and in some situations their use may increase the potential for erosion and sedimentation. For example, if there is no snow on the ground or the ground is not frozen by November 1, or at any time during winter construction, silt fencing will be installed if it can be properly anchored. Similarly, if saturated or inundated wetlands are not frozen, all work will be performed from construction mats. Also, if the ground thaws and the snow is gone before April 15, resumption of the standard BMPs may be appropriate. Temporary bridges will still be used for all stream crossings, regardless of the season or frozen ground or stream conditions. All areas stabilized during the winter construction period will be inspected once snow cover is gone in the spring and remedial measures taken as needed.

Table 6 highlights some of the major differences between winter construction and typical construction season BMPs. The table presents differences for temporary erosion control and stabilization measures that will be used during construction, and permanent measures when construction is completed.

TABLE 6. SEASONAL DIFFERENCES IN CONSTRUCTION BMP REQUIREMENTS		
Control Measure	**General Construction**	**Winter Construction**
	April 16 through October 31	**November 1 through April 15**
Mulch on slopes less than 8%	Within 100 feet of wetlands or waterbodies apply hay and/or straw mulch at a minimum of 70 lbs/1,000 square feet of exposed soil (about 2 bales). Must be done within 7 days of initial soil disturbance and before storm forecasted events.	Within 100 feet of wetlands or waterbodies apply and maintain properly anchored hay and/or straw mulch at a minimum of 150 lbs/1,000 square feet of exposed soil (about 5 bales) at all times (double the April 16 – October 31 rate). Or apply anchored erosion control mats or the appropriate layer of erosion control mix (Section 8.3.1). Do not apply mulch on top of more than 1 inch of snow. Remove snow as necessary. Apply anchored mulch after each day of final grading.
Mulch on slopes greater than 8%	Hay or straw mulch can be applied without being anchored, though specific site conditions may require use of anchoring.	Apply mulch as specified above and anchor with Curlex, jute matting, or similar mulch netting. Erosion control mix can be used on slopes in place of anchored hay or straw mulch.
Area of exposed soils allowed at any one time	No restriction on area exposed, but contractor must attempt to minimize amount of exposed soil at any one time, especially next to water resources.	Not more than 1 acre of exposed (not mulched or otherwise devoid of vegetative cover) soil.
Sediment barriers	A single line of sediment barriers including silt fence, hay bales, or erosion control mix filter berms must be installed between water resources and disturbed soils.	If soil is frozen, use erosion control mix filter berms in place of hay bale/silt fence sediment barriers. After Dec. 1, install 2 lines of sediment barriers if wetlands or waterbodies are within 100 feet of disturbed soils.
Temporary seeding in uplands	If required, apply annual ryegrass at 1 lb/1,000 square feet. Mulch with hay or straw.	Not required, but if temporary seeding is desired, it must be applied at a rate 2 times higher than the General Construction Season, and covered with mulch.
Temporary seeding in wetlands	If required, apply annual ryegrass at a rate of 1 lb/1,000 square feet and cover with straw mulch. Do not add lime or fertilizer to wetlands. When in doubt, ask the TransCanada representative.	Not required, but if temporary seeding is desired, it can be applied at a rate 3 times higher than the General Construction Season, and covered with straw mulch. Apply only annual rye grass and do not add lime or fertilizer.
Permanent seeding in uplands	Apply seed mixture and mulch as specified in Table 7.	Not required before April 16, but if dormant seeding is desired, the site will receive an adequate cover of loam, if necessary, be seeded at a rate 2 times higher than the General Construction Season, and covered with mulch at a minimum of 150 lbs/1,000 square feet.
Permanent seeding in wetlands	If required, apply annual ryegrass at a rate of 1 lb/1,000 square feet and mulch with straw. Do not add lime or fertilizer to wetlands.	Not required, but if temporary seeding is desired it can be applied at a rate 2 times higher than the General Construction Season, and covered with straw mulch. Do not add lime or fertilizer.

TABLE 6. SEASONAL DIFFERENCES IN CONSTRUCTION BMP REQUIREMENTS		
Control Measure	**General Construction**	**Winter Construction**
	April 16 through October 31	**November 1 through April 15**
Temporary seedbed preparation	Apply limestone and fertilizer (uplands only) according to soil test data. If soil test is not possible, 10-10-10 fertilizer may be applied at a rate of 600 lb/acre and limestone at 3 tons/acre.	Not required, but seedbed can be prepared according to General Construction requirements.
Permanent seedbed preparation	Apply limestone and fertilizer (uplands only) according to soil test data. If soil test is not possible, 10-20-20 fertilizer may be applied at a rate of 800 lbs/acre and limestone at 3 tons/acre.	Not required before April 16, but if dormant seeding is desired, the seedbed can be prepared according to the General Construction requirements.
Inspection and monitoring	Erosion controls will be inspected weekly and after a ½ inch or greater rain storm to ensure proper function. Monitoring will be performed until a new, healthy vegetative cover is attained over at least 90% of the site. This applies to both temporary and permanent seeding.	Monitoring will be performed weekly during all periods when significant runoff could occur to ensure proper stabilization and re-vegetation (both temporary and permanent). Starting in the spring following completion of the project, inspections will be performed. Areas with less than 75% vegetated cover will be reseeded and mulched and monitoring continued until a new, healthy vegetative cover is attained over at least 90% of the site.
Maintenance of erosion controls	If any evidence of erosion or sedimentation is evident, repairs will be made to existing controls or other methods will be used.	If any evidence of erosion or sedimentation is evident, repairs will be made to existing controls or other methods will be used.

10.0 SITE RESTORATION STANDARDS

Following completion of the construction work, the contractor will be responsible for conducting site restoration work. The following guidelines will apply to all activities, including temporary and permanent roads, stream/wetland crossings, staging and work areas.

10.1 General Procedures

Near the completion of construction of the transmission line TransCanada or its designated representative and the contractor will review the project restoration needs and prioritize the restoration work to be completed. This prioritization will consider time of year, ground conditions, re-vegetation probabilities, and equipment availability. A restoration "walk-through" will be conducted with the contractor and TransCanada's representative.

Highest priority restoration areas include, but are not limited to:

- All wetland, stream, or brook crossings, particularly the disturbed areas within 100 feet and stream banks;
- Drainageways or ditches;
- Cut banks and steep slopes (over eight percent);
- Around the substation construction area;
- Around pole and anchor pole placement; and
- All temporary access roads, ROW travel corridors, yarding, and construction laydown areas.

10.2 Methods of Restoration

All soil that is excavated, mounded, or deposited during construction will be regraded. All regrading and redistribution of soil will be completed to approximate existing grades. The banks of streams and rivers will be restored to natural conditions as much as practicable. In general, logs, timbers, construction mats or other material or any structure used at temporary crossings will be removed, and the banks restored to their original depth and contour. Any bridge materials or support culverts within the channel will be removed.

All construction mats used to cross or work in wetlands will be removed and any surface damage repaired, as needed. Exposed wetland soils will be stabilized by seeding with annual rye. Any construction mats, corduroy logs or bridges used to protect water resources on construction access roads will be removed and the road surface re-graded to original conditions, as needed.

- Previously installed water bars may remain or new ones will be installed at locations designated by a TransCanada representative. Permanent water bars will be constructed to a sufficient height and width to divert the amount of water anticipated at each location as well as to provide some post-project permanence to the site. Water bars will be permanently seeded to ensure their long-term stability.
- All areas severely rutted by construction equipment will be regraded and permanently revegetated.
- Upon completion of the project, all areas of exposed soil will be permanently revegetated or otherwise permanently stabilized.
- Lime, fertilizer, seed and hay or straw mulch will be applied in upland areas as specified in Table 7.

TABLE 7. PERMANENT SEEDING SPECIFICATIONS

Type of Area	Soil Amendments	Seed Mix Components/(varieties)	Seed Rate (lbs/acre[1])	Mulch (tons/acre)
Uplands[2,3]	Apply ground limestone at 3 tons/acre	Creeping red fescue/(Pennlawn, Ensyla, Wintergreen)	20	1.5-2 (90 -100 bales)
	Apply 10-20-20 fertilizer at 800 lbs/acre	Redtop/(any native species)	2	
		Tall fescue/(Kentucky 31)	20	
Wetlands	None	Annual ryegrass/(any native species)	40	1.5-2[4] (90 -100 bales)

1. Increase seeding rates by 10% when hydroseeding.
2. Add winter rye to the mix at a rate of 120 lb/acre after October 1.
3. Do not lime or fertilize any areas within the waterbody buffers.
4. Mulch wetlands with weed-free straw only.

- The contractor will be responsible for the proper maintenance of all revegetated areas until the project has been completed and accepted by TransCanada. Where seeded areas have become eroded or damaged by construction operations, or where poor germination is observed, the affected areas will be promptly re-graded, limed, fertilized, and re-seeded as needed. Areas that are revegetated following construction activities

will be considered properly stabilized when healthy vegetation covers at least 90 percent of the seeded area unless adjacent, undisturbed areas indicate that achieving that level of vegetation in the area is unlikely.

- The contractor will perform all erosion control work to the complete satisfaction of TransCanada before the work is accepted. TransCanada will base acceptance of the erosion control and stabilization work on a final inspection.

10.3 Timing of Restoration

Final restoration of areas disturbed by construction will be completed within the following time periods:

- At river, stream or brook crossings, complete final restoration (finish grade, seed and mulch) of all areas within 100 feet of the waterbody within 48 hours of the removal of the crossing, unless specified otherwise.
- Complete final restoration of all other areas within 100 feet of the waterbody or wetland within 48 hours of final grading.
- Complete final restoration of all other areas within 7 days of final grading.

11.0 SUPERVISION AND INSPECTION

To mitigate effectively project-related impacts, the Kibby Wind Power Project E&S Plan for the 115 kV transmission line must be properly implemented. Field decisions may be required regarding timing of construction activities and erosion and sedimentation control measures, proper placement and installation of erosion controls, restoration and revegetation and other construction-related items. Construction of the 115 kV transmission line will be continually monitored and inspected in the field for compliance with the E&S Plan, as well as other environmental permit requirements and regulations, through the combined efforts of the contractors and TransCanada representatives. A description of the responsibilities of each of these groups for supervising and inspecting construction activity and sites for compliance with the E&S Plan is provided below.

11.1 Contractor Representative

All contractors working on construction of the Kibby Wind Power Project 115 kV transmission line will be required to designate an individual that is present on the ROW on a daily basis as the contractor's representative. The contractor representative will be responsible for monitoring the activities of its employees for compliance with the E&S Plan and other environmental permit requirements. The contractor representative will work closely with its personnel and TransCanada to ensure compliance. The contractor representative will be responsible for completing the Contractor's Weekly Inspection Form of Erosion and Sedimentation Control Measures, included in Appendix D.

11.2 TransCanada Representative

To ensure proper implementation of the erosion control plan, TransCanada employees or representatives will be assigned as environmental inspectors and be on the ROW during active construction. The environmental inspectors will supervise the environmental aspects of construction activities and will report directly to the TransCanada construction field supervisor(s). TransCanada environmental inspectors will have the authority to stop activities that violate the environmental conditions of the E&S Plan or other permit requirements and order corrective action. The environmental inspectors will have transmission line construction experience, be experienced in erosion control techniques and have an understanding of the wetland and waterbody resources required to be protected.

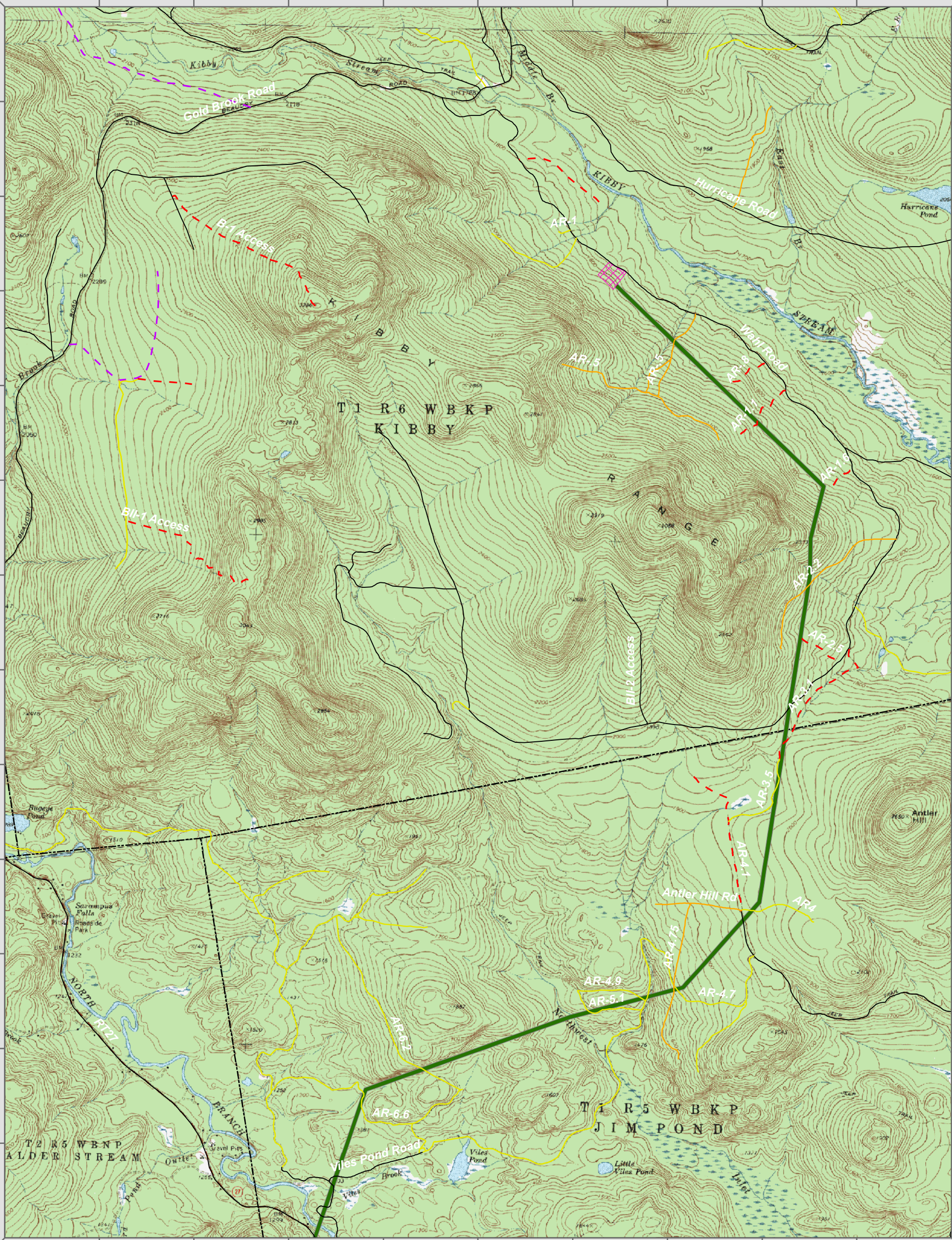
Responsibilities of the TransCanada environmental inspectors include working with the contractor to ensure project compliance with all environmental requirements permits and approvals, and the contractor has performed erosion control work that meets the applicable standards. Specific duties include: participation in the pre-construction and post-construction walk-throughs; verifying and marking the location of sensitive resource areas; verifying that all authorized construction work areas are marked before clearing; verifying the proper installation and maintenance of erosion control devices; verifying the repair of all ineffective temporary erosion control measures within 24 hours of identification; determining corrective action and implementation of additional measures deemed necessary based on field or weather conditions; working with the contractors and TransCanada to ensure compliance with environmental permit conditions and the spill prevention and control plan; documentation of temporary and permanent revegetation programs; verifying restoration of contours and topsoil; and coordination with environmental regulatory agencies.

