EROSION AND SEDIMENT CONTROL PLAN

WIND COLEBROOK SOUTH

COLEBROOK, CONNECTICUT

Prepared for:



BNE Energy

29 South Main Street Town Center, Suite 200 West Hartford, CT 06107

by:

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APPENDICES

- Inspection and Maintenance Records
- Appendix B Appendix C Supporting Calculations

Contact Information / Responsible Parties:

Permittee(s): BNE Energy 29 South Main Street Town Center, Suite 200 West Hartford, CT 06107 (800) 450-0503

Contractor Co-Permittee: To be determined

Contractor Operator(s): To be determined

Stormwater Manager and SWPPP Contact(s): BNE Energy 29 South Main Street Town Center Suite 200 West Hartford, CT 06107 (800) 450-0503

This SWPPP was prepared by: Curtis Jones, P.E., LEED AP CIVIL 1 43 Sherman Hill Road Suite D-101 Woodbury, CT 06798

Section 1.0 PROJECT INTRODUCTION

1.0 PROJECT INTRODUCTION

Project/Site Information:

Project/Site Name:	Wind Colebrook Sou	ıth
Location:	17 & 29 Flagg Hill R Colebrook, Connecti	load cut
Latitude/Longitude:	Latitude: 41° 57' 50'' N	Longitude: 73° 08' 46'' W

Method for determining latitude/longitude: Google Earth

1.1 SITE SUMMARY

1.1.1 Existing Conditions

The project is located at 17 & 29 Flagg Hill Road and consists of approximately 80 acres and is undeveloped with the exception of of an existing house at 17 Flagg Hill Road. The Property is located along the Norfolk town line and approximately 600 feet from the Winsted/Winchester town line. Though the surrounding land uses are mixed, consisting of both commercial and residential development, the property is located in the R-2 residential zone. The Colebrook zoning regulations do not address wind turbine installations. The Property is abutted by the undeveloped land owned by the Nature Conservancy to the west, land owned by the Gun Club to the north and residential properties to the east and south. The site is currently accessed via Flagg Hill Road. This access point will be maintained throughout the construction process. Currently, there are no structural stormwater discharge points. All stormwater flows over land to discharge points off site.

1.1.2 Project Description

The Project consists of three GE 1.6MW wind turbines, associated ground equipment, the installation of an access driveway and an electrical connection. The installation of the turbines will require the construction of temporary equipment lay-down areas for the turbines, crane assembly area, access road and associated ground equipment including an electrical collector yard and associated utility infrastructure so that the turbines can be interconnected to the electrical grid. Following completion of the project, all temporary structures will be removed and the site returned to pre-construction conditions as far as practicable. The existing structure at 17 Flagg Hill Road will serve as a temporary construction office and in the future will serve as a permanent maintenance facility for the project. The existing well and septic system serving this structure will need to be relocated due to the construction of the access road to serve the project.

1.1.3 Site Specific Concerns

The terrain and existing topography of the project site is such that during construction special care will be required to ensure that all BMPs remain intact and are functional.

1.1.4 Construction Schedule

Currently specific dates for construction have not been determined but anticipate construction to begin in Late Fall 2011. Specific dates will be provided to reviewing officials.

1.2 PROJECT OWNER AND OPERATOR

The project owner and operator, BNE Energy, will be the responsible entity for completing the project. The address and telephone is:

BNE Energy 29 South Main Street Town Center Suite 200 West Hartford, CT 06107 (800) 450-0503

1.3 SOILS, SLOPES, VEGETATION, AND CURRENT DRAINAGE PATTERNS

1.3.1 Soil type(s)

Based upon a review of typical geologic conditions and the National Soil Cooperative Survey, the soils have been classified as (1) Bice- Millsite complex soils slopes 3 to 45 percent slopes – very rocky; (2) Westminster- Millsite- Rock Outcrop complex 3 to 15 percent slopes; (3) Bice fine sandy loams ranging from 3 to 15 percent slopes – very stony; (4) Schroon fine sandy loams ranging from 2 to 15 percent slopes - very stony; (5) Shelburne fine sandy loam, 8 to 35 percent slopes – extremely stony; (6)Ashfield fine sandy loam, 8 to 15 percent slopes – very stony, (7) Wonsqueak mucky peat; and (8) Brayton-loonmeadow complex – extremely stony.

1.3.2 Slopes

The project site consists of varying slope conditions ranging from relatively flat conditions in the central portion of the site and moderately steepe to steeper slopes in the extreme easterly and westerly portion of the site.

1.3.3 Drainage Patterns

Existing site topography is such that runoff migrates, typically via overland sheet flow, through the site to either the existing pond or to an existing ditch line along Flagg Hill Road. An unnamed perennial watercourse outlets from the pond in the vicinity of the southern Property boundary, flowing south.

1.3.4 Vegetation

The property is generally characterized by second growth and upland hardwood forest. Forested uplands in the eastern portion of the Property are dominated by deciduous pole timber (trees 4.0 to

11.9 inches diameter at breast height [DBH]) and small sawtimber size trees (12 to 15 inches DBH). While in the northwest and southwest corners of the property is characterized as red oak- northern hardwood forest.

1.4 SITE FEATURES AND SENSITIVE AREAS TO BE PROTECTED

1.4.1 Receiving Waters and TMDL Applicability

There are currently no impaired waterways on the most current 303(d) listing of impaired waterways within the vicinity of the project site.

1.4.2 Wetlands

Wetlands soils within the property boundary have been identified and delineated. Mitigation and impacts are discussed in the environmental assessment completed by VHB, Inc.

Section 2.0 CONSTRUCTION ACTIVITIES

2.0 CONSTRUCTION ACTIVITIES

2.1 DESCRIPTION OF CONSTRUCTION ACTIVITY

Construction will typically consist of activities such as:

- Surveys to stake access roads, structural locations and limits of clearing
- Installation of sediment and erosion control devices
- Clearing of property necessary for construction
- Establishment of construction staging area
- Excavation and installation of access roads
- Excavation and installation of lay-down and equipment assembly areas
- Excavation and installation of foundations and erection of new structures
- Installation of conductors
- Restoration of site, including re-establishment of vegetative areas

2.2 CONSTRUCTION SITE ESTIMATES

The following are estimates of the construction site:

Property Area: +/- 80 acres Area to be disturbed: 13.32 acres

Total estimated cut- 26, 850 cubic yards Total estimated fill- 34,300 cubic yards Fill to be brought on site- 7,450 cubic yards*

*Fill to be brought on site includes road gravel, asphalt and stone

Section 3.0 BEST MANAGEMENT PRACTICES

3.0 BEST MANAGEMENT PRACTICES

Soil erosion and sediment controls are measures that are used to reduce the amount of soil particles that are carried from a land area and deposited in receiving waters. This section provides a general description of the most appropriate control measures proposed for the Project. The permittee's construction contractor(s) and their subcontractors will be responsible for amending the erosion and sediment controls in the SWPPP for their portion(s) of the project as needed. Based on field conditions at the time of construction, the contractors or subcontractors may adjust the locations and types of BMPs so that erosion and sedimentation are controlled to the maximum extent practicable. However, in no case will modifications to the SWPPP result in any less stringent erosion and sedimentation control measures than specified herein.

3.1 STRUCTURAL CONTROL PRACTICES

Structural control practices divert flows from exposed soils, store water flow, or otherwise limit runoff from exposed areas of the site. Such practices may include silt fences, drainage swales, sediment traps, check dams, subsurface drains, rock outlet protection (rip-rap), reinforced soil retaining systems, and temporary or permanent sediment basins. Some of these practices may be used as both temporary and permanent control measures. Structural control practices should be placed in upland areas to the degree practicable to prevent erosion and reduce sedimentation in lower elevation areas. See Appendix A for additional information.

3.2 TEMPORARY EROSION CONTROL PRACTICES

Erosion and sediment control measures will be in place prior to the initiation of soil disturbing activities and will be maintained throughout construction. The contractor may need erosion control measures in other locations of the project as work progresses to keep sediment from leaving the construction site. These measures will be determined by the contractor in the field; if measures are changed in the field, the SWPPP must be modified accordingly. All temporary erosion controls will be removed after the protected area is finally stabilized. The minimum temporary erosion and sediment control practices that will be used for the Project are discussed in the following sections. See Appendix D for additional information.

3.2.1 Sediment Fence (GSF)

Sediment fence will retain sediment from small disturbed areas. Sediment fence will be placed along slopes as shown on the Erosion Control Plans and in accordance with the construction details. The contractor will use his best judgment to install additional sediment fence as necessary to prevent loss of sediment. Refer to section 5-11 of 2002 Connecticut Guidelines for Soil Erosion and Sediment Control.

Maintenance: Inspect the silt fence at least once a week and within 24 hours of the end of a storm with a rainfall amount of 0.5 inches or greater to determine maintenance needs. When used for dewatering operations, inspect frequently before, during and after pumping operations. Remove the sediment deposits, or if room allows, install a second silt fence up slope from the existing fence when deposits reach approximately one half the height of the existing fence. Replace or repair within 24 hours of an observed failure. Refer to Connecticut Guidelines for Soil Erosion and

Sediment Control figure GF-5 for troubleshooting failures. Maintain silt fence until the contributing area is stabilized.

3.2.2 Hay Bale Barrier (HB)

Hay bale barriers will retain sediment from small disturbed areas. Hay bales will be placed along slopes as shown on the Erosion Control Plans and in accordance with the construction details. The contractor will use his best judgment to install additional hay bales as necessary to prevent loss of sediment. Refer to section 5-11 of 2002 Connecticut Guidelines for Soil and Sediment Control.

Maintenance: Inspect the hay bale barrier at least once a week and within 24 hours of the end of a storm with a rainfall amount of 0.5 inches or greater to determine maintenance needs. When used for dewatering operations, inspect frequently before, during and after pumping operations. Remove the sediment deposits, or if room allows, install a secondary barrier up slope from the existing barrier when deposits reach approximately one half the height of the barrier. Replace or repair within 24 hours of an observed failure. Refer to Connecticut Guidelines for Soil Erosion and Sediment Control figure HB-5 for troubleshooting failures. Maintain hay bale barrier until the contributing area is stabilized.

3.2.3 Stone Check Dam (SCD)

Stone Check DamsWill be used to reduce velocity of concentrated flows, thus reducing erosion of the drainage way.

Maintenance: Inspect the stone check dam at least once a week and within 24 hours of the end of a storm with a rainfall amount of 0.5 inches or greater to determine maintenance needs. Remove the sediment deposits when deposits reach approximately one half the height of the Check dam. Replace or repair within 24 hours of an observed failure. Maintain until the contributing area is stabilized.

3.2.4 Water Bars (WB)

The Water Bar is a non-engineered measure consisting of a channel with a supporting earthen ridge used on access and construction roads to intercept flows in the roadway that have a drainage area less than 1 acre and to force these flows off the roadway.

Maintenance: For water bars receiving drainage from disturbed areas, inspect and perform any repair work at the end of each day that the water bar is exposed to vehicular traffic and within 24 hours of the end of a storm with a rainfall amount of 0.5 inch or greater. For water bars receiving drainage from stable areas inspect and perform any repair work at the end of each day that the water bar is

exposed to vehicular traffic or annually, whichever comes first. Immediately reshape and repair any observed damage to the water bar. If sediment deposits reach approximately one-half the height of the water bar, remove the accumulated sediments. When the water bars have served their usefulness they may be removed.

3.2.5 Temporary Diversion (TD)

Will be used to divert sediment laden runoff from a disturbed area to a sediment trapping facility.

Maintenance: When the temporary diversion is located within close proximity to on going construction activities, inspect the diversion at the end of each work day and immediately repair damage caused by construction equipment. Otherwise, inspect the temporary diversion and associated measures at least once a week and within 24 hours of the end of a storm with a rainfall amount of 0.5 inches or greater to determine maintenance needs. Repair within 24 hours of an observed failure.

3.2.6 Temporary Fill Berm (TFB)

Will be used to divert runoff from unprotected fill slopes during construction to a stabilized outlet or sediment trapping facility.

Maintenance: Inspect the temporary fill berm and associated controls at the end of each work day to ensure the criteria for installing the measures have been met. Determine if repair or modification is needed. This measure is temporary and under most situations will be covered the next work day. Maintenance requirements should be minimal. The contractor should avoid placing other material over the berm and construction traffic should not be allowed to cross.

3.2.7 Temporary Sediment Trap (TST)

Will be used to detain sediment laden runoff from small disturbed areas long enough to allow the majority of sediment to settle out.

Maintenance: Inspect the temporary sediment trap and associated controls at least once a week and within 24 hours of the end of a storm with a rainfall amount of 0.5 inches or greater to determine maintenance needs. Check the outlet to verify that it is structurally sound and has not been damaged by erosion or construction equipment. The height of the stone outlet should be maintained at least 1 foot below the crest of the embankment. When sediment has accumulated more than one quarter of the minimum wet storage volume, dewater and remove sediment as necessary to restore the trap to its original dimensions.

3.2.8 Construction Entrance (CE)

Will be used to reduce tracking of sediment off site to paved areas.

Maintenance: Maintain the entrance in a condition which will prevent tracking and washing of sediment onto paved surfaces. Provide periodic top dressing with additional stone or additional length as required. Immediately remove all sediment spilled, dropped, washed or tracked onto paved surfaces.

3.2.9 Temporary Erosion Control Blankets (ECB)

Will be used to provide temporary surface protection to disturbed soils to absorb raindrop impact and to reduce sheet and rill erosion until vegetation is established.

Maintenance: Inspect temporary erosion control blankets at least once a week and within 24 hours of the end of a storm with a rainfall amount of 0.5 inches or greater to determine maintenance needs. Repair any dislodged or failed blankets immediately.

3.3 SOIL STABILIZATION PRACTICES

Soil stabilization involves covering disturbed soils with grass, mulch, straw, geotextiles, trees, vines, or shrubs. Stabilization practices for exposed disturbed soils are extremely important while conducting construction activities. Vegetative cover serves to reduce the erosion potential by absorbing the energy of raindrops, promoting infiltration in lieu of runoff, and reducing the velocity of runoff. Stabilization measures shall be initiated as soon as practicable, but no more than 14 days after construction activities have temporarily or permanently ceased on any portion of the site.

3.4 MAINTENANCE AND INSPECTIONS

All erosion and sediment control devices shall be installed pursuant to the specifications in the construction details and in accordance with the Connecticut General Permit for the Discharge of Stormwater and Dewatering Wastewaters Associated with Construction Activities . They will be maintained so that they remain effective at all times.

Erosion and sediment control devices will be inspected by qualified personnel at least once every seven calendar days and within 24 hours of each 0.5-inch or greater rainfall event. During each inspection, the construction inspector will complete the Inspection and Maintenance Report Form located in the appendix. This form will be copied and used as necessary. Ineffective temporary erosion control measures will be repaired or replaced before the next storm event or as soon as practicable. The permittee will immediately install additional temporary erosion control devices in any area deemed in need of protection.

Following temporary or final stabilization, inspections must be conducted at least once a month. If construction has been halted due to frozen conditions, regular inspections are not mandatory until one month before the expected thaw. If vegetation establishment is not satisfactory, special steps to correct the problem will be implemented such as over seeding, mulching, sodding, or the use of erosion control blankets. Once a definable area of the construction site has been finally stabilized, no further inspection requirements apply to that area.

3.5 FINAL STABILIZATION

3.5.1 Seeding

The contractor will be responsible for labor, materials, tools, equipment, and other related items required for preparing ground, providing for sowing of seeds, fertilizing, mulching and top dressing, and other management practices required for erosion control and to achieve final stabilization. It will be the contractor's responsibility to make sure that the soil seedbed is not blown, washed, or otherwise removed from the site. The contractor will make repairs (including replacement of lost topsoil and mulch) to the seedbed preparation site in the event of heavy rain, wind, or other natural events that cause damage. When practicable, native plant species should be used for landscaping.

3.5.2 Fertilizer

Soil in areas of disturbance may need supplementation from fertilizer. Soil tests may be necessary to determine the most appropriate fertilizer for each location. Once applied, the fertilizer will be

worked into the soil to limit exposure to stormwater. Fertilizer spills will be cleaned up immediately and will not be applied along or in a waterway.