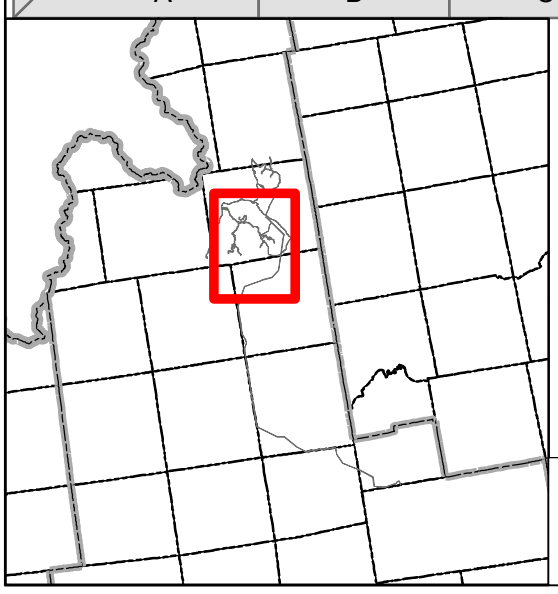
The TransCanada environmental inspectors will participate in the pre-construction walk-through of the ROW, followed by a meeting with the construction field supervisor(s) and the contractors to determine the sequence of construction and the placement of erosion control measures to be employed. The environmental inspectors will also participate in periodic coordination meetings with the construction field supervisor(s) and contractor personnel during construction. In addition, the environmental inspectors will perform independent inspection of erosion control devices to ensure proper functioning in areas of active construction. Furthermore, field inspections and documentation of erosion controls will be conducted on a weekly basis in areas with no construction, and following major storm events. The environmental inspector will keep records of compliance with the environmental conditions and mitigation measures required by federal and state environmental permits during active construction and restoration.

12.0 ENVIRONMENTAL TRAINING FOR CONTRACTORS

Environmental training will be provided by TransCanada to both TransCanada and contractor personnel whose activities or responsibilities could impact the environment during project construction. The level of training will be commensurate with the type of duties of the personnel. All personnel who will be working on the ROW or present at a construction site at any time during construction, will be provided environmental training relating to erosion and sedimentation control before being allowed access to a construction site. The training will be given prior to the start of construction with refresher training provided on a monthly basis throughout the construction process to reinforce the importance of compliance with environmental requirements, and identify potential changes in erosion and sedimentation control or other requirements that have occurred during construction.

The training program will cover LURC standards, DEP standards, the Maine Erosion and Sedimentation Control Law, this E&S Plan, Maine Pollutant Discharge Elimination System (MPDES) Construction General Permit requirements for storm water management, the Spill Prevention Control and Countermeasure Plan, threatened and endangered species restrictions, job-specific permit conditions, TransCanada company policies, and any other pertinent information related to the job. In addition to the environmental compliance officer and other inspectors, the construction field supervisor(s) and all construction personnel are expected to play an important role in maintaining strict compliance with all permit conditions to protect the environment during construction. A record will be kept of the date, location, attendees and topics covered at all training sessions.





Legend

- Mile Marker
- Road
- GRAVEL ACCESS
- UNCONFIRMED ACCESS
- DORMANT LOGGING RD
- SKIDDER TRAIL
- ATV ACCESS
- Series A Road Alignment
- Series B Road Alignment
- Proposed Substation
- Transmission Line
- Collector Line
- Turbines
- Town Boundary
- County Boundary
- State Boundary

N

500

Meters

Figure 1-A

Kibby Wind Power Project

Proposed Transmission Line and Access Roads

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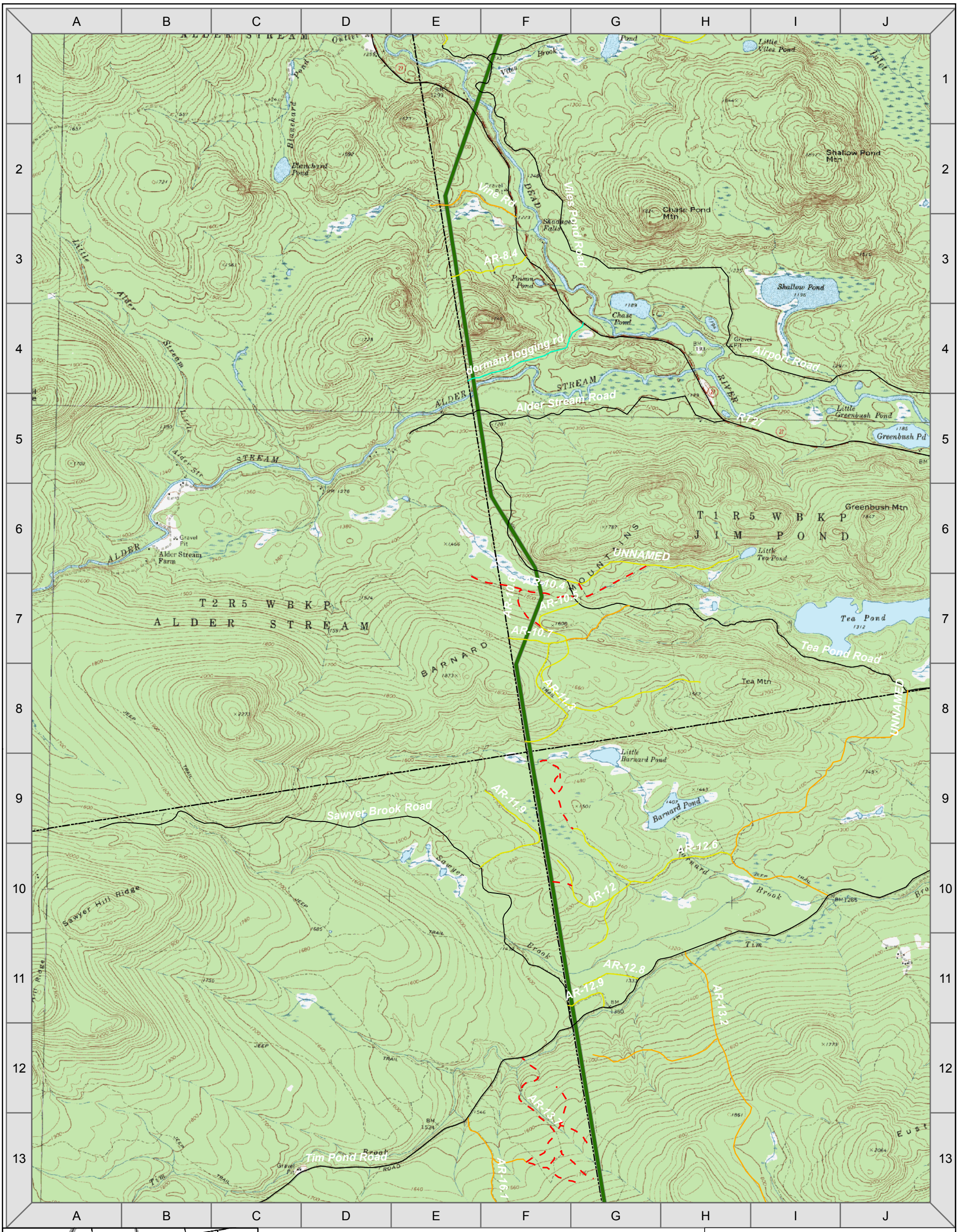

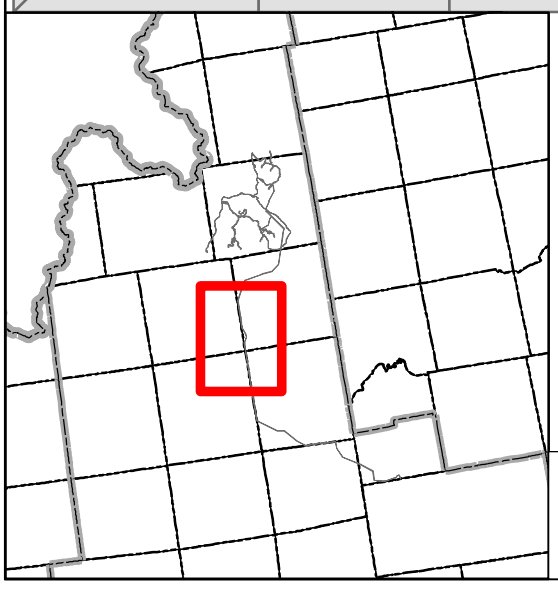

Legend

- Mile Marker
- Road
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- UNCONFIRMED ACCESS
- DORMANT LOGGING RD
- SKIDDER TRAIL
- ATV ACCESS
- Series A Road Alignment
- Series B Road Alignment
- Proposed Substation
- Transmission Line
- Collector Line
- Turbines
- Town Boundary
- County Boundary
- State Boundary

N

500

Meters

Figure 1-B

Kibby Wind Power Project

Proposed Transmission Line and Access Roads

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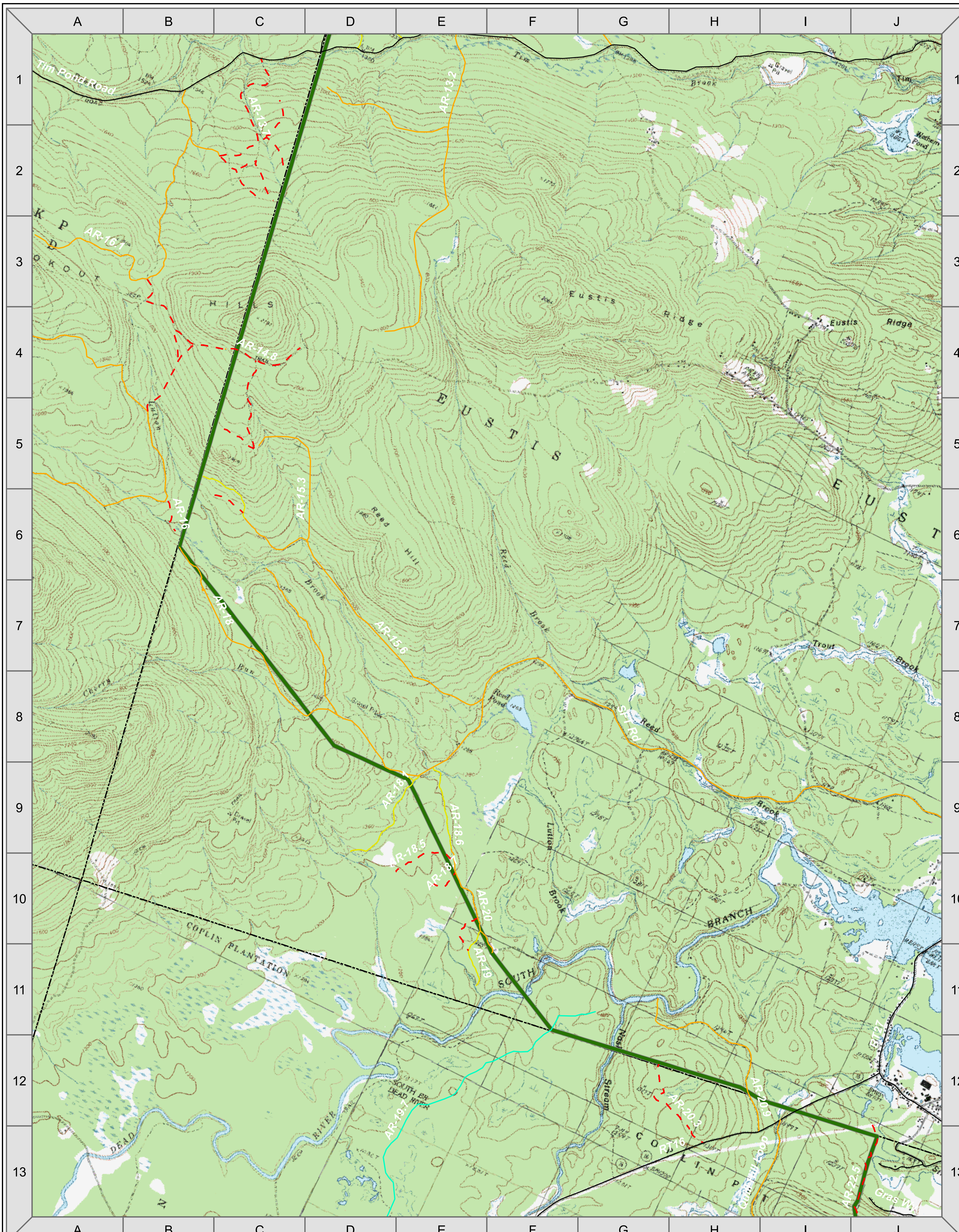

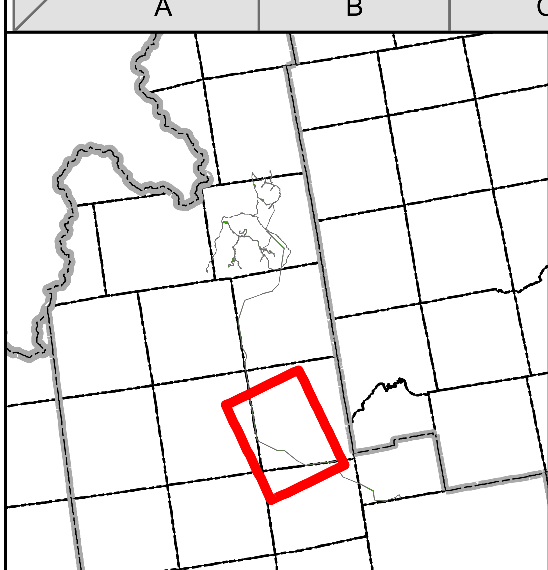

Legend

- Mile Marker
- Road
- GRAVEL ACCESS
- UNCONFIRMED ACCESS
- DORMANT LOGGING RD
- SKIDDER TRAIL
- ATV ACCESS
- Series A Road Alignment
- Series B Road Alignment
- Proposed Substation
- Transmission Line
- Collector Line
- Turbines
- Town Boundary
- County Boundary
- State Boundary

500

Meters

Figure 1-C

Kibby Wind Power Project

Proposed Transmission Line and Access Roads

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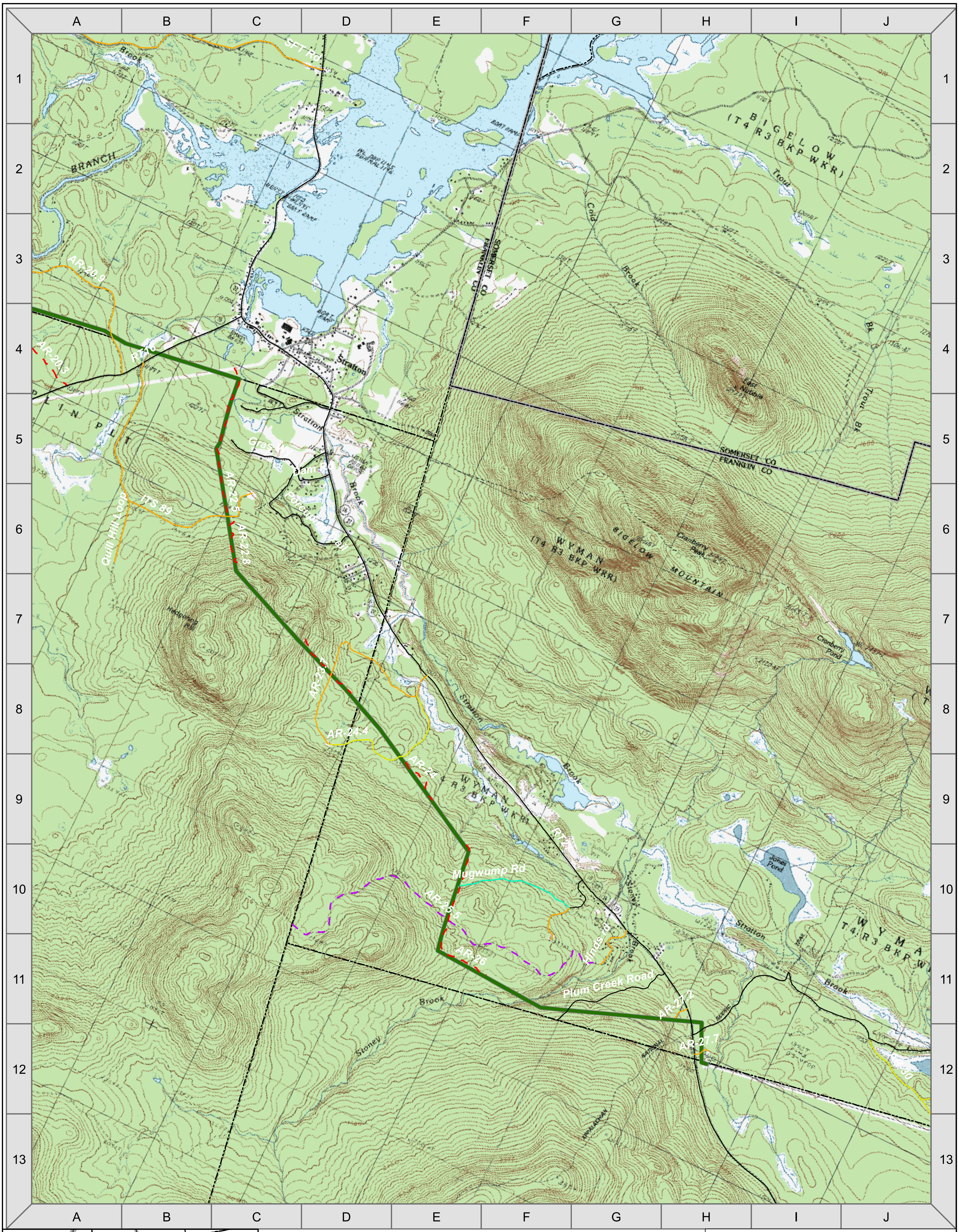