3.5.3 Mulching

Mulching will be used in conjunction with both temporary and permanent seeding practices to enhance success by providing erosion protection prior to the onset of vegetative growth. Mulches enhance plant establishment by moderating soil temperatures and conserving moisture. After seeding, straw or hay mulch will be applied at a rate of two to three tons per acre on the disturbed areas. Other forms of mulch will be applied at a rate designated by the Project Engineer. Mulch will not be applied in wetlands, on lawns, and areas where hydro-mulch is used. Mulch will be anchored immediately after placement on steep slopes and stream banks. Mulch will be held in place by a very thin covering of topsoil, small brush, pins, stakes, wire mesh, asphalt binder, or other adhesive material approved by the project engineer.

3.5.4 Topsoiling

Topsoil should be applied in areas where the subsoil or existing surface soil does not provide an adequate growth medium for the desired vegetation, where soil is too shallow to provide adequate rooting depth, or where the soil contains substances toxic to the desired vegetation. Topsoil shall be reasonably free from subsoil and stumps, roots, brush, stones, and clay lumps or similar objects.

3.5.5 Temporary Control Removal

Temporary erosion controls will be left in place until the Project site is stabilized with a uniform vegetative cover of 70 percent density of the native background vegetative cover on all unpaved areas. Following re-vegetation, the permittee will conduct periodic site visits to make sure that vegetation establishment is satisfactory. If sufficient vegetative cover has not been achieved, additional restoration measures will be implemented. Inspection results will be documented using the Inspection and Maintenance Report Form found in the appendix. All temporary soil erosion and sediment control measures will be removed and disposed of after final site stabilization is achieved and before submitting the Notice of Termination (NOT) to the CT DEP.

Section 4.0 EROSION CONTROL PLAN APPENDICES

4.0 SWPPP APPENDICES

Attach the following documentation to the SWPPP in the following appendices.

Appendix A – Maps and Drawings

- Erosion Control Plans
- Post Construction Grading Plans
- Erosion Control Narrative and Details

Appendix B – Inspection and Maintenance Records

- Inspection & Maintenance Log
- Inspection Report
- Maintenance Report

Appendix C – Supporting Calculations

• Calculations for O and Temporary Sediment Traps

Appendix A
MAPS AND DRAWINGS



Soils Map



Soil Map-State of Connecticut (Wind Colbrook South)

MAP LEGEND

Area of Interest (AOI)		OJ	Very Stony Spot
Area of Interest (AOI)		t	Wet Spot
Soils		А	Other
D	Soil Map Units	Special	Line Features
Special	Point Features	?v	Gully
<:;	Biowout	•'_	Short Steep Slope
	Borrow Pit	···,	Other
Х	Clay Spot	PoliticalF	eatures
٠	Closed Depression	0	Cities
Х	GravelPit	WaterFe<	tures
	Gravelly Spot		Oceans
@	Landfill		Streams and Canals
А	Lava Flow	Transport	tation
	Marsh or swamp	+++	Rails
	Mine or Quarry		Interstate Highways
@	Miscellaneous Water	-~~	USRoutes
®	PerennialWater		Major Roads
v	Rock Outcrop	'V	LocalRoads
+	Saline Spot		
	Sandy Spot		
_	Severely Eroded Spot		
¢	Sinkhole		
	Slide or Slip		
jd	Sodic Spot		
=	SpoilArea		
0	Stony Spot		

MAP INFORMATION

Map Scale: 1:4,700 if printed on A size (8.5" x 11") sheet.
The soilsurveys that comprise your AOI were mapped at 1:12,000.
Please rely on the bar scale on each map sheet for accurate map measurements.
Source of Map: Natural Resources Conservation Service Web Soil Survey URL: http://websoilsurvey.nrcs.usda.gov Coordinate System: UTM Zone 18N NAD83
This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.
Soil Survey Area:State of ConnecticutSurvey Area Data:Version 7, Dec 3, 2009
Date(s) aerial images were photographed: 8/14/2006
The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

	State of Connecticut (CT6	00)	
Map Unit Symbol	Map Unit Name	Acres In AOI	Percent of AOI
413C	Bice-Millsite complex.3 to 15percent slopes.very rocky	20.1	22.0%
413E	Bice-Millsite complex, 15 to 45 percent slopes, very rocky	14.5	15.8%
415C	Westminster-Millsite-Rock outcrop complex.3 to 15 percent slopes	6.4	7.0%
4178	Bice fine sandy loam, 3 to 8 percent slopes, very stony	8.9	9.7%
417C	Bice fine sandy loam,8 to 15 percent slopes, very stony	5.5	6.0%
418C	Schroon fine sandy loam_2 to 15 percent slopes, very stony	8.3	9.0%
425C	Shelburne fine sandy loam. 8 to 15 percent slopes, very stony	2.0	2.2%
4260	Shelburne fine sandy loam. 15 to 35 percent slopes. extremely stony	2.6	2.9%
427C	Ashfield fine sandy loam,8 to 15 percent slopes, very stony	4_6	5.0%
437	Wonsqueak mucky peat	9_1	9_9%
443	Brayton-loonmeadow complex, extremely stony	9_5	10.4%
Totals for Area of Intere	est	91.8	100.0%

Map Unit Legend



والالحمال الحمال الحمال الحمال		LEGEN	D		BALED FILTER	
	LIMITS OF CLEARING		PROPERTY LINE EXISTING CONTOUR PROPOSED CONTOUR	\bigcirc	TEMPORARY SOIL STOCKPILE	
$ PCS \Longrightarrow$	TEMP. WATER DIVERSION SWALE		PROPOSED STORM DRAINAGE EDGE OF WATER	T 8T	TEMPORARY SEDIMENT TRAP	
	PERM. RIPRAP DIVERSION/CONVEYANCE DRY WATER QUALITY SWALE		WETLANDS/WATERCOURSE BOUNDARY 100' WETLANDS REVIEW AREA	78	TEMPORARY SEEDING	
	SOIL TYPE BOUNDARY STAKED HAY BALES		EXISTING ROADWAY		EROSION CONTROL BLANKET STONE CHECK DAM	
· • • • • • • • • • • • • • • • • • • •	SILT FENCE		PROPOSED ACCESS DRIVE	<u> </u>	WATER BAR WITH STAKED HAYBALES	





2' X 2' STONE INFILTRATION TRENCH VERNAL POOL AREA

100' VERNAL POOL SETBACK 750' VERNAL POOL SETBACK

-





		LEGEN	D		BALED FILTER
(전) (1년·21) (전·21) (전·21) (전·21) (전·22) ((전) (전·22) (D·22) (D·2	COMPACTED EARTH		PROPERTY LINE		
	LIMITS OF CLEARING		EXISTING CONTOUR PROPOSED CONTOUR		TEMPORARY SOIL STOCKPILE
	TEMP. WATER DIVERSION SWALE		PROPOSED STORM DRAINAGE	TST	TEMPORARY SEDIMENT TRAP
	PERM. RIPRAP DIVERSION/CONVEYANCE		EDGE OF WATER WETLANDS/WATERCOURSE BOUNDARY	TS	TEMPORARY SEEDING
	DRY WATER QUALITY SWALE		100' WETLANDS REVIEW AREA		
	SOIL TYPE BOUNDARY		EXISTING ROADWAY	ECB	ERUSION CONTROL BLANKET
	STAKED HAY BALES		PROPOSED ACCESS DRIVE	\checkmark	STONE CHECK DAM





LEGEND

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88888	
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LEGEND

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PROPERTY LINE EXISTING CONTOUR CONTOUR FROM CONSTRUCTION GRADING TO REMAIN CONTOUR FROM CONSTRUCTION GRADING TO BE MODIFIED PROPOSED CONTOUR PROPOSED STORM DRAINAGE EDGE OF WATER WETLANDS/WATERCOURSE BOUNDARY 100' WETLANDS REVIEW AREA EXISTING ROADWAY



_ _

PERM. RIPRAP DIVERSION/CONVEYANCE SWALE SOIL TYPE BOUNDARY

PROPOSED UPLAND MEADOW RESTORATION AREA

DRY WATER QUALITY SWALE

VERNAL POOL AREA

100' VERNAL POOL SETBACK

750' VERNAL POOL SETBACK





	PROPERTY LINE		EXISTING RUADWAY
	EXISTING CONTOUR		DRODOSED ACCESS DR
	CONTOUR FROM CONSTRUCTION GRADING TO REMAIN		FROFUSED ACCESS DR
	CONTOUR FROM CONSTRUCTION GRADING TO BE MODIFIED		PERM. RIPRAP DIVERSI
	PROPOSED CONTOUR		
	PROPOSED STORM DRAINAGE		SUL TIPE BOUNDART
	EDGE OF WATER	******	PROPOSED UPLAND ME
· · · · ·	WETLANDS/WATERCOURSE BOUNDARY		
	100' WETLANDS REVIEW AREA		DRY WATER QUALITY S



PROPERTY LINE	========	EXISTING ROADWAY
EXISTING CONTOUR		DROBOSED AGOESS DRIVE
CONTOUR FROM CONSTRUCTION GRADING TO REMAIN		PROPOSED ACCESS DRIVE
CONTOUR FROM CONSTRUCTION GRADING TO BE MODI	IFIED	PERM RIPRAR DIVERSION /CONVEYANCE S
PROPOSED CONTOUR		
PROPOSED STORM DRAINAGE		SOIL TYPE BOUNDARY
EDGE OF WATER		PROPOSED LIPLAND MEADOW RESTORATIO
WETLANDS/WATERCOURSE BOUNDARY		
100' WETLANDS REVIEW AREA		DRY WATER QUALITY SWALE





- PROPOSED ACCESS DRIVE

- 100' WETLANDS REVIEW AREA
- WETLANDS/WATERCOURSE BOUNDARY






LEGEND			
PROP	ERTY LINE	 EXISTING ROADWAT	
EXIST	ING CONTOUR	PROPOSED ACCESS DRIVE	
CONT	OUR FROM CONSTRUCTION GRADING TO REMAIN	 FROFUSED ACCESS DRIVE	
CONT	OUR FROM CONSTRUCTION GRADING TO BE MODIFIED	PERM. RIPRAP. DIVERSION/CONVEYANCE. SWALE	
— — — — — — — PROP	OSED CONTOUR		
PROP	OSED STORM DRAINAGE	SOL THE BOUNDART	
EDGE	OF WATER	PROPOSED UPLAND MEADOW RESTORATION AREA	
· · WETLA	ANDS/WATERCOURSE BOUNDARY		
100' ·	WETLANDS REVIEW AREA	DRY WATER QUALITY SWALE	

CONSTRUCTION SEQUENCE

STEPS TO BE TAKEN TO PREVENT THE SILTING OF THE WETLANDS DURING CONSTRUCTION OF THE ACCESS DRIVE AND LAYDOWN AREAS FOR THE 'WIND COLEBROOK SOUTH' PROJECT, FLAGG HILL ROAD, COLEBROOK, CT.

THE SEQUENCE OF CONSTRUCTION WILL BE AS FOLLOWS:

Field stakeout the limits of all construction activities.

Clear all vegetation within the construction area. Do not remove stumps at this time. All trees/shrubs less than 6" in diameter shall be chipped.

The construction entrance, silt fence, haybales and/or other perimeter siltation devices shall be placed as shown on the erosion and sediment control plans prior to removal of any stumps.

The staging and processing area in the vicinity of Station 18+50 will initially be accessed by the existing driveway on the eastern side of the property. Work will then begin working down the roadway from Station 18+50 towards Station 0+00.

Remove stumps from the area of the proposed access drive from Station 0+00 to 18+50, the crane assembly area, turbine 1 location and turbine 1 access drive. Stumps shall be removed from the site. Stumps are not to be buried.

Water bars, havbale traps and silt fence will be used to control erosion during rough grading of access drive as shown.

Strip topsoil material and stockpile prior to rough grading of roadway. Stockpile material at locations shown on the plans. Ensure adequate erosion control measures are in place around stockpile areas.

Rough grade access drive to station 0+00 to 18+50, the crane assembly area, turbine 1 and turbine 1 access drive. The cuts and fills will be made and material processed on site as necessary. All finished slopes loamed, seeded and mulched unless specified to be finished with riprap.

Install drainage from Station 0+00 to 18+50, construct temporary sediment traps 1 and 2 and the temporary and permanent water diversions to keep clean water away from construction areas and sediment laiden water toward temporary sediments traps and staked haybale barries.

Remove stumps from the remainder of the area of construction. Stumps shall be removed from the site. Stumps are not to

Rough grade access drive to the wetlands crossing at Station 37+50 and laydown area for turbine 2 construction. Install drainage and construct TSTs 3-5. The cuts and fills will be made and material processed on site as necessary. All finished slopes loamed, seeded and mulched.

Install Seepage Envelope at wetlands crossing per detail. Rough grade the remainder of the access drive and laydown area for turbine 3 construction. Install drainage and construct TST 6. The cuts and fills will be made and material processed on site as necessary. All finished slopes loamed, seeded and mulched.

Additional haybales shall be placed across unpaved roads at the end of each work day to prevent sedimentation and soil

Construct riprap swales, stone infiltration trenches and water quality trenches as shown on plans. The swales and water quality trenches need to be protected from sedimentation during construction. If sedimentation occurs they will need to be cleaned or reconstructed as necessary after vegetation has been established.

Temporary diversion ditches with haybales may need to be installed to control lateral runoff along both sides of the proposed road prior to importing processed gravel.

Place aravel on drive, compact in 3-8" lifts per detail.

Provide temporary seeding measures on all exposed soils which were damaged due to construction activities and are not to be permanently restored or are outside of construction traffic zones for a period in access of 30 days.

Seed all disturbed areas. Clean all silt from drainage structures. Remove temporary sediment traps and erosion control measures after site is stabilized with vegetation.

After turbine construction is complete grade site in accordance with the post-construction grading plans and plant the upland meadow restoration areas as shown.

The starting time for the construction is unknown, however the time limit for the construction of the drive should be limited to 180 days.

*TEMPORARY SEDIMENT TRAPS WILL BE SURROUNDED TO THE MAXIMUM EXTENT PRACTICAL WITH SILT FENCE TO EXCLUDE MIGRATING AMPHIBIANS AND AVOID THESE BASINS BECOMING DECOY POOLS.

*SYNCOPATED SILT FENCING WILL BE EMPLOYED WITHIN 750' OF THE VERAL POOLS TO FACILITATE MOVEMENT OF WETLAND-DEPENDENT AMPHIBIANMS TO AND FROM THESE VERNAL POOLS DURING CONSTRUCTION.

RESPONSIBILITY FOR EROSION CONTROL PLAN

THE PARTY RESPONSIBLE FOR THE IMPLEMENTATION AND OVERSIGHT OF THE EROSION CONTROL PLAN SHALL BE:

BNE ENERGY, INC. TOWN CENTER, SUITE 200 29 SOUTH MAIN STREET WEST HARTFORD, CT 06107 PHONE # - 860-561-5102

UPLAND RESTORATION AND THIRD PARTY MONITORING NARRATIVE

Wind Colebrook South - Unland Restoration Plan

Disturbed upland areas will be restored following construction with New England Disturbed upland areas will be restored following construction with new England Conservation/Wildlife Mix, a native herbacecous seed mixture that will form a permanent, maintenance free cover of grasses, forbs, wildflowers and legumes. This seed mixture will provide erosion control and wildlife habitat value. Areas that will not be subject to annual mowing will rever to forest through the natural process of succession.

Upland Restoration Plan Construction Sequence and Planting Schedule

- 1. Prior to all work, erosion control barriers will be installed as detailed on the Erosion Control Plan.
- 2. Where adequate topsoil (±6 inches) does not exist, disturbed areas shall be backfilled to a minimum depth of 6 inches with clean topsoil. Once final topsoil is backning to a minimum depth of o increase with clean topson. Once that topson is in place, these areas will be planted with New England Conservation/Wildlife Mix after the completion of final grading. The seed mix will be applied at a rate of 1 lb/1,750 square feet. Soil conditioning activities, including raking, will be combined with the seed application process.
- 3. Where 2:1 slopes are utilized for final grading, or in areas specified on the plan sheets, biodegradable erosion control matting will be installed over the seed mixture to promote establishment of vegetation and aid in stabilization. The contractor will use "5C2" erosion control matting, available at New England Wetland Plants Inc. (413) 548-8000 or an approved equivalent.