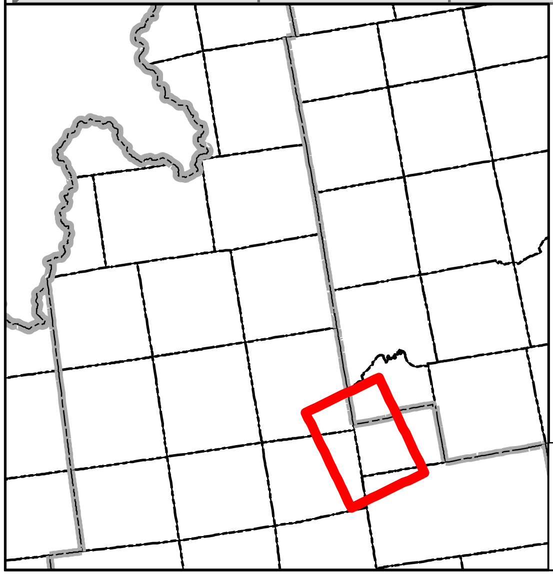

Legend

- Mile Marker
- Road
- GRAVEL ACCESS
- UNCONFIRMED ACCESS
- DORMANT LOGGING RD
- SKIDDER TRAIL
- ATV ACCESS
- Series A Road Alignment
- Series B Road Alignment
- Proposed Substation
- Transmission Line
- Collector Line
- Turbines
- Town Boundary
- County Boundary
- State Boundary

500
Meters

Figure 1-D

Kibby Wind Power Project

Proposed Transmission Line and Access Roads

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APPENDIX A
DEFINITION OF TERMS

APPENDIX A

DEFINITION OF TERMS

Adjacent to a natural resource: Within 100 feet or in a position to wash into a water resource (river, stream, brook, pond, wetland, or tidal area).

Annual seed mix: Seed mixture largely made up of plants that only persist one growing season.

Brook: Essentially the same as a stream, a water course that has a defined channel, a gravel, sand, rock or clay base, and flows at least part of the year. It may be a dry channel part of the year.

Corduroy: Logs greater than 3 inches in diameter at the small end and at least 18 feet long that are placed perpendicular to travel direction, on approaches to and in wetlands for crossings. The purpose of the logs is to prevent rutting and preserve vegetation root integrity in and adjacent to wetland areas. May also be used on approaches to mats or bridge stream crossings.

Crossing: Any activity extending from one side to the opposite side of a sensitive natural resource whether under, through, or over that resource. Such activities include, but are not limited to, roads, fords, bridges, culverts, utility lines, water lines, sewer lines, and cables, as well as maintenance work on these crossings. Crossings should be done to minimize impact. For example, crossing at a right angle to the resource and finding the driest or narrowest spot is one method for minimizing impact.

Cross-sectional area: The cross-sectional area of a stream channel is determined by multiplying the stream channel width by the average stream channel depth. The stream channel width is the straight-line distance from the normal high water line on one side of the channel to the normal high water line on the opposite side of the channel. The average stream channel depth is the average of the vertical distances from a straight line between the normal high water marks of the stream channel to the bottom of the channel.

Culvert: A pipe or box structure of wood, metal, plastic, or concrete used to convey water.

Erosion: Movement of earthen material by water or wind.

Erosion control blanket (matting): Manufactured material made out of natural or synthetic fiber designed to control movement of earthen material when installed properly.

Erosion control mix: Erosion control mix consists primarily of organic materials such as shredded bark, wood chips, stump grindings, composted bark, or similar materials. Ground construction debris or reprocessed wood products are not acceptable for use in erosion control mix. It contains a well-graded mix of particle sizes and may contain rocks up to 4 inches in

diameter. Properly manufactured mix will have organic matter content between 80 and 100 percent (dry weight), 100 percent of particles must pass a 6-inch screen, the organic portion needs to be fibrous and elongated, only small proportions of silts, clays, or fine sand, and a pH between 5.0 and 8.0. Its applications include erosion control berms and mulch.

Erosion control plans: Written guidelines specific to a project or activity, describing various techniques and methods to control erosion for specific construction activities.

Fill: Any earth, rock, gravel, sand, silt, clay, peat, or debris that is put into or upon, supplied to, or allowed to enter a water body or wetland. Material, other than structures, placed in or adjacent to a water body or wetland.

Filter strip: Undisturbed areas of ground consisting of natural vegetation and natural litter such as leaves, brush, and branches, located between a water resource and access road, skid road or trail, or other area of disturbed soil.

Ford: A permanent crossing of a stream utilizing an area of existing, non-erodible substrate of the stream, such as ledge or cobble, or by placing non-erodible material such as stone or geotextile on the stream bottom.

Geotextile, Non-woven: Synthetic material made of spun polypropylene fiber used to support wetland fill or stabilize soils.

Geotextile, Woven: Synthetic material of woven polypropylene used to stabilize soils and make sediment barriers (silt fence).

Great pond: An inland water body which in a natural state has a surface area in excess of 10 acres, and any inland water body which is artificially formed or increased which has a surface area in excess of 30 acres.

Intermittent watercourse: Water course that has water in it only part of the year. It is still considered a natural resource.

Mats: Pre-constructed, portable, timber platforms used to support equipment or travel in or over wetlands or water bodies.

Mulch: Temporary erosion control such as hay, bark, or some similar natural material utilized to stabilize disturbed soil.

Perennial seed mix: Seed mixture made up of seeds from plants that persist for several years.

Perennial watercourse: A river, stream, or brook depicted as a solid blue line on the most recent edition of a United States Geological Survey 7.5 minute series topographic map. Typically has water in it year round.

Permanent access road: Project access road that is not restored after project construction completion. Permanent access roads should be designed and constructed so they are not an

erosion problem. None are currently anticipated to be constructed for the proposed 115 kV transmission line.

Permanent stabilization: Establishment of a permanent vegetative cover on exposed soils where perennial vegetation is needed for long-term protection.

Permanent vegetative cover: Perennial seed stock, including but not limited to grasses and legumes that persist for more than several growing seasons.

Protected Natural Resource: Coastal sand dune system, coastal wetlands, significant wildlife habitat, fragile mountain areas, freshwater wetlands, great ponds or rivers, streams, or brooks. This definition is taken from the Maine Natural Resources Protection Act dated August 23, 2006.

Riprap: Heavy, irregular-shaped rocks that are fit into place, usually without mortar, on a slope in order to stabilize and prevent soil erosion.

Sediment barrier: Staked hay bales, silt fence, or similar materials placed in a manner to intercept silt and sediment laden water runoff.

Sedimentation: Deposition of earthen material in a water body or wetland.

Sensitive Natural Resource: Area that deserves special attention because it is significant wildlife habitat, fisheries habitat, or has other natural resource values. These areas may require the use of minimum impact construction techniques such as use of mats, leaving vegetation intact for buffers, special timing of construction, or other specific techniques.

Settling basin (sediment/catch basin): Excavated pit placed to intercept water running off disturbed soils or dirt road bed. Usually used only where filter strip is inadequate to protect a stream, pond, or wetland from silt and sediment.

Silt fence: Woven geotextile sediment barrier. Proper installation requires placement on-contour and keying the fabric in at ground level.

Steep slopes: Slopes in excess of eight percent.

Stone check dam: A small, temporary dam constructed across a swale or drainage ditch. The purpose is to reduce the velocity of concentrated flows, reducing erosion and trapping sediment generated in the ditch.

Stream: Generally, a channel between defined banks with a gravel, sand, rock, or clay base that flows at least part of the year. It may be a dry channel part of the year. The Maine Natural Resources Protection Act contains a more detailed definition.

Structure: Anything built for the support, shelter, or enclosure of persons, animals, goods, or property of any kind, together with anything constructed or erected with a fixed location on or in the ground. Examples of structures include buildings, utility lines, and roads.

Temporary access road: Road constructed solely for project access which is restored to original grade upon project completion, if not sooner. All exposed soils on access road adjacent

to water bodies or on slopes steeper than eight percent must be stabilized with a permanent seed mix and mulch or matting.

Temporary stabilization: Mulch, matting, or seed, or a combination thereof, utilized to stabilize soil. Soil stock piles left in place longer than 14 days must have temporary stabilization.

Temporary vegetative cover: An annual seed mixture, typically annual rye and oats.

Topography: The contour and elevation of the surface of the ground.

Turn out: Water diversion that directs water out of a ditch or off a travel-way and into a vegetated buffer.

Upland edge: The area of uplands alongside a wetland, stream, or water body.

Wastes requiring special handling: Wastes generated from construction activity including engine oil, hydraulic oil, gear oil, diesel, gasoline, or coolants.

Water bar: Constructed bar across an access road or skid trail that directs surface water off the road or trail into a stable vegetated surface or filter strip. They are used as a temporary measure on active roads or when closing roads permanently to prevent erosion.

Water body: River, stream, brook, pond, wetland, or tidal area.

Water resource: River, stream, brook, pond, wetland, or tidal area.

Wetland: An area that is inundated or saturated by surface or groundwater at a frequency and for a duration sufficient to support, and which under normal circumstance do support, a prevalence of wetland vegetation typically adapted for life in saturated soils. The Maine Natural Resources Protection Act contains a more detailed definition.

APPENDIX B
PROJECT CONTACT LIST

APPENDIX B

PROJECT CONTACT LIST

To be determined — Office:

Construction Project Manager — Mobile:

Affiliation

To be determined	Office:
Lead Environmental Inspector	Mobile:
To be determined	Office:
Environmental Compliance Manager	Mobile:
To be determined	Office:
Land Agent	Mobile:
To be determined	Office:
Public Relations	Mobile:
To be determined	Office:
LURC Contact	Mobile:
To be determined	Office:
DEP Contact	Mobile:

APPENDIX C
CONSTRUCTION TECHNIQUE ILLUSTRATIONS

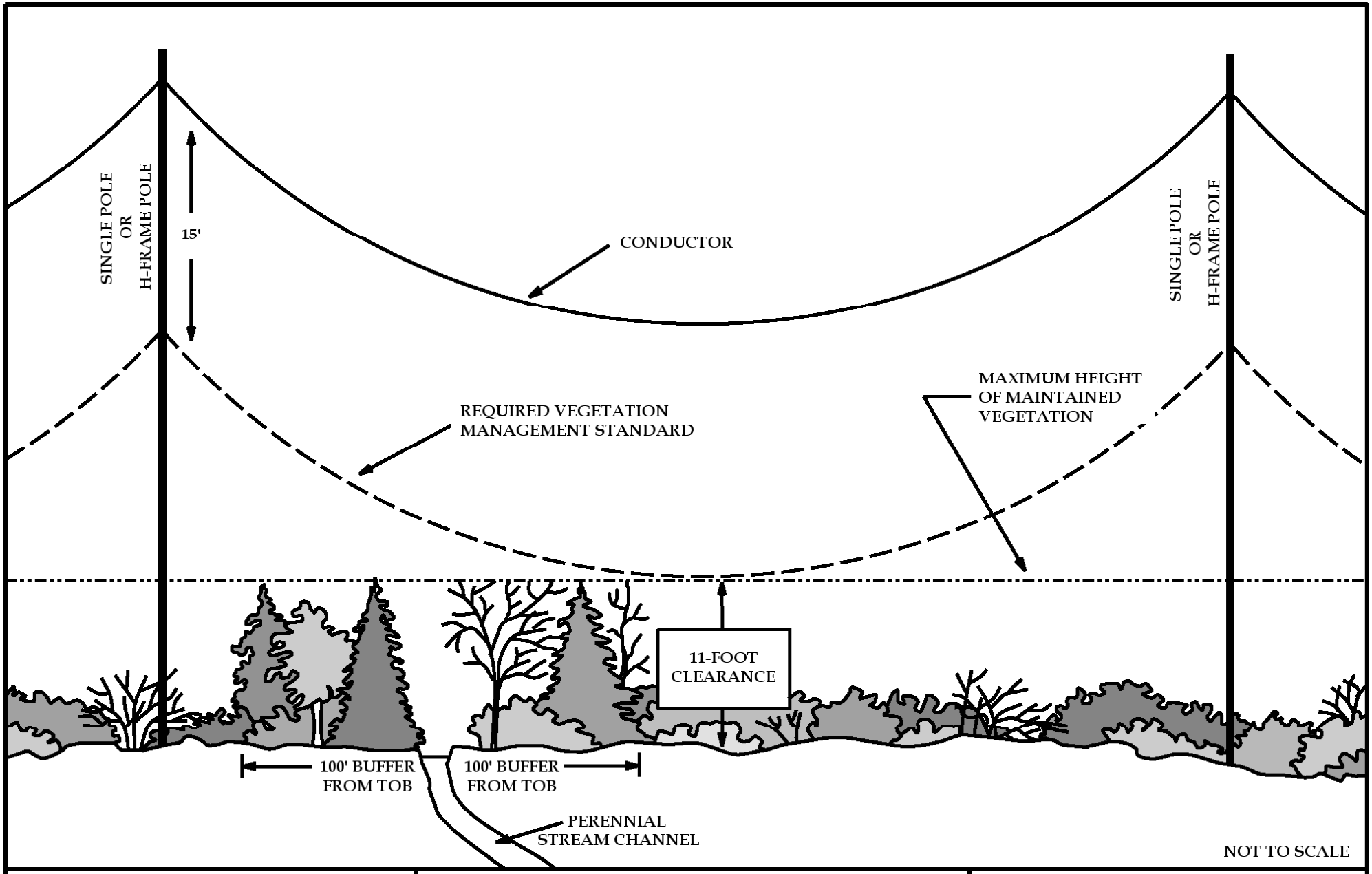

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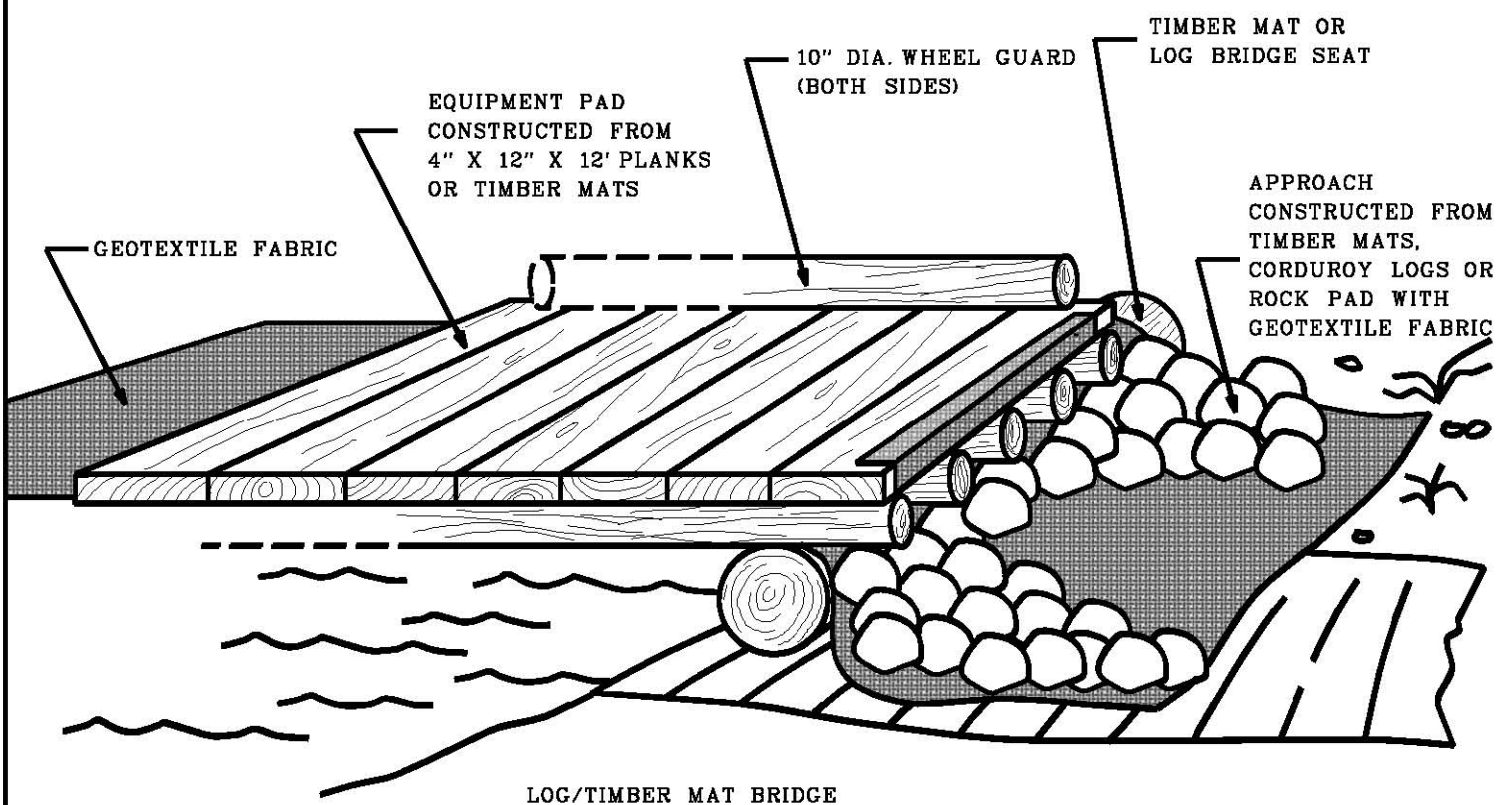
FIGURE 1

TYPICAL ROW VEGETATION CLEARING / MAINTENANCE

SPAN	DIAMETER	
	(80,000 lb. load)	(40,000 lb. load)
8 ft.	16 in.	12 in
12 ft.	18 in.	14 in.
16 ft.	20 in.	16 in.



LOG/TIMBER MAT BRIDGE

(TEMPORARY)

NOTES:

1. Span small crossings with mats.
2. Add support culverts to stream if the stream is too wide to span with one mat length. (Ensure fish passage requirements)
3. Add geotextile fabric under equipment pad to prevent soil from entering stream.
4. Install wheel guards to ensure that soil does not spill over into stream.
5. Approaches to equipment pad may be timber mats, corduroy logs, or a rock pad over geotextile fabric.
6. Additional pads can be placed side by side if extra width is required.
7. Equipment pad typically contructed of hardwood; must accommodate the largest equipment utilized.

FIGURE 2
LOG / TIMBER MAT BRIDGE

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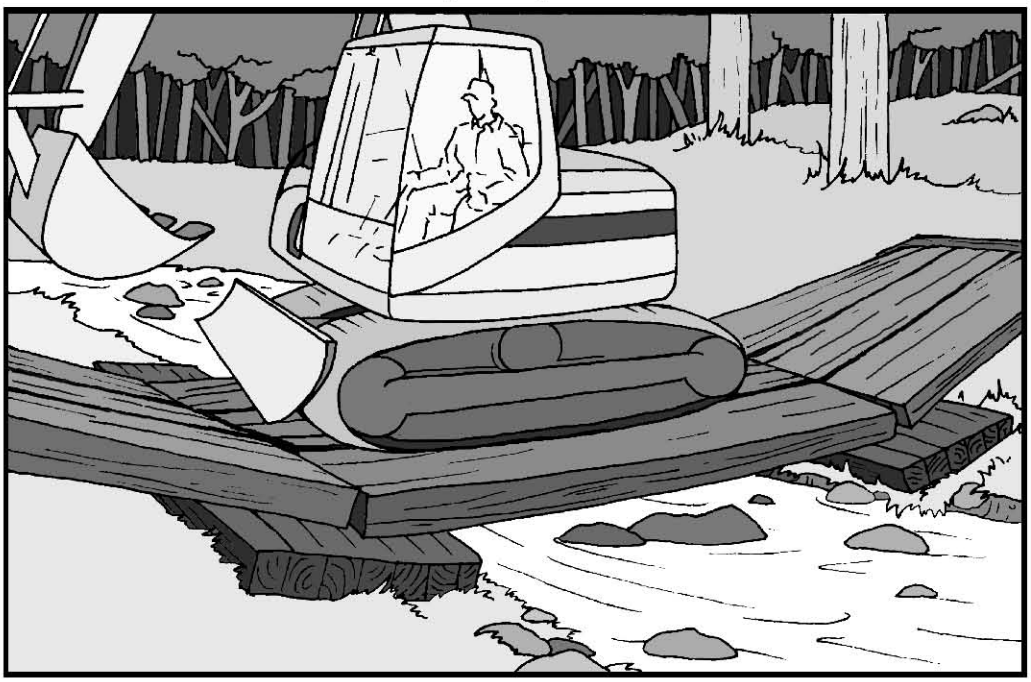
TIMBER MAT - WATERBODY CROSSING

IMPROPER INSTALLATION

- Mats not long enough to keep equipment out of water and wetland soils
- Lacks cross supports which elevate travel mat
- Mats do not extend far enough to protect wetland soils from rutting



PROPER INSTALLATION

- Mats are elevated by cross-supports on stream banks, keeping them up out of water and out of wet soils
- Water flows under mats
- Mats extend over approaches to crossing, protecting soils from eroding
- Equipment stays out of water and wetlands

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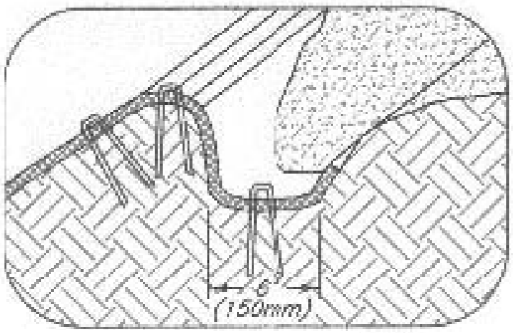
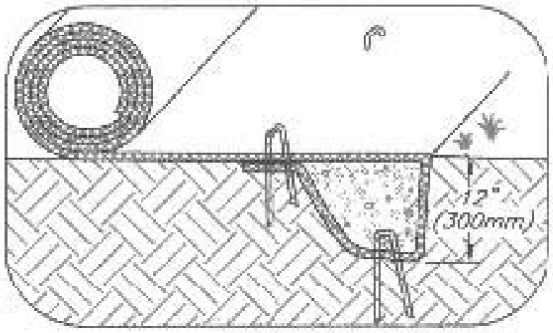
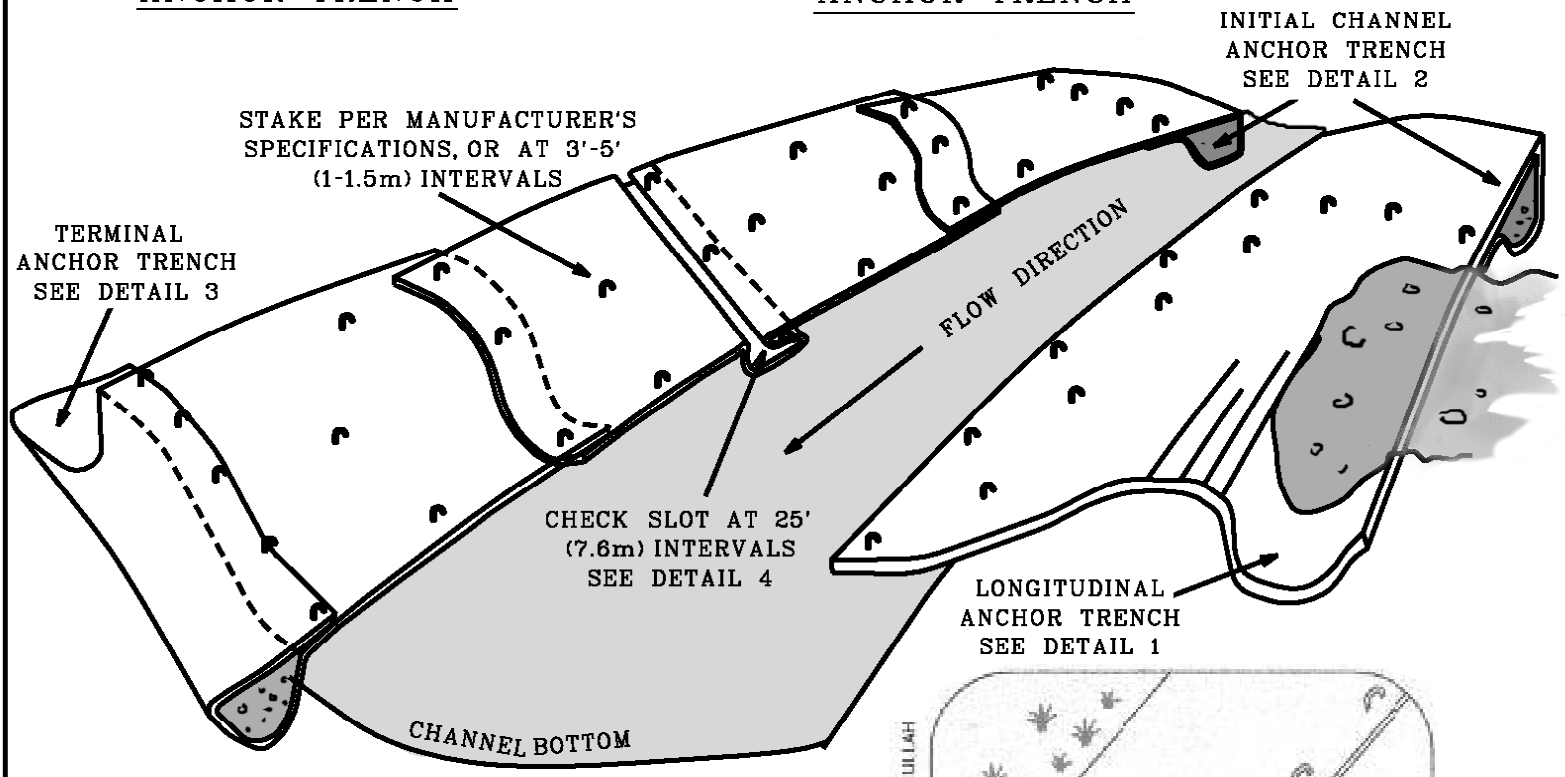
FIGURE 3
TIMBER MAT WATERBODY CROSSING

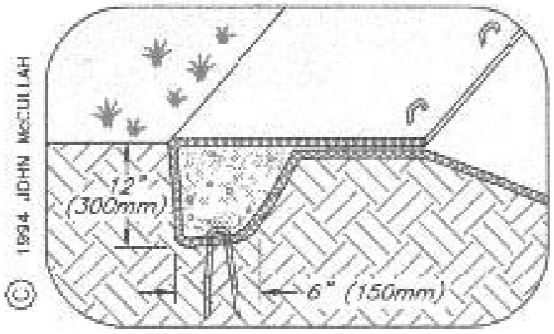


DETAIL *1: LONGITUDINAL ANCHOR TRENCH

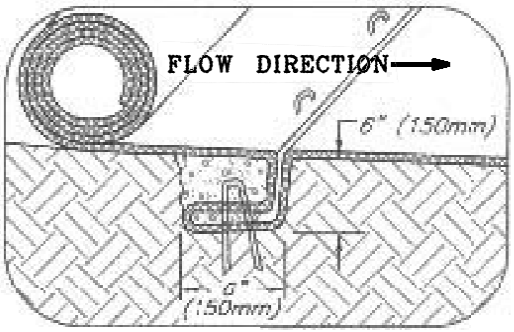


DETAIL *2: INITIAL CHANNEL ANCHOR TRENCH





DETAIL *3: TERMINAL SLOPE AND CHANNEL ANCHOR TRENCH



DETAIL *4: CHECK SLOT

NOTES:

1. CHECK SLOTS TO BE CONSTRUCTED PER MANUFACTURER'S SPECIFICATIONS.

2. STAKING OR STAPLING LAYOUT PER MANUFACTURER'S SPECIFICATIONS.

3. FIRM CONTINUOUS CONTACT BETWEEN SOIL AND MAT IS CRITICAL FOR PROPER FUNCTION (I.E. TO PREVENT EROSION).

FIGURE 4
STREAM BANK STABILIZATION USING EROSION CONTROL BLANKETS

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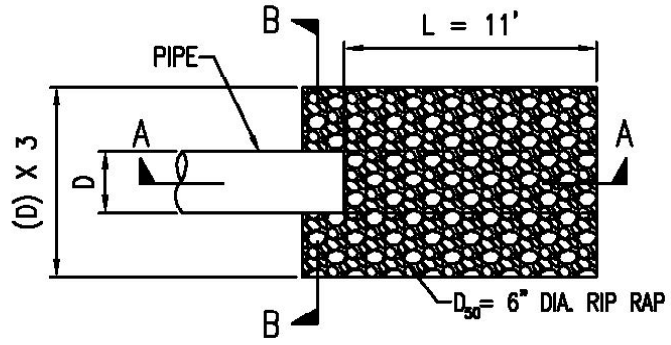
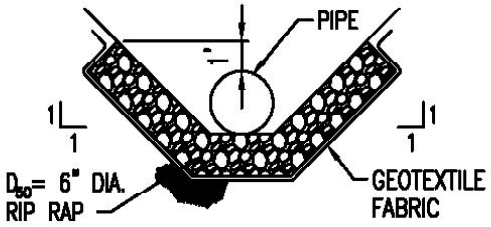
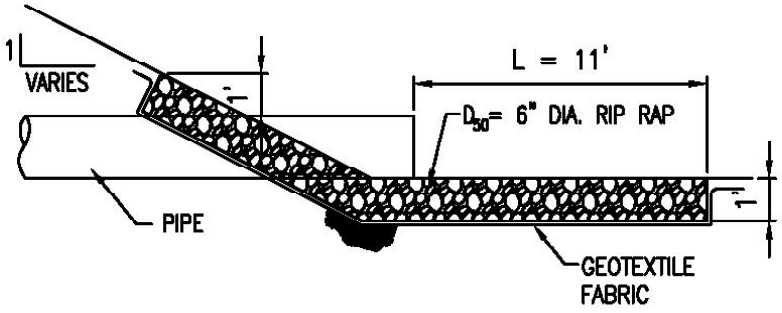