4. The contractor will be responsible for the careful installation, maintenance (including watering) and establishment of native plant material in these areas.

5. The erosion control barriers shall be disassembled following successful stabilization of these areas. Sediment collected by these devices will be removed and disposed of in a manner that preventils erosion and transport to a wetland or watercourse.

6. Monitoring of revegetated areas will be conducted as follows by a qualified third party inspector. These areas will be monitored the first three growing seasons following establishment. Monitoring reports will be submitted to the Connecticut Siting Council no later than December 15 of each year. The reports will provide details on the three success standards described below. In the event that remediation measures are required, recommendations will be provided. The first year of monitoring will be the first year that the site has been through a full growing season starts no later than Ag 31.

7. Revegetated areas will be assessed using three success standards. Each standard is described below. Success Standard 1: At least 75% of the surface area of these areas should be reschiblished with Indigenous species within three growing seasons. Success Standard 2: Vegetation should be checked to ensure that no invasive species colonize in these areas. Success Standard 3: Slopes within and adjacent to the revegetated areas are stabilized.

8. In the event that remediation measures are recommended, BNE Energy, Inc. will initiate these measures with the assistance of the qualified third party inspector.

9. If necessary to control invasive species, herbicide applications will be conducted by a state-licensed individual. If applications are required in proximity to site wetlands, the herbicide RODEO● [glyphosate (53.8% active ingredient)] shall be utilized as it is the only herbicide approved by CTDEP for application in aquatic environments.

Fertilizers will not be used to promote growth within these areas. The proposed seed mixture contains a variety of native herbaceous species adept at colonizing recently disturbed areas.

Planting Schedule 1: Upland Restoration Areas

Disturbed areas will be planted with New England Conservation/Wildlife Mix (or equivalent) at 1750 sq.ft./ib. or as recommended by manufacturer. This mix

RESPONSIBILITY FOR THE PLAN

Whenever sedimentation is caused by stripping vegetation and/or grading, it shall be the responsibility of the person, corporation or other entity having responsibility to remove sedimentation from all lower properties, drainage systems and watercourses and to repair any damage at their expense as quickly as possible.

All control measures will be maintained in effective condition throughout the construction period. Surface inlets shall be kept open and free of sediment and debris. The system shall be checked after every major storm and nent shall be disposed of at an approved location consistent with the plan.

It shall be the responsibility of any person, corporation or other entity engaging in any act on or near any stream, watercourse or swale or upon the flood plain or right-of-way thereof to maintain as nearly as possible in its present state that same stream, watercourse, swale, flood plain or right-of-way for the duration of the activity and to return it to its original or equal condition after such activity is completed.

No person, corporation or other entity shall block, impede the flow of, alter, construct any structure or deposit any material or thing or commit any act which affects normal or flood flow in any communal stream or watercourse without having obtained prior approval from the Town.

SEEDING AND PLANTING REQUIREMENTS

Seedbed Preparation

Fine grade and rake surface to remove stones larger than 2" in diameter. Install needed erosion control devices such as surface water diversions. Grade stabilization structures, sediment basins or drainage channels to maintain grassed areas. Apply limestone at a rate of 2 tons/Ac. or 90 lbs/1000 SF unless otherwise required according to soil test results. Apply fertilizers with 10-10 at a rate of 300 lbs./Ac. or 77.5 lbs/1000 SF. At least 50% of the nitrogen shall be from organic sources. Work lime and fertilizer into soil uniformity to a depth of 4" with a whisk, springtooth harrow or other suitable equipment following the contour lines.

Seed Application

Seed Application Apply grass mixtures at rates specified by hand, cyclone seeder or hydroseeder. Increase seed mixture by 10% if hydroseeder is used. Lightly drag or roll the seeded surface to cover seed. Seeding for selected fine grasses should be done between April 1 and June 1 or between August 15 and October 15. If seeding cannot be done during these times, repeat mulching procedure below until seeding can take place or seed with a quick germinating seed mixture to stabilize slopes. A quick germinating seed mixture (Domestic Rye) can be applied between June 15 through August 15 as approved by the Architect or Engineer.

Mulching Immediately following seeding, mulch the seeded surface with straw, hay or wood fiber at a rate of 1.5 to 2 tons/Ac. except as otherwise specified elsewhere. Mulches should be free of weeds and coarse matter. Spread mulch by hand or mulch Mulches should be tree of weeds and coarse matter. Spread mulch by hand or mu blower. Punch mulch into soil surface with track machine or disk harrow set straight up. Mulch material should be "tucked" approximately 2- 3" into the soil surface. Chemical mulch binders or netting, in combination with the straw, hay or wood fibers, will be used where difficult slopes do not allow harrowing by machines.

40 lbs/Ac. 20 lbs/Ac.

Grass Seed Mixtures

remova fashion

ss Seed Mixtures Temporary Covers Perennial ryegrass 20 lbs/Ac. 20 lbs/Ac. Permanent Covers Creeping Red Fescue Canada Bluegrass

WETLAND REGULATED ACTIVITY

includes the following species: big bluestern (Andropogon gerardii), fringed brome grass (Bromus ciliates), creeping red fescue (Festuca rubra), Canada wild rye (Elymus Canadensis), Virginic wild rye (Elymus virginicus), switchgrass (Panicum

Wind Colebrook South - Third Party Environmental Inspections

2. The qualified third party environmental inspector will monitor erosion and . me quannea uma party environmental inspector will monitor effolion and sedimentation controls throughout the construction period to ensure that controls are properly maintained and any recommendations to remediate failing controls or removal accumulated sediment are implemented by the contractor in a timely

virggtum), deer tongue grass (Panicum clandestinum), little bluestem (Schizgchvrium vegutani, ose cape cape gas ("anom cancertaini, nae buester (cancer) scoparium), india grass (corphestrum nutans), commo mikewed (Asciepias syriaco), New England aster (Aster novae-angliae), partridge pea (Chamaeorista fasciculate), showy tick-trefoil (Desmodium Canadense), grass leaved goldenrod (Euthamic grannifold), gray goldenrod (Solidago nemoralis).

A qualified third party environmental inspector shall inspect the installation of erosion and sedimentation controls prior to the start of construction activities. A pre-construction meeting shall be held with the third party environmental inspector and general contractor prior to the start of construction.

3. The qualified third party environmental inspector shall monitor erosion and sedimentation controls on a weekly basis or within 24 hours of a rainfall event of 0.5 inches or greater.

4. Erosion and sedimentation control monitoring reports will be prepared by the third party environmental inspector on a bi-weekly basis and submitted to the Connecticut Stiting Council.

5. The on-site erosion and sediment controls shall be montiored by a qualified third party environmental inspector to ensure establishment of appropriate environmental safeguards protective of amphibian and reprtile species.

<u>Wetlands Impacts:</u> Crossing at Station 37+50 - 4,250 sf

Total Activity in Wetlands - 4.250 st

GENERAL PRINCIPLES

EROSION CONTROL NARRATIVE

The following general principles shall be maintained as effective means of minimizing erosion and sedimentation during the development process.

Stripping away of vegetation, regrading or other development shall be done in such a way as to minimize erosion.

Grading and development plans shall preserve important natural features, keep cut and fill operations to a minimum, and insure conformity with topography so as to create the least erosion potential and adequately handle the volume and velocity of surface water runot

Whenever feasible, natural vegetation shall be retained, protected and supplemented wherever indicated on the site development plan.

The undisturbed area and the duration of exposure shall be kept to a practical minimum.

Disturbed soils shall be stabilized as quickly as possible

Temporary vegetation and/or mulching shall be used to protect exposed critical areas opment when expected to be exposed in excess of 30 day

The permanent (final) vegetation and mechanical erosion control measures shall be installed as soon as practical during construction

Sediment in the runoff water shall be trapped until the disturbed areas is stabilized by the use of debris basins, sediment basins, silt traps or similar

Concentration of surface runoff shall be only permitted by piping and/or through drainage swales or natural watercourses

Excavation and Fills --

Slopes created by cuts or fills shall not be steeper than 1.5:1 and shall be restabilized by temporary or permanent measures, as required during the development process and shown on the site plans.

Adequate provisions shall be made to prevent surface water from damaging the cut face of excavations or the sloping surfaces of fills.

Cut and fills shall not endanger adjoining property.

All fills shall be compacted to provide stability of material and to prevent undesirable settlement. The fill shall be spread in a series of layers each not exceeding twelve (12) inches in thickness and shall be compacted by a or other approved method after each laver is spread

Fills shall not encroach on natural watercourses, constructed channels or regulated flood plain areas, unless permitted by license or permit from authority having jurisdiction in accordance with approved site plans.

Fills placed adjacent to natural watercourses, constructed channels or flood plains shall have suitable protection against erosion during periods of flooding.

Grading shall not be done in such a way as to divert water onto the property of another landowner without their express written consent.

During grading operations, necessary measures for dust control shall be

Sedimentation and erosion control shall be implemented in accordance with the Guidelines for Soil Erosion and Sediment Control (2002) - State of Connecticut DEP Bulletin 34.

The following general specifications will also be adhered to: Land disturbance will be kept to a minimum. Restabilization will be scheduled

Haybale filters will be installed at all culvert outlets and along the toe of all critical cut and fill slopes.

Culvert discharge areas will be protected with riprap channels. Energy dissipaters will be provided as necessary.

Catch basins will be protected with haybale filters throughout the construction period and until all disturbed areas are thoroughly stabilized.

All erosion and sediment control measures will be constructed in accordance with the standards and specifications of the Guidelines for Soil Erosion and Sediment Control (2002) — State of Connecticut DEP Bulletin 34.

*SYNCOPATED SILT FENCING WILL BE EMPLOYED WITHIN 750' OF THE VERAL POOLS TO FACILITATE MOVEMENT WETLAND-DEPENDENT AMPHIBIANMS TO AND FROM THESE VERNAL POOLS DURING CONSTRUCTION

Erosion and sediment control measures will be installed prior to construction whenever possible

All control measures will be maintained in effective condition throughout the construction period.

Additional control measures will be installed during construction if necessary or required.

All erosion control measures shall be inspected weekly and within 24 hours of a rainfall event of 0.5 inches or greater.

EARTHWORK QUANTITY ESTIMATE

TOTAL CUT - 26.850 C.Y. TOTAL FILL - 34.300 C.Y.

COMMON CLEAN FILL REQUIRED (TOPSOIL AND SUBSOIL) - 24.400 C.Y.

RIPRAP TO BE PROCESSED FROM ON-SITE MATERIAL - 2.450 C.Y. PROCESS GRAVEL, ASPHALT AND STONE TO BE IMPORTED - 7.450 C.Y.

NOTE: ALL EXCAVATED (CUT) MATERIAL TO BE REUSED ON-SITE. OVERALL SITE DISTURBANCE ASSOCIATED WITH THE PROPOSED IMPROVEMENTS - 13.32 ACRES





PERSPECTIVE VIEW SUPPORTING POST AT LEAST 42" LONG, 1.5" SQUARE HARDWOOD OR STEEL POST NIN. នុង 6" BY 6" BACKFILL SECTION

CONSTRUCTION NOTES FOR SILT FENCE





. PREPARE SOIL BEFORE INSTALLING BLANKETS, INCLUDING ANY NECESSARY APPLICATION OF LIME, FERTILIZER, AND SEED. NOTE: WHEN USING COLL-O-SEED DO NOT SEED PREPARED AREA. CELL-O-SEED MUST BE INSTALLED WITH PAPER SIDE DOWN. 2. BEGINA THE TOP OF THE SLOPE BY ANCHORING THE BLANKET IN A "(150m) DEEP X "(150m) WHE TBRICH WITH APPROXIMATELY 12" (300m) OF BLANKET ENTENDED BEYOND THE UP-SLOPE FORTION OF THE TRENCH. ANCHOR THE BLANGET WITH A ROW OF STALES/STAKES APPROXIMATELY 12" (300m) APART IN THE BUANET OVER COMPACTED SOIL AND FOLD BEAMING 12" (300m) PORTON OF BLANKET BACK VORE SEED AND COMPACTED SOIL SECURE BLANKET VORT COMPACTED SOIL WITH A ROW OF STAPLES/STAKES SPACED APPROXIMATELY 12" (300m) APART ACROSS THE WIDTH OF THE BLANKET.

50' MINIMUI EXISTING GROUND 50' MINIMUM

STABILIZED







DATE

NO. REVISION

BNE ENERGY, INC. 29 SOUTH MAIN STREET TOWN CENTER SUITE 200 WEST HARTFORD, CT 06107

DETAILS

WIND COLEBROOK SOUTH

FLAGG HILL ROAD COLEBROOK CONNECTICUT Civil CORNERSTONE PROFESSIONAL PARK, SUITE D-101 43 SHERMAN HILL ROAD Y (203) 266 - 0778 CONN CONNECTICU WOODBUR BB APPROLED: CI SOME N.T.S. 26 AUG 11 ABOL NO. 3092 CHOD FILE NAME: 3092

C602

-CLASS "A" CONCRETE, PRECAST CONCRETE UNITS OR CEMENT CONCRETE MASONRY, WHERE BLOCK OF PRECAST CONCRETE UNITS ARE USED, CORBELING WILL BE PERMITTED, MAX, CORBEL TO BE 3". NO PROJECTION SHALL EXTEND INSIDE OF LIMITS NOTED.

- END OF PIPE TO BE CUT FLUSH WITH THE INSIDE OF CATCH BASIN. WORK TO BE INCLUDED IN THE COST OF CATCH BASIN.

POURED CONCRETE OR PRECAST BASE.







Appendix B INSPECTION AND MAINTENANCE RECORDS

INSPECTOR CERTIFICATION				
Project:	Wind Colebrook North			
Drojact Location	Winsted- Norfolk Road			
Project Location.	Colebrook North			
Contractor:				
Address:				
Phone:				
Fax:				

CONSTRUCTION INSPECTION & MAINTENANCE LOG

Date	Activity	Description	(1) Report No.
	InspectionMaintenance	By:	

CONSTRUCTION SITE I	INSPECTION REPORT	[
General Information					
Project Name:	Wind Colebrook North				
Location:	Winsted- Norfolk Road				
	Colebrook, Connecticu	ıt			
CT DEP Tracking No.		(1) Report	No.		
Date of Inspection.		Start / End			
		Time:			
Inspector's Name(s):					
Inspector's Title(s):					
Inspector's Contact					
Information:					
Describe present phase					
of construction:					
Type of Inspection:					
Regular Pre-stor	rm event During s	torm event 🗖 Pos	st-storm event		
Weather Information					
Has it rained since the last inspection?					
□Yes □No	-				
If yes, provide:	~ -				
Storm Start Date & Time	: Storm Dura	tion (hrs):	Approxima	ite Rainfall	
(1n):					
Weather at time of this in	spection?				
Discharge Information (A)					
Do you suspect that discharges may have occurred since the last inspection?					
Image: Internal geo may have occurred since the fast inspection. Image: Imag					
Are there any discharges at the time of inspection?					
Describe location of any discharges from the site:					

SITE	-SPECIFIC BMPs			
(B)	BMP Description	BMP Installed and Operating Properly?	Corrective Action Needed	Date for corrective action / responsible party
1		□Yes □No		
2		□Yes □No		
3		□Yes □No		
4		□Yes □No		
5		□Yes □No		
6		□Yes □No		
7		□Yes □No		
8		□Yes □No		
9		□Yes □No		
10		□Yes □No		
11		□Yes □No		
12		□Yes □No		
13		□Yes □No		
14		□Yes □No		
15		□Yes □No		
16		□Yes □No		
17		□Yes □No		
18		Yes No		
19		□Yes □No		

OVERALL SITE ISSUES

(C)	BMP/activity	Implemented?	Maintained?	Corrective Action	Date for corrective action/responsible person
1	Are all slopes and disturbed areas not actively being worked properly stabilized?	□Yes □No	□Yes □No		
2	Are natural resource areas (e.g., streams, wetlands, mature trees, etc.) protected with barriers or similar BMPs?	□Yes □No	□Yes □No		
3	Are perimeter controls and sediment barriers adequately installed (keyed into substrate) and maintained?	□Yes □No	□Yes □No		
4	Are discharge points and receiving waters free of sediment deposits?	□Yes □No	□Yes □No		
5	Are storm drain inlets properly protected?	□Yes □No	□Yes □No		
6	Is there evidence of sediment being tracked into the street?	□Yes □No	□Yes □No		
7	Is trash/litter from work areas collected and placed in covered dumpsters?	□Yes □No	□Yes □No		