PLAN



SECTION B–B



SECTION A–A

FIGURE 5
CULVERT INLET / OUTLET
PROTECTION
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CULVERT CROSSING

IMPROPER INSTALLATION

- Culvert is undersized, allowing overflow to cross travel-way
- Insufficient cover thickness over culvert
- Outlet is not stable, leading to erosion
- Culvert outlet is set too high, causing it to be impassable to fish and other aquatic organisms

PROPER INSTALLATION

- Culvert is adequately sized for flow
- Sufficient cover thickness over culvert
- Inlet and outlet are adequately supported by gravel and rock to protect and maintain stability
- Outlet is properly seated at or below stream bottom, allowing aquatic organisms to travel upstream

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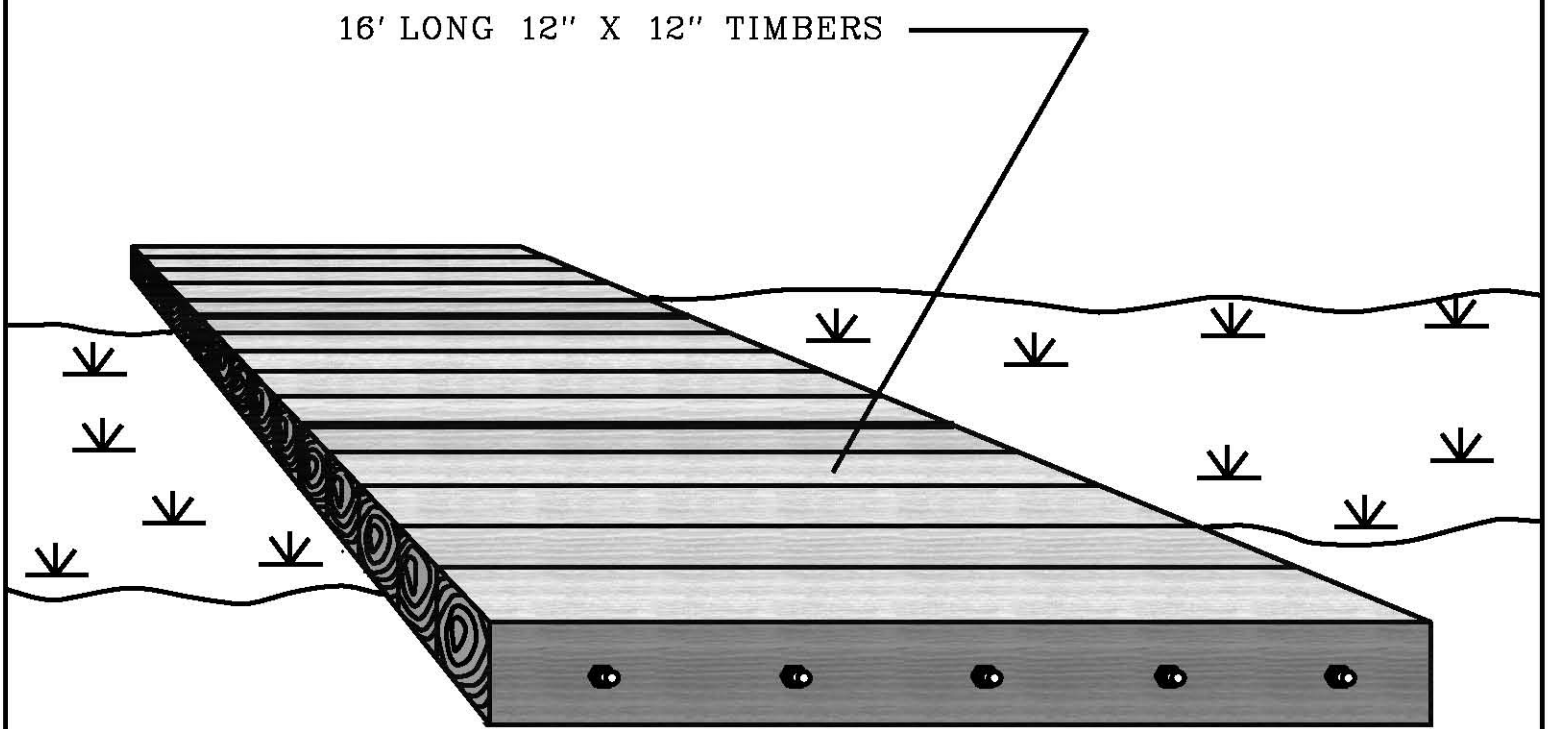
FIGURE 6
CULVERT CROSSING



PREFABRICATED
TIMBER MAT ROAD
(TEMPORARY LIGHT DUTY)

NOTE: TIMBER MATS TO BE PLACED WITH THE LONGEST DIMENSION OF THE MAT PERPENDICULAR TO THE DIRECTION OF TRAVEL.

FIGURE 7
TIMBER MAT ROAD

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TIMBER MAT - WETLAND CROSSING

IMPROPER INSTALLATION

- Long axis of mats is not perpendicular to travel direction
- Mats are working down into wetland causing significant disturbance and picking up mud
- Mats do not extend beyond wetland edge to solid ground

PROPER INSTALLATION

- Correct orientation relative to travel direction
- Entire wetland is spanned, preventing rutting at ends of crossing

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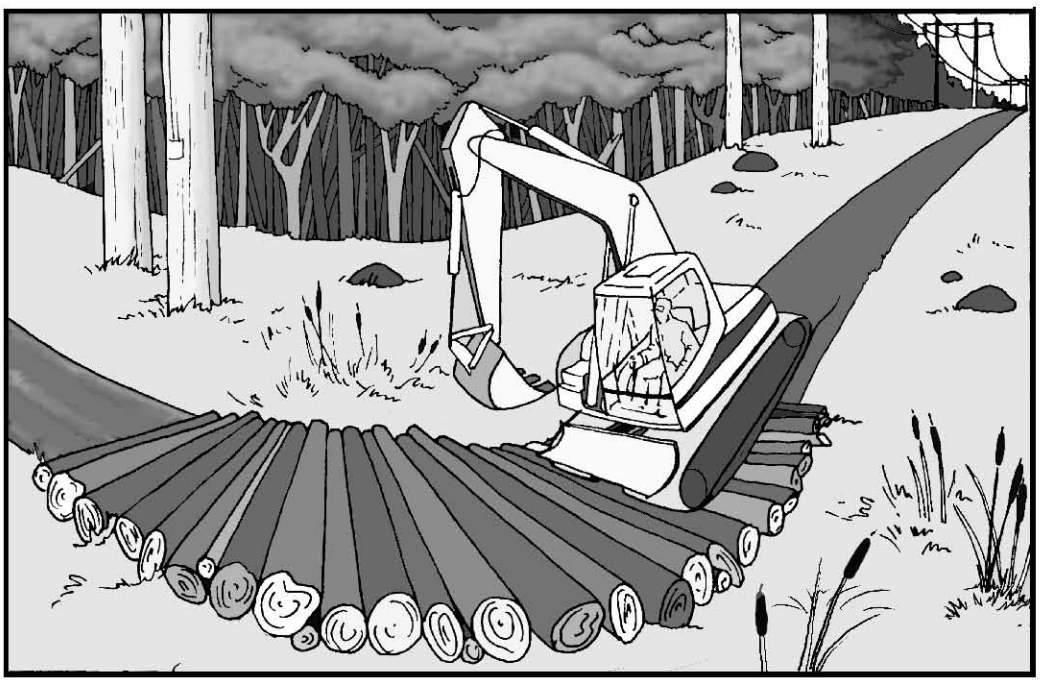
FIGURE 8
TIMBER MAT
WETLAND CROSSING

CORDUROY CROSSING

IMPROPER INSTALLATION

- Area is too wet for proper application of corduroy
- Insufficient corduroy to support equipment
- Corduroy is sunken into wetland soil
- Approaches are steep, rutted, and are not protected with additional corduroy or mats



PROPER INSTALLATION

- No flowing or standing water or saturated soil present
- Adequate amount of layered corduroy to protect soil from rutting
- Approaches are protected from rutting by extension of corduroy beyond edges of crossing

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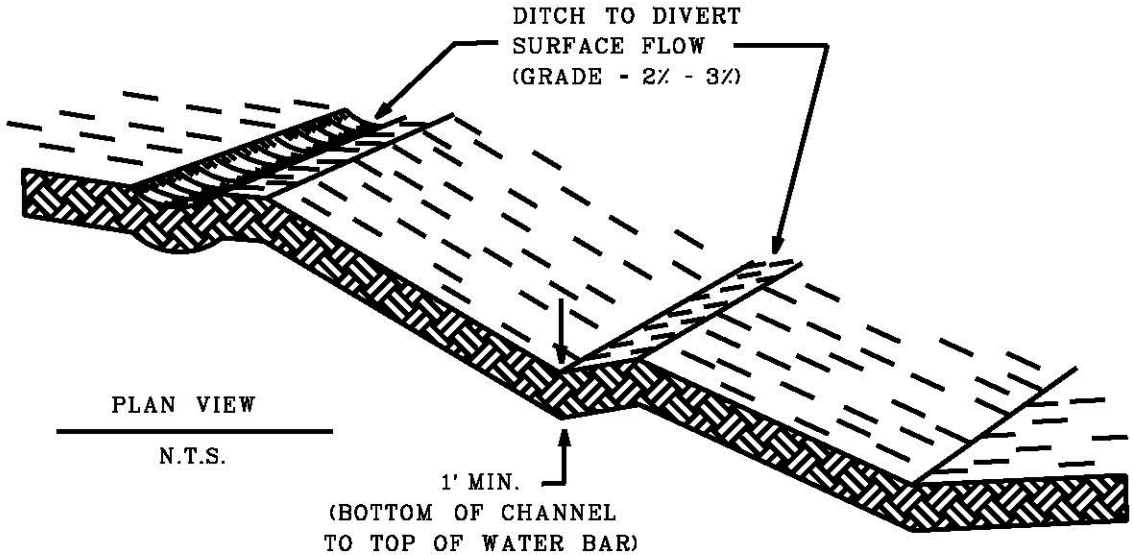
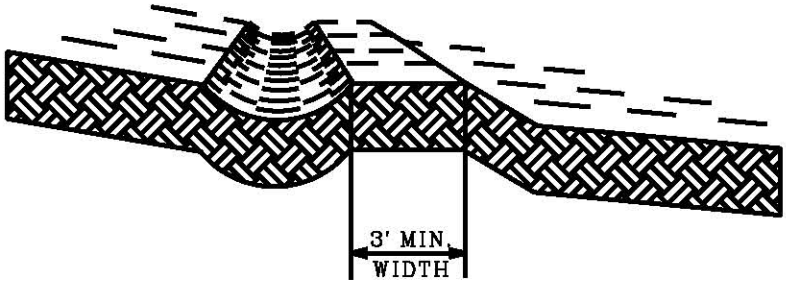
FIGURE 9
CORDUROY CROSSING

TYPICAL WATER BAR CONSTRUCTION



PLAN VIEW

N.T.S.



CROSS SECTION

N.T.S.

RECOMMENDED SPACING BETWEEN WATER BARS	
SLOPE (PERCENT)	SPACING (FEET)
0-2	500-300
3-5	250-180
6-10	167-140
11-15	136-127
16-20	125-120
21+	100

NOTES:

1. All trees, brush, stumps, rocks, and other obstructions shall be removed and disposed of to prevent interference with the proper functioning of the diversion.
2. Fills shall be compacted as needed to prevent unequal settlement or failure.
3. All graded areas shall be stabilized with temporary or permanent seeding.
4. Diversion channel should be lined with erosion control fabric as soil conditions require.
5. The outlet of the water bar must be to a well vegetated area or be stabilized by installing a stone check dam, haybale/silt fence dissipating device or synthetic geomat, depending on the amount of channelized flow expected. If used, the geomat will consist of a geotextile fabric 8 feet wide and 10 feet long. The end of the fabric at the right-of-way must be toed into the ground.

FIGURE 10
TYPICAL WATER BAR

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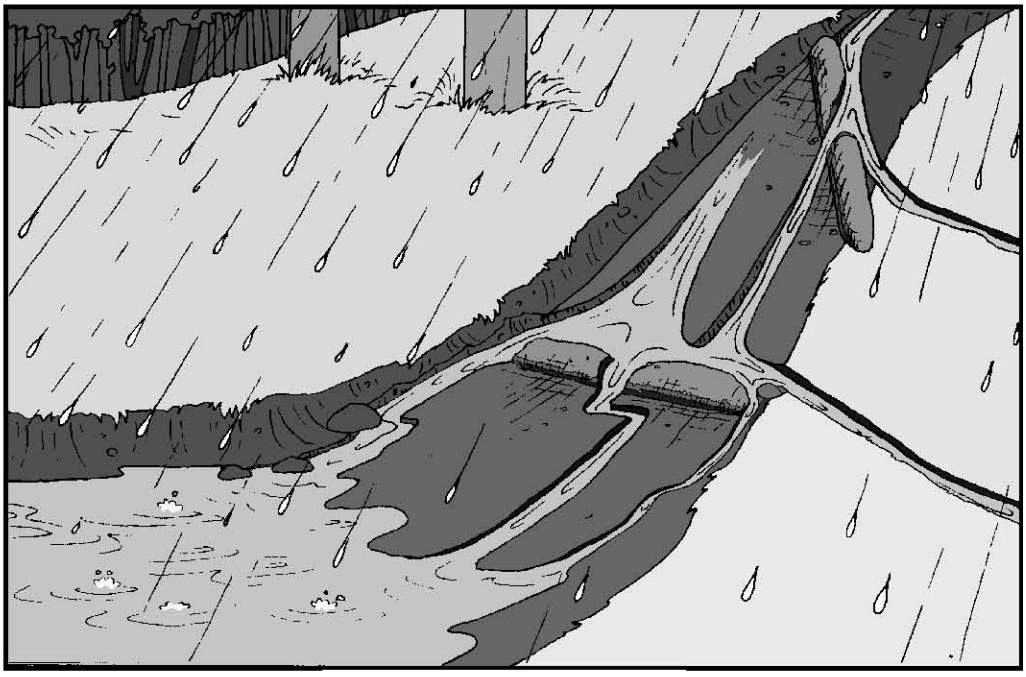
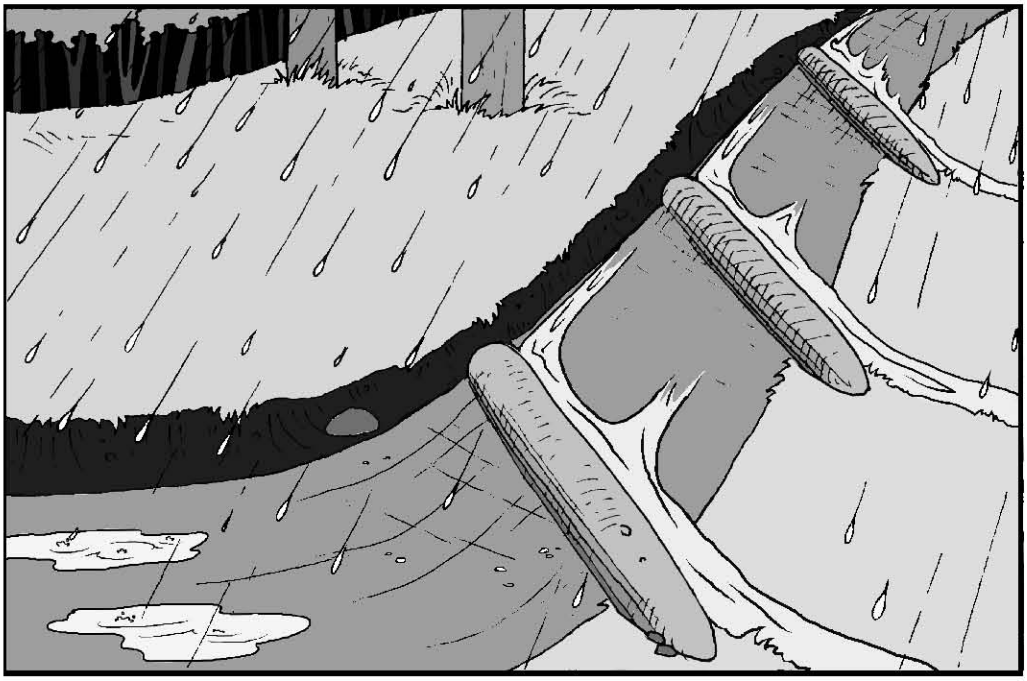
WATER BARS