(C)	BMP/activity	Implemented?	Maintained?	Corrective Action	Date for corrective action/responsible person
8	Are washout facilities (e.g., paint, stucco, concrete) available, clearly marked, and maintained?	□Yes □No	□Yes □No		
9	Are vehicle and equipment fueling, cleaning, and maintenance areas free of spills, leaks, or any other deleterious material?	□Yes □No	□Yes □No		
10	Are materials that are potential stormwater contaminants stored inside or under cover?	□Yes □No	□Yes □No		
11	Are non- stormwater discharges (e.g., wash water, dewatering) properly controlled?	□Yes □No	□Yes □No		
12	(Other)	□Yes □No	□Yes □No		
13	(Other)	□Yes □No	□Yes □No		

(C)	BMP/activity	Implemented?	Maintained?	Corrective Action	Date for corrective action/responsible person

GENERAL INSPECTION COMMENTS AND EXPLANATION

General Inspection Comments (D)
Is other descriptive information attached to this inspection report?

Plan Information (E)

Were all current plan BMP's in place at the time of inspection?

□Yes □No

Are additional BMP's required?

□Yes □No

Does the plan need to be updated? □Yes □No

Explanation of additional BMP and Plan update requirements:

Certification statement:

I certify that I have thoroughly and completely reviewed the Stormwater Pollution Control Plan for the site. I further certify, based on such review and in my professional judgment, that the Stormwater Pollution Control Plan has been prepared in accordance with the Connecticut Guidelines for Soil Erosion and Sediment Control, as amended, and the conditions for the General Permit for the Discharge of Stormwater and Dewatering Wastewaters from Construction Activities issued on October 1, 2002 (or as reissued or modified), and the controls required for such Plan are appropriate for the site. I am aware that there are significant penalties for false statements in this certification, including the possibility of fine and imprisonment for knowingly making false statements.

Name:		
(Please print)		
Signature:		
Title:	Date:	

•

CONSTRUCTION SITE	MAINTENANCE REPO	ORT			
General Information					
Project Name:	Wind Colebrook North				
Location:	Winsted- Norfolk Road				
	it				
CT DEP Tracking No.:		(1) Report No.			
Date of Maintenance:		Start / End Time:			
Describe present phase					
of construction:					
Type of Maintenance:					
Regular Pre-stor	rm event Dost-stor	m event D Plan Update			
Maintenance Information		-			
Inspection Report	Maintenance performe	ed:			
Reference (No., Item)					
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Inspection Deport	Maintananaa naufauma				
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Inspection Report Reference (No., Item)	Maintenance performed:
Performed by:	

I certify that I have thoroughly and completely reviewed the Stormwater Pollution Control Plan for the site. I further certify, based on such review and in my professional judgment, that the Stormwater Pollution Control Plan has been prepared in accordance with the Connecticut Guidelines for Soil Erosion and Sediment Control, as amended, and the conditions for the General Permit for the Discharge of Stormwater and Dewatering Wastewaters from Construction Activities issued on October 1, 2002 (or as reissued or modified), and the controls required for such Plan are appropriate for the site. I am aware that there are significant penalties for false statements in this certification, including the possibility of fine and imprisonment for knowingly making false statements.

Name:	
Signature:	
Title:	Date:

Appendix C SUPPORTING CALCULATIONS

CALCULATIONS FOR TEMPORARY SEDIMENT TRAPS AND OUTLET PROTECTION

Temporary Sediment Trap Calculations

TEMPORARY SEDIMENT TRAP SIZING PER 2002 CT DEP E&S MANUAL 8-26-11

TST 1 (MAIN ACCESS DRIVE- STATION 4+20 TO 15+25)- NEAR BIORETENTION AREA#2

Initial Storage Volume = 134 cubic yards per acre of drainage area V = 134 cubic yards x 0.40 acres= 54 cubic yards Half of Storage Volume will be wet and half dry = 54/2 = 27 cubic yards = 729 cubic feet

Vwet = $0.85 \times \text{Awet} \times \text{Dwet}$ If trap is 2.0' deep: 729 cubic feet= $0.85 \times \text{Awet} \times 2.0'$ Awet required = 429 square feet Use dimension of $15' \times 30'$ for Wet Surface Area = Awet = 450 square feet

Vdry = (Awet + Adry)/2 x Ddry If dry area is 1.5' high, Adry = 21' x 36' = 756 sf Vdry = (450 + 756)/2 x 1.5' = 905 cubic feet Use dimension of 21' x 36' for Dry Surface Area

TST 2 (TURBINE 1):

Initial Storage Volume = 134 cubic yards per acre of drainage area V = 134 cubic yards x 1.82 acres = 244 cubic yards Half of Storage Volume will be wet and half dry = 244 I = 122 cubic yards = 3,294 cubic feet

Vwet = 0.85 x Awet x Dwet If trap is 3.0' deep: 3,294 cubic feet= 0.85 x Awet x 3.0' Awet required = 1,292 square feet Use dimension of 20' x 65' for Wet Surface Area = Awet = 1,300 square feet

Vdry = (Awet + Adry)/2 x Ddry If dry area is 2.0' high, Adry = $28' \times 73' = 2,044$ sf Vdry = $(1,300 + 2,044)/2 \times 2.0' = 3,344$ cubic feet Use dimension of $28' \times 73'$ for Dry Surface Area

TST 3 (MAIN ACCESS DRIVE- STATION 27+00):

Initial Storage Volume = 134 cubic yards per acre of drainage area V = 134 cubic yards x 1.40 acres = 188 cubic yards Half of Storage Volume will be wet and half dry = 188/2 = 94 cubic yards = 2,538 cubic feet

Vwet = 0.85 x Awet x Dwet If trap is 3.0' deep: 2,538 cubic feet= 0.85 x Awet x 3.0' Awet required = 995 square feet Use dimension of 20' x 50' for Wet Surface Area = Awet = 1,000 square feet

Vdry = (Awet + Adry)/2 x Ddry If dry area is 2.0' high, Adry = $28' \times 58' = 1,624$ sf Vdry = $(1,000 + 1,624)/2 \times 2.0' = 2,624$ cubic feet Use dimension of $28' \times 58'$ for Dry Surface Area

TST 4 (TURBINE 2):

Initial Storage Volume = 134 cubic yards per acre of drainage area V = 134 cubic yards x 1.55 acres = 208 cubic yards Half of Storage Volume will be wet and half dry = 208/2 = 104 cubic yards = 2,808 cubic feet

Vwet = 0.85 x Awet x Dwet If trap is 3.0' deep: 2,808 cubic feet= 0.85 x Awet x 3.0' Awet required= 1,101 square feet Use dimension of 20' x 55' for Wet Surface Area = Awet = 1,100 square feet

Vdry = (Awet + Adry)/2 x Ddry If dry area is 2.0' high, Adry = $28' \times 63' = 1,764$ sf Vdry = $(1,100 + 1,764)/2 \times 2.0' = 2,864$ cubic feet Use dimension of $28' \times 63'$ for Dry Surface Area

TST 5 (MAIN ACCESS DRIVE- STATION 35+00):

Initial Storage Volume = 134 cubic yards per acre of drainage area V = 134 cubic yards x 0.35 acres= 47 cubic yards Half of Storage Volume will be wet and half dry= 47 I_2 = 24 cubic yards = 648 cubic feet

Vwet = 0.85 x Awet x Dwet If trap is 2.0' deep: 648 cubic feet= 0.85 x Awet x 2.0' Awet required= 381 square feet Use dimension of 15' x 26' for Wet Surface Area = Awet = 390 square feet

Vdry = (Awet + Adry)/2 x Ddry If dry area is 1.5' high, Adry = 21' x 32' = 672 sf Vdry = $(390 + 672)/2 \times 1.5' = 796.5$ cubic feet Use dimension of 21' x 32' for Dry Surface Area