IMPROPER INSTALLATION

- Upper bar is too steeply angled
- Angle of lower bar is too shallow
- Lower bar does not extend far enough, allowing water to escape around ends
- Bars are not high enough, allowing water to flow over top, eroding them



PROPER INSTALLATION

- Bars are at moderate angles
- There are enough bars to divert all water flowing down slope
- Bars are high enough to prevent water from flowing over them
- Bars extend beyond edges of road, preventing water from flowing around them

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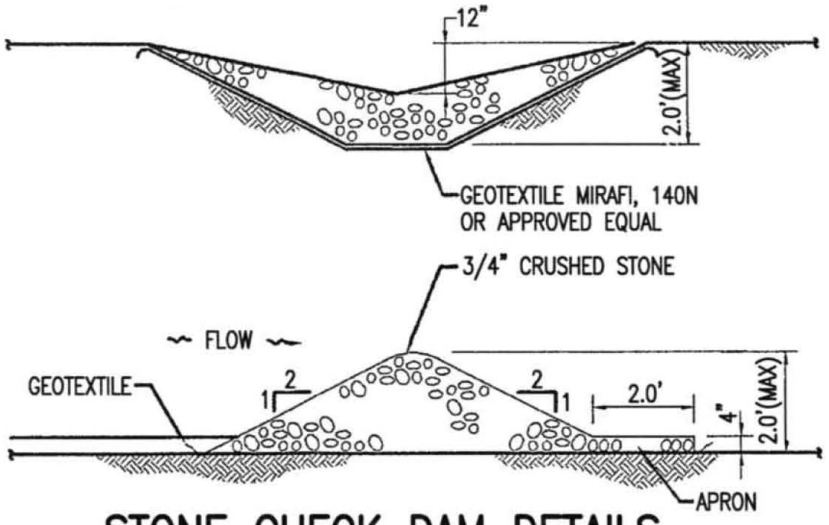
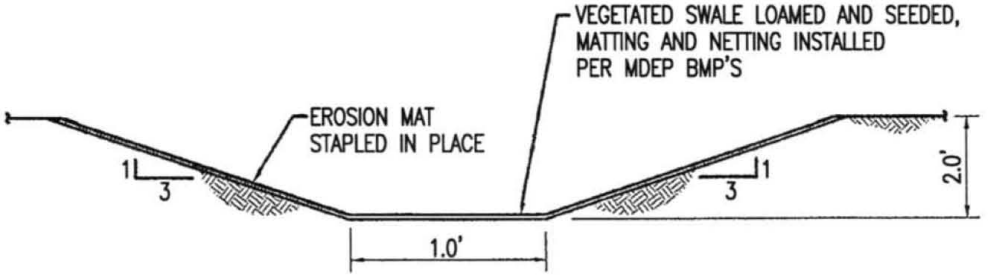
FIGURE 11
WATER BARS



STONE CHECK DAM DETAILS



VEGETATED SWALE DETAIL

FIGURE 12
TYPICAL SWALE STABILIZATION METHODS

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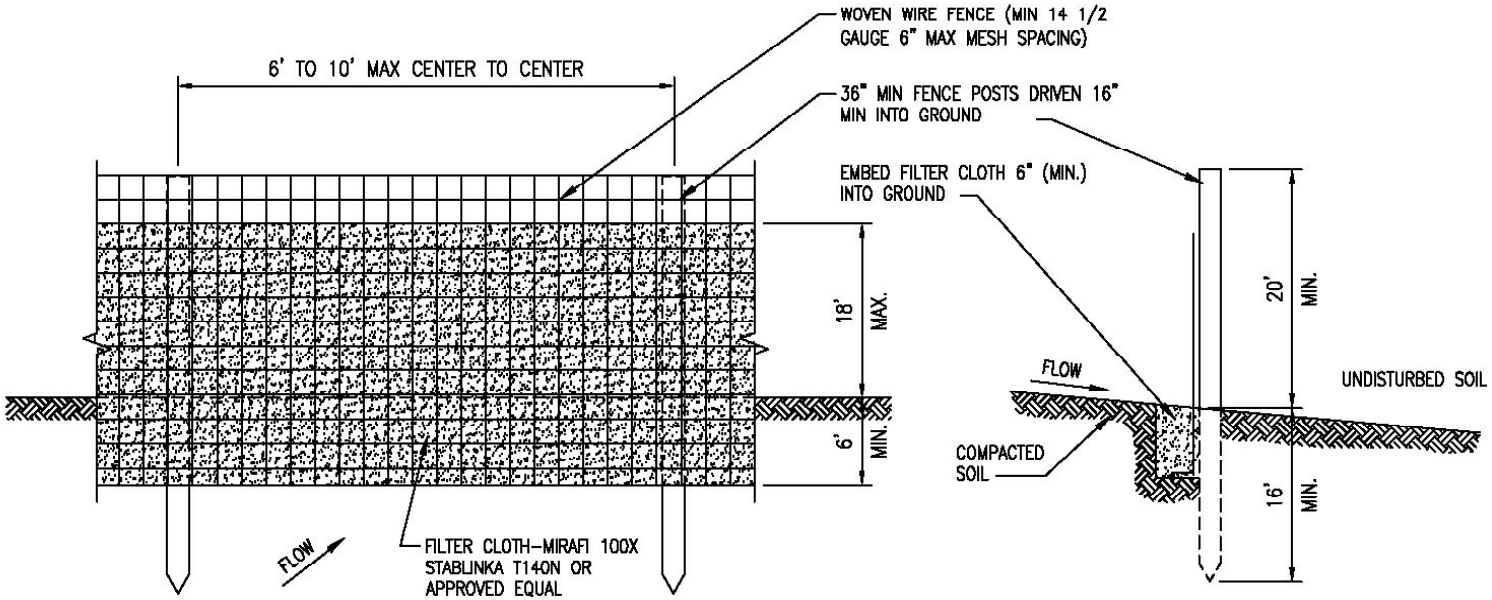

ELEVATION

SECTION

1. WOVEN WIRE FENCE TO BE FASTENED TO FENCE POSTS WITH WIRE TIES OR STAPLES.
2. FILTER CLOTH TO BE FASTENED SECURELY TO WOVEN WIRE FENCE WITH TIES SPACED EVERY 24" AT TOP AND MIDSECTION.
3. WHEN TWO SECTIONS OF FILTER CLOTH ADJOIN EACH OTHER THEY SHALL BE OVERLAPPED BY 6" AND FOLDED.
4. MAINTENANCE SHALL BE PERFORMED AS NEEDED AND MATERIAL REMOVED WHEN BUILD–UP REACHES 1/3 THE HEIGHT OF THE FENCE.

POSTS:	STEEL "T" OR "U" TYPE OR 2" HARDWOOD.
FENCE:	WOVEN WIRE. 14 1/2 GA 6" MAX MESH OPENING.
FILTER CLOTH:	FILTER X, MIRAFI 100X. STABLINKA T140N OR APPROVED EQUAL.
PREFABRICATED UNIT:	ENVIROFENCE OR APPROVED EQUAL

FIGURE 13
TYPICAL SILT FENCE EROSION CONTROL BARRIER
KIBBY WIND POWER PROJECT

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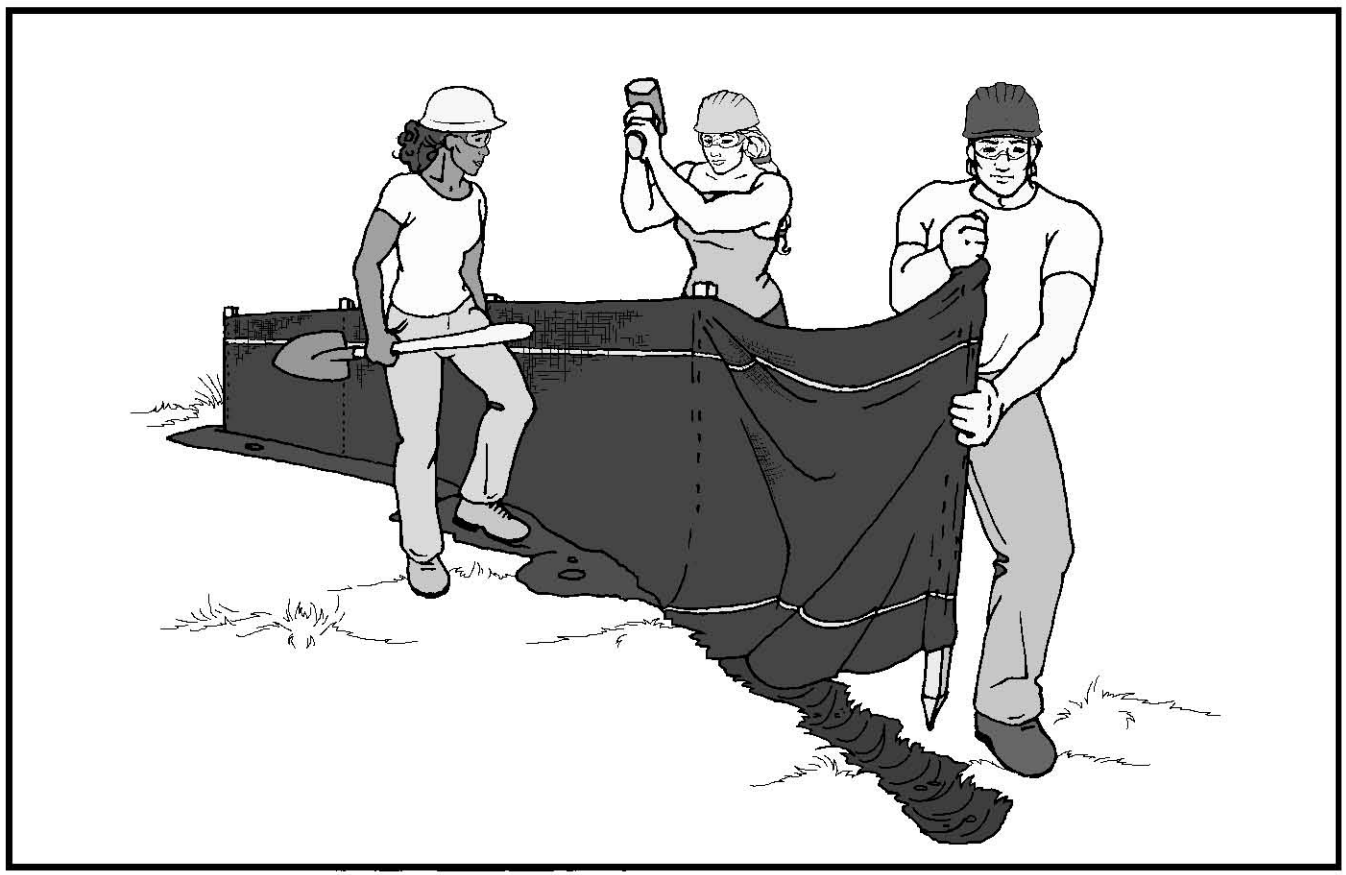
SEDIMENT BARRIER - SILT FENCE

PROPER INSTALLATION



- Dug trench to key material into ground
- Stakes are placed facing away from disturbed area
- Excess material on bottom is buried with excess dirt to prevent water from flowing under fence

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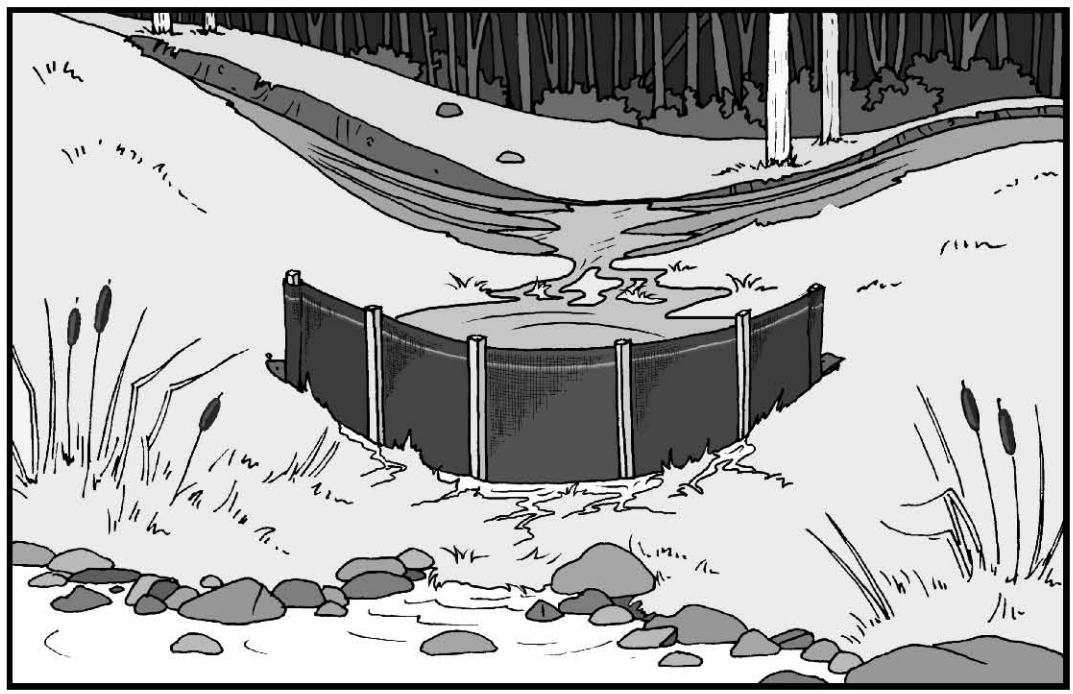
FIGURE 14
SEDIMENT BARRIER
-SILT FENCE-
PROPER INSTALLATION

SEDIMENT BARRIER - SILT FENCE

IMPROPER INSTALLATION

- Fence located too far from road and too close to resource
- Stakes installed on wrong side of fence
- Needs maintenance (restaking, restapling, or even replacement)



PROPER INSTALLATION

- Adequate distance from road and resource allows silt fence to capture and slow water, and allows silt fence to filter it before reaching resource
- Stakes placed on correct side; facing resource, while filter fabric faces disturbed area
- Adequate length; fence is long enough to prevent water from escaping around edges

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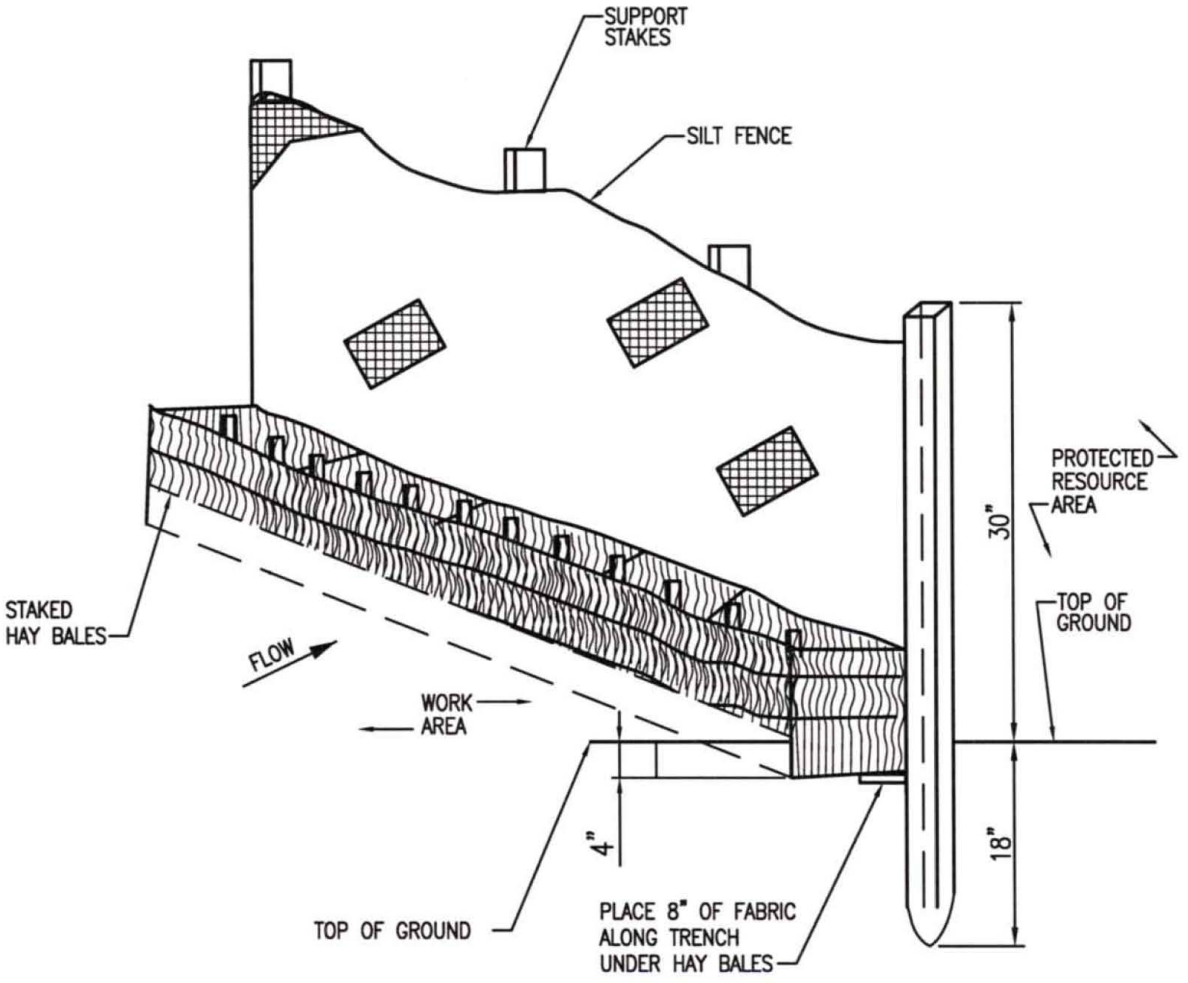
FIGURE 15
SEDIMENT BARRIER
SILT FENCE



NOTES

1. ESTABLISH TEMPORARY EROSION CONTROL AT LIMIT OF WORK UNLESS INDICATED OTHERWISE.
2. INSTALL WITH SILT FENCE ON WORK SIDE OF SUPPORT STAKES.

FIGURE 16
TYPICAL SILT FENCE / HAYBALE EROSION CONTROL BARRIER

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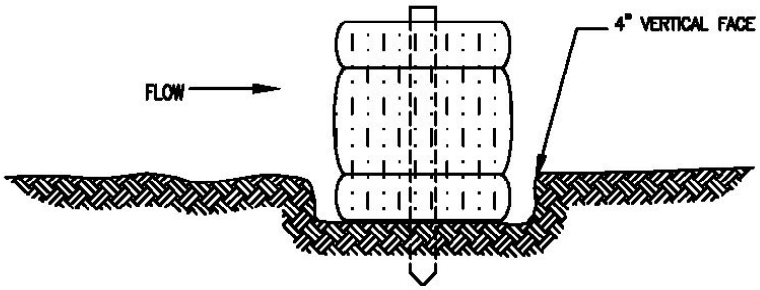
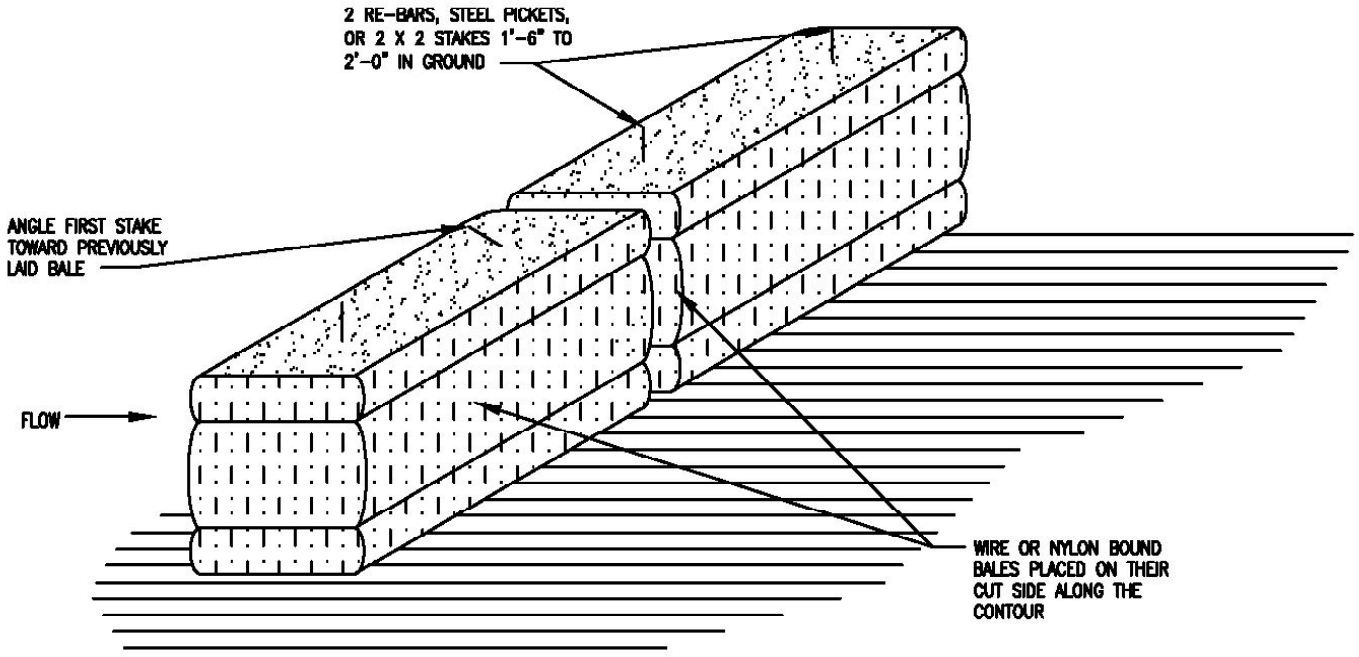


EMBEDDING DETAIL



ANCHORING DETAIL

FIGURE 17
TYPICAL HAYBALE EROSION CONTROL BARRIER

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SEDIMENT BARRIER - HAY BALES

PROPER INSTALLATION

- Dug trench to key bales into ground
- Stakes placed and driven in at angles to snug bales together
- Excess dirt used to cover openings and cracks
- Baling twine does not contact ground

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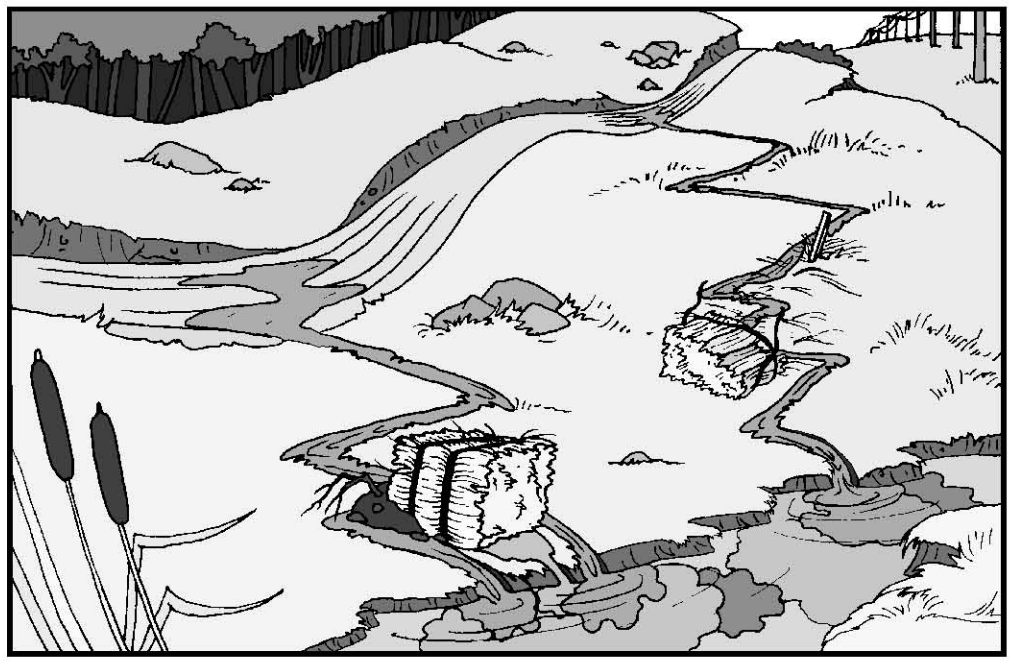
FIGURE 18
SEDIMENT BARRIER
-HAY BALES-
PROPER INSTALLATION

SEDIMENT BARRIER - HAY BALES



IMPROPER INSTALLATION

- Hay bales are not staked
- Not enough hay bales to adequately capture and slow flow
- Too far from source of runoff and sediment
- Improper orientation of bales; horizontal grass fibers do not provide adequate filtration
- Baling twine in contact with ground

PROPER INSTALLATION

- Staked properly; bales are secure and snug to one another
- Sufficient number of bales to slow flow and insure that no water escapes around edges
- Positioned close to disturbance, and far from resource to allow proper filtration
- Vertical orientation of grass fibers provides adequate filtration
- Baling twine does not contact ground

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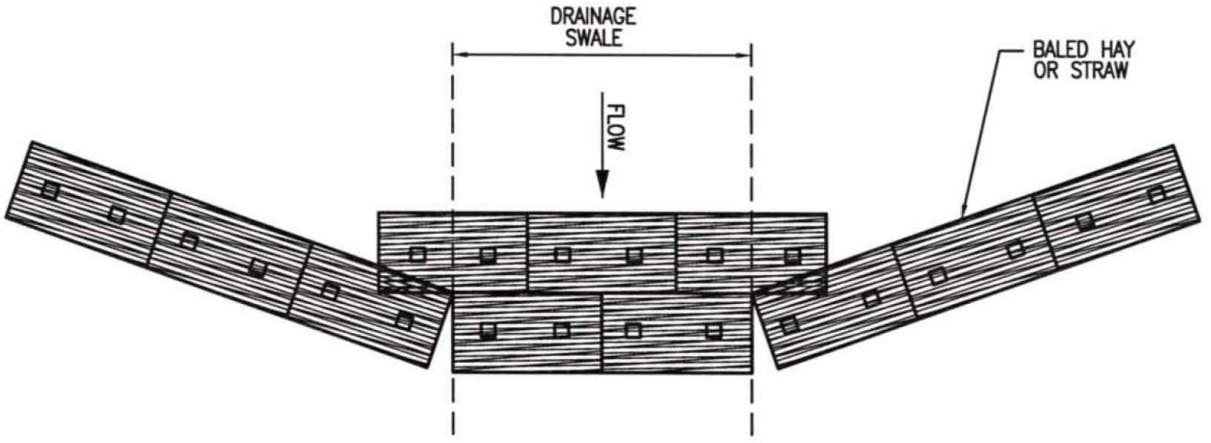
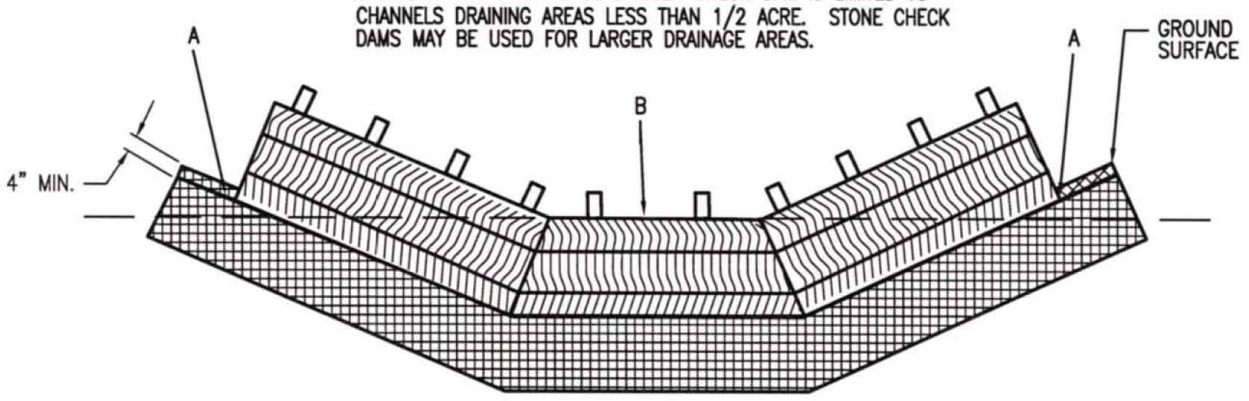
FIGURE 19
SEDIMENT BARRIER
HAY BALES



PLAN VIEW

NOTE:
PLACEMENT OF STRAW BALE BARRIER CHECK DAM IS LIMITED TO CHANNELS DRAINING AREAS LESS THAN 1/2 ACRE. STONE CHECK DAMS MAY BE USED FOR LARGER DRAINAGE AREAS.



POINTS "A" SHALL BE HIGHER THAN POINT "B"

CROSS-SECTION

HAY BALE CHECK DAM

FIGURE 20
TYPICAL HAY BALE CHECK DAM

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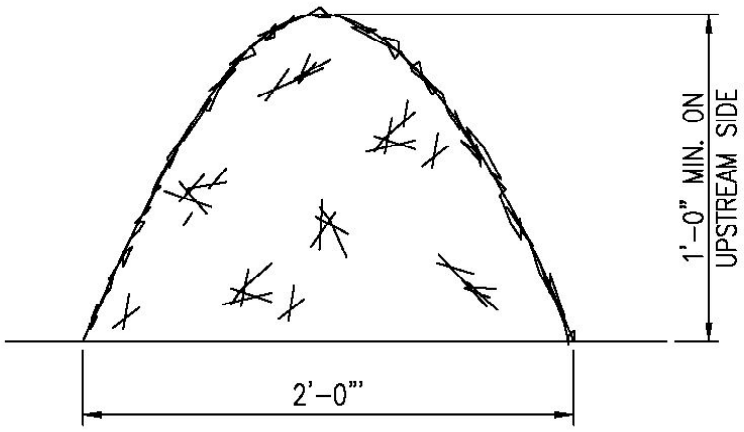

EROSION CONTROL SOIL/BARK MIX: SHALL CONSIST OF SHREDDED BARK, STUMP GRINDINGS, COMPOSTED BARK OR FLUME GRIT AND FRAGMENTED WOOD GENERATED FROM WATER-FLUME LOG HANDLING SYSTEMS. THE MIX SHALL CONFORM TO THE FOLLOWING:

1. pH – 5.0 TO 8.0.
2. SCREEN SIZE: 6" – 100% PASSING
   3/4" – 70% TO 85% PASSING
   MIX SHALL NOT CONTAIN LARGE PORTIONS OF SILTS, CLAYS OR FINE SANDS
3. ORGANIC MATERIAL 20% – 100% (DRY WEIGHT BASIS)
   ORGANIC PORTION MUST BE FIBROUS AND ELONGATED
4. SOLUBLE SALTS SHALL BE < 4.0 mmhos/cm

FIGURE 21
EROSION CONTROL MIX
BERM DETAIL
KIBBY WIND
POWER PROJECT

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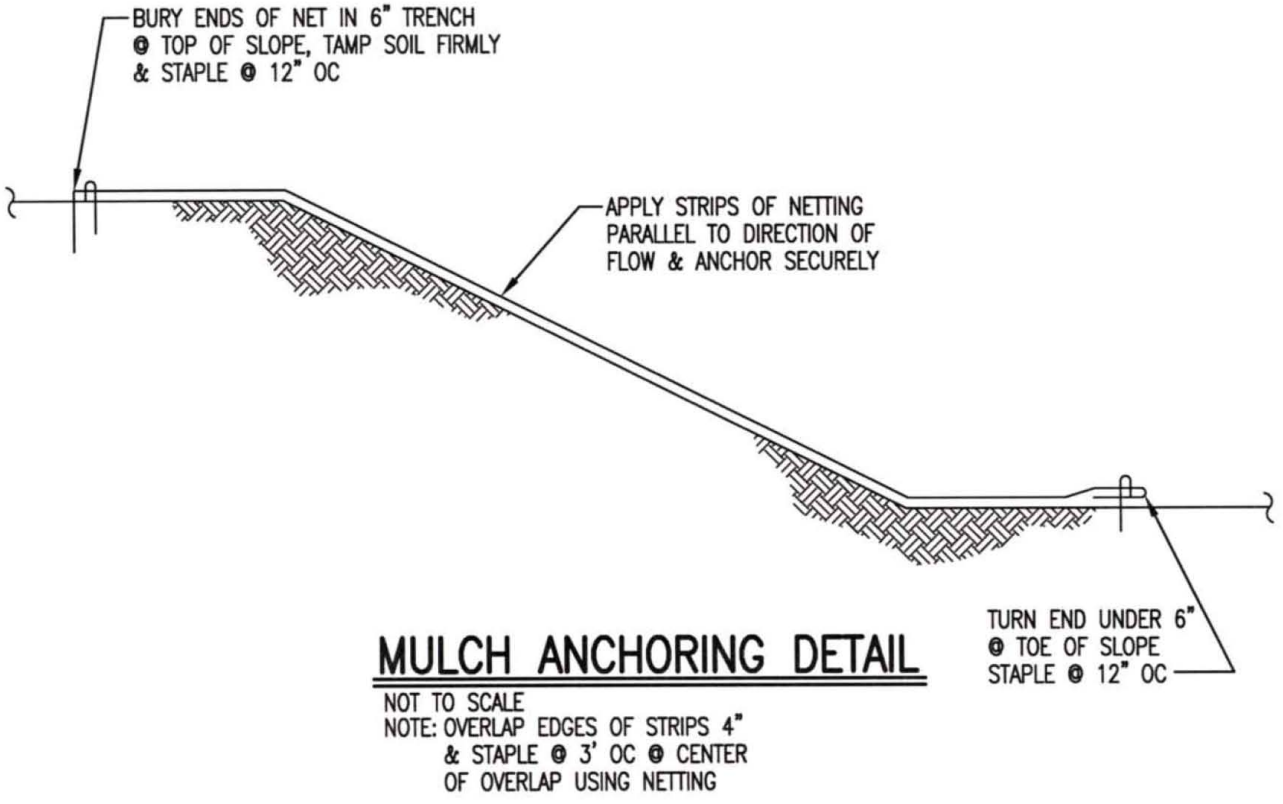

MULCH ANCHORING DETAIL

NOT TO SCALE
NOTE: OVERLAP EDGES OF STRIPS 4"
& STAPLE @ 3' OC @ CENTER
OF OVERLAP USING NETTING

FIGURE 22
MULCH ANCHORING DETAIL
USING NETTING

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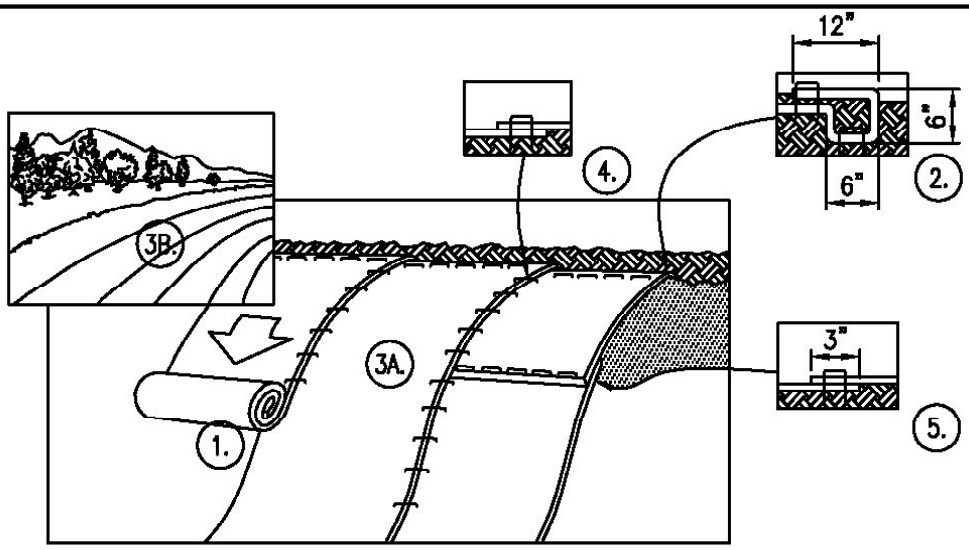

1. PREPARE SOIL BEFORE INSTALLING BLANKETS, INCLUDING ANY NECESSARY APPLICATION OF LIME, FERTILIZER, AND SEED. NOTE: WHEN USING CELL-O-SEED DO NOT SEED PREPARED AREA. CELL-O-SEED MUST BE INSTALLED WITH PAPER SIDE DOWN.

2. BEGIN AT THE TOP OF THE SLOPE BY ANCHORING THE BLANKET IN A 6" (15cm) DEEP X 6" (15cm) WIDE TRENCH WITH APPROXIMATELY 12" (30cm) OF BLANKET EXTENDED BEYOND THE UP-SLOPE PORTION OF THE TRENCH. ANCHOR THE BLANKET WITH A ROW OF STAPLES/STAKES APPROXIMATELY 12" (30cm) APART IN THE BOTTOM OF THE TRENCH. BACKFILL AND COMPACT THE TRENCH AFTER STAPLING. APPLY SEED TO COMPACTED SOIL AND FOLD REMAINING 12" (30cm) PORTION OF BLANKET BACK OVER SEED AND COMPACTED SOIL. SECURE BLANKET OVER COMPACTED SOIL WITH A ROW OF STAPLES/STAKES SPACED APPROXIMATELY 12" (30cm) APART ACROSS THE WIDTH OF THE BLANKET.

3. ROLL THE BLANKETS (A.) DOWN OR (B.) HORIZONTALLY ACROSS THE SLOPE. BLANKETS WILL UNROLL WITH APPROPRIATE SIDE AGAINST THE SOIL SURFACE. ALL BLANKETS MUST BE SECURELY FASTENED TO SOIL SURFACE BY PLACING STAPLES/STAKES IN APPROPRIATE LOCATIONS AS SHOWN IN THE STAPLE PATTERN GUIDE. WHEN USING OPTIONAL DOT SYSTEM, STAPLES/STAKES SHOULD BE PLACED THROUGH EACH OF THE COLORED DOTS CORRESPONDING TO THE APPROPRIATE STAPLE PATTERN.

4. THE EDGES OF PARALLEL BLANKETS MUST BE STAPLED WITH APPROXIMATELY 2"-5" (5cm-12.5cm) OVERLAP DEPENDING ON BLANKET TYPE. TO ENSURE PROPER SEAM ALIGNMENT, PLACE THE EDGE OF THE OVERLAPPING BLANKET (BLANKET BEING INSTALLED ON TOP) EVEN WITH THE COLORED SEAM STITCH ON THE PREVIOUSLY INSTALLED BLANKET.

5. CONSECUTIVE BLANKETS SPLICED DOWN THE SLOPE MUST BE PLACED END OVER END (SHINGLE STYLE) WITH AN APPROXIMATE 3" (7.5cm) OVERLAP. STAPLE THROUGH OVERLAPPED AREA, APPROXIMATELY 12" (30cm) APART ACROSS ENTIRE BLANKET WIDTH.

NOTE:
*IN LOOSE SOIL CONDITIONS, THE USE OF STAPLE OR STAKE LENGTHS GREATER THAN 6" (15cm) MAY BE NECESSARY TO PROPERLY SECURE THE BLANKETS.

FIGURE 23
SLOPE STABILIZATION USING
EROSION CONTROL BLANKETS
KIBBY WIND
POWER PROJECT

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APPENDIX D

CONTRACTOR'S WEEKLY INSPECTION FORM

TRANSCANADA KIBBY PROJECT 115 kV TRANSMISSION LINE

TEMPORARY STREAM CROSSING AND

EROSION AND SEDIMENTATION CONTROL INSPECTION FORM

Date: _____

Inspector: _____

Location (mile post, structure number, access road):

_____

Do adequate winter conditions exist (frozen ground and at least six inches of snow cover)?

Yes No Comments: _____

Have temporary stream crossings (bridges) been properly installed and are they intact?

Yes No Comments: _____

Are stream channels clear of debris such that the stream channel is not obstructed?

Yes No Comments: _____

Are Best Management Practices (BMP's) for erosion and sediment control being employed (such as silt fence, water bars, haybale check dams, seeding, hay mulch)?

Yes No

Circle all erosion and sediment control BMP's currently in use:

Silt Fence Water Bars Hay Bale Check Dams Seeding Mulching

Are BMP's being used properly (i.e., silt fence properly anchored and maintained, proper seeding and use of hay mulch)?

Yes No Comments:_____

Have temporary timber mats been used for wetland crossings?

Yes No Comments:_____

Is there any evidence of excessive rutting of soils, wetland crossing without use of temporary mats, soil erosion, or sedimentation of waters along any portion of the areas inspected?

Yes No Comments:_____

If yes, please explain who was notified and directed to take corrective action and the date and time they were notified:

_____

_____

	TransCanada	Contractor
Acknowledgement		
	Print:_____	Print:_____
	Signature:_____	Signature:_____
Completion of Actions		
	Print:_____	Print:_____
	Signature:_____	Signature:_____

APPENDIX E

MAINE EROSION AND SEDIMENTATION CONTROL LAW*

38 MRSA §420-C

APPENDIX E

MAINE EROSION AND SEDIMENTATION CONTROL LAW*

38 MRSA §420-C

A person who conducts, or causes to be conducted, an activity that involves filling, displacing or exposing soil or other earthen materials shall take measures to prevent unreasonable erosion of soil or sediment beyond the project site or into a protected natural resource as defined in section 480-B. Erosion control measures must be in place before the activity begins. Measures must remain in place and functional until the site is permanently stabilized. Adequate and timely temporary and permanent stabilization measures must be taken and the site must be maintained to prevent unreasonable erosion and sedimentation.

This section applies to a project or any portion of a project located within an organized area of this State. This section does not apply to agriculture fields. Forest management activities, including associated road construction or maintenance, conducted in accordance with applicable standards of the Maine Land Use Regulation Commission, are deemed to comply with this section. This section may not be construed to limit a municipality's authority under home rule to adopt ordinances containing stricter standards than those contained in this section.

* The Erosion and Sedimentation Control Law is administered by DEP. Please contact the DEP in Augusta, Maine with specific questions regarding this law.

APPENDIX F

MAINE SLASH LAW*

12 MRSA §9333

APPENDIX F

MAINE SLASH LAW*

12 MRSA §9333

§9333. Disposal along railroad and utility lines

1. **Stumpage owner**. A stumpage owner, operator, landowner or agent who cuts or causes or permits to be cut any forest growth on lands that are within or border the right-of-way of a railroad, a pipeline, or an electric power, telegraph, telephone or cable line may not place slash or allow it to remain on the ground within the right-of-way or within 25 feet of the nearer side of the right-of-way.

2. **Construction**. Slash accumulated by the construction and maintenance of a railroad, a highway, a pipeline or electric power, telegraph, telephone or cable line may not be left on the ground but must be hauled away, burned or chipped. Slash may not be left or place within the right-of-way or within 25 feet of the nearer side of the right-of-way. If a burning permit is denied or revoked under this chapter, the director may allow logs that are too large to be chipped to remain in the right-of-way until the director determines that their removal is economically feasible.

3. **Utility line maintenance**. Slash accumulated by the periodic maintenance of a pipeline or an electric power, telegraph, telephone or cable line may be disposed of in the following manner.

A. Slash with a diameter of 3 inches or less may be left in piles on the ground within the maintained portion of the right-of-way. A pile may not be higher than 18 inches from the ground or longer than 50 feet and must be separated from other piles by a minimum of 25 feet in every direction. A buffer strip with a minimum width of 10% of the total width of the maintained right-of-way must be kept totally free of slash with a diameter of 3 inches or less.

B. Slash with a diameter of more than 3 inches must be removed, chipped or limbed and placed on the ground surface. The pieces must be separated and may not be piled one piece over another. Slash of this size may be left within the maintained buffer strips.

C. If a utility line right-of-way is adjacent to a road, slash that is 3 inches or less in diameter must be removed, burned or chipped. Slash with a diameter of more than 3 inches may be left on the ground within the right-of-way and must not be limbed and separated and may not be

piled one piece over another. Usable timber products generated from the maintenance of a utility right-of-way may be piled within the right-of-way but must be removed within 30 days.

* Note that this is an excerpt from the full text of the law. Please contact the Maine Forest Service, Augusta, Maine, for the full text of the law or with specific questions regarding the Slash Law.

APPENDIX G
OTHER RECOMMENDED REFERENCES

APPENDIX G
OTHER RECOMMENDED REFERENCES

Maine Erosion and Sediment Control BMPS. Bureau of Land and Water Quality, Maine Department of Environmental Protection, Augusta, Maine. March 2003. DEPLW0588.

Best Management Practices for Forestry: Protecting Maine's Water Quality. Maine Forest Service, Augusta, Maine. 2004. www.state.me.us/doc/mfs/pubs/bmp_manual.htm

Forest Transportation Systems: Roads and Structures Manual. Seven Islands Land Company, Bangor, Maine. Third Edition, 1999.

APPENDIX H
CONSTRUCTION MATERIALS SOURCE LIST

APPENDIX H

CONSTRUCTION MATERIALS SOURCE LIST

The following list of vendors has been selected given the wide variety of construction materials they offer. The list is not meant to be all-inclusive or an indication of favored vendors.

W.H. Shurtleff Company (Culverts, Geotextiles)
One Runway Road
Suite 8
South Portland, Maine 04106-6169
1-800-663-6149

info@whshurtleff.com

A. H. Harris (Geotextiles, i.e. Curlex Excelsior Blankets)

22 Leighton Road	585 Riverside Street
Augusta, Maine 04332	Portland, Maine 04103
(207) 622-0821	(207) 775-5764
Attn: Daryl Harvey	Attn: Andy Morrison

North American Green (Erosion control materials, including silt fence, geotextiles)
Maine Distributor:

E.J. Prescott Inc.
P.O. Box 600
32 Prescott Street, Libby Hill Business Park
Gardiner, Maine 04345

(207) 582-1851
Attn: Greg Hinkley

Lane's Erosion Control Services (Erosion Control Mulch Mix)
199 Neck Road
West Gardiner, Maine 04345

(207) 724-7369

New England Organics (Erosion Control Mulch Mix)
5 Fundy Road
Falmouth, Maine 04105

Local Distributors: Jordan Lumber Company, Kingfield, Tel. 778-1334 (also source of silt fence, other materials);

Norpine Landscape Inc., Kingfield, Tel. 265-2430 (also source for hay bales, seed mixes);