TST 6 (MAIN ACCESS DRIVE - STATION 39+50):

Initial Storage Volume = 134 cubic yards per acre of drainage area V = 134 cubic yards x 1.45 acres = 194.3 cubic yards Half of Storage Volume will be wet and half dry = 194/2 = 97 cubic yards= 2,619 cubic feet

Vwet = 0.85 x Awet x Dwet If trap is 3.0' deep: 2,619 cubic feet= 0.85 x Awet x 3.0' Awet required= 1,027 square feet Use dimension of 20' x 55' for Wet Surface Area = Awet = 1,100 square feet

Vdry = (Awet + Adry)/2 x Ddry If dry area is 2.0' high, Adry = $28' \times 63' = 1,764$ sf Vdry = $(1,100 + 1,764)/2 \times 2.0' = 2,864$ cubic feet Use dimension of $28' \times 63'$ for Dry Surface Area

Outlet Protection Calculations

	OUTLET PIPE DIAMETER OR SPAN (in)									
DISCHARGE	12	15	18	24	30	36	42	48	54	60
(cfs)										
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OUTLET PROTECTION- OUTLET VELOCITY14 feet/sec

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Table 8-6.1 - Length- La (feet)Type A Riprap Apron

Notes: **1**. Bold face outlined boxes indicate minimum Lato be used for a given pipe diameter or span. 2. Rounding and interpolating are acceptable.

ConnDOT Drainage Manual

October 2000

Project Descript	ion		<:.	<	1+
Worksheet	Cross Culvert Stat •				
Flow Element	Circular C	hannel			
Method	Manning's	Formu l a			
Solve For	Channe l D	epth			
Input Data					
Mannings Coeff	ic 0.013	-			
Channel Slope	010000 ft/ft				
Diameler	15.0 in				
Discharge	3.20 cfs				
		-			
Results					
Depth	0.62 ft	_			
Flow Area	0.6 ft2				
Wetted Perime	1.96 ft				
Top Width	0.00 ft				
Critical Depth	0.72 ft				
Percent Full	49.7 %				
Critical Slope	0.006160 ft/ft			1.00	10
Velocity	5.25 ft/s	€ – CA<:;E:	rv00	FILE	144
Velocity Head	0.43 ft				
Specific Energ-	1.05 ft				
Froude Numbe	1.33				
Maximum Disc	6.95 cfs				
Discharge Full	6.46 cfs				
Slope Full	0.002454 ft/ft				
Flow Type)	upercritical				

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Diameter	15.0 in					
Discharge	3.20 cfs					
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Results		_				
Depth Flow	0.40 ft	_				
Area Wetted	0.3 ft ²					
Perime Top	1.50 ft					
Width Critical	0.00 ft					
Depth Percent	0.72 ft					
Full Critical	32.0 %					
Slope Velocity	0.006160 ft/ft			-		
Velocity Head	9.46 ftfs	<_LA>£	-::::L t;; "T.	{2-\ <i>f</i>	Y-'A P	
Specific Energ-	1.39 ft					
Froude Numbe	1.79 ft					
Maximum Disc	3.10					
Discharge Full	15.54 cfs					
Slope Full	14.44 cfs					
	0.002454 ft/ft					
Flow Type	lupercritical					

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Project Descript	ion			s-rA	b.+C:>o	
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Diameter	15.0 in					
Discharge	3.20 cfs					
Results						
Depth Flow	0.35 ft					
Area Wetted	0.3 ft ²					
Perime Top	1.40 ft					
Width Critical	0.00 ft					
Depth Percent	0.72 ft					
Full	28.3 %					
Critical Slope	0.006160 ftlft				~ ~ ~	
Velocity	11.19 ftls	4	USE	STANISA	ED RIPP	-A-P
Velocity Head	1.95 ft					
Specific Energ-	2.30 ft					
Froude Numbe	3.92					
Maximum Disc	19.65 cfs					
Discharge Full	18.27 cfs					
Slope Full	0.002454 ftlft					
Flow Type >	>upercritica					

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Results							
Depth Flow Area Wetted Perime Top Width Critical Depth Percent Full Critical Slope Velocity Velocity Head Specific Energ Froude Numbe Maximum Disc Discharge Full Slope Full	0.33 ft 0.3 ft ² 1.36 ft 0.00 fl 0.72 ft 26.8% 0.006160 ft/ft 12.12 ft/s 2.28 ft 2.62 ft 4.38 21.97 crs 20.43 crs 0.002454 ft/ft	<asf;< td=""><td>sA['JI;'</td><td>::::.A\<-D</td><td>cC-\\T</td><td>Ρ</td><td></td></asf;<>	sA['JI;'	::::.A\<-D	cC-\\T	Ρ	

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Worksheet for Circular	Channel				

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Diameter	15.0 in						
Discharge	3.20 cfs						
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Results							
Depth	0.62 ft						
Flow Area	0.6 ft"						
Wetted Perime	1.96 ft						
Top Width	0.00 ft						
Critical Depth	0.72 ft						
Percent Full	49.7 %						
Critical Slope	0.006160 ftlft						
Velocity	5.25 ftls		USE	1101215-13	=12	CLUTCA	FY
Velocity Head	0.43 ft						
Specific Energ-	1.05 ft						
Froude Numbe	1.33						
Maximum Disc	6.95 cfs						
Discharge Full	6.46 cfs						
Slope Full	0.002454 ftlft						
Flow Type)	upercritical						

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Project Descript	ion			0
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Diameter	15.0 in			
Discharge	3.20 cfs			
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Results				
Depth	0.33 ft			
Flow Area	0.3 rt•			
Wetted Perime	1 .36 ft			
Top Width	0.00 ft			
Critical Depth	0.72 ft			
Percent Full	26.8 %			
Critical Slope	0.006160 ft/ft			6 2210
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Velocity Head	2.28 ft			
Specific Energ-	2.62 ft			
Froude Numbe	4.38			
Maximum Disc	21.97 cfs			
Discharge Full	20.43 cfs			
Slope Full	0.002454 ft/ft			
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Mannings Coeffi	c 0.013	
Channel Slope	010000 ft/fl	
Diameter	15.0 in	
Discharge	0.65 cfs	
Results		
Depth	0.27 ft	
Flow Area	0.2 ft2	
Wetted Perime	1.20 fl	
Top Width	0.00 fl	
Critical Depth	0.31 fl	
Percent Full	21.4 %	
Critical Slope	0.005243 ft/ft	
Velocity	3.37 ft/s 🦾	USE MOD. RIPRAP
Velocity Head	0.18 ft	
Specific Energ-	0.44 ft	
Froude Numbe	1.37	
Maximum Disc	6.95 cfs	

6.46 cfs

0.000101 ft/fl

lupercritical

Project Engineer: Emly Jones FlowMaster v7.0 [7.0005) untitled.fm2 Curtis Jones & Associates 08/18/11 10:26:13 AM © Haestad Methods, Inc. 37 Brookside Road Waterbury, CT 06708 USA +1-203-755-1666 Page 1 of 1

Discharge Full

Slope Full

Flow Type

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OUTLET PROTECTION-OUTLET VELOCITY14 feet/sec

	OUTLET PIPE DIAMETER OR SPAN (in)									
DISCHARGE	12	15	18	24	30	36	42	48	54	60
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Table 8-6.1 - Length-La (feet)

Type A Riprap Apron

Notes: 1. Bold face outlined boxes indicate minimum La to be used for a given pipe diameter or span. 2. Rounding and interpolating are acceptable.

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October 2000

ConnDOT Drainage Manual

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OUTLET PROTECTION- OUTLET VELOCITY=::: 14 feet/sec **OUTLET PIPE DIAMETER OR SPAN (in)** 12 DISCHARGE 15 42 18 24 30 36 48 54 60 (cfs) 0-5 120-51 10 (10 Saffa Sta USE -"Later of 6 12 11 方である A. A. 「日本に注意 1.5-12 and the second 110 7 13 12 1270 4 1 4 1000 100 1.00 8 14 13 12 MINIMUM 世纪工 9 ------14 13 214 10 a man 15 13 1.55 100 11 14.1 and -16 14 125-120 LENGTH - 9202 12 14 1.1.1. 日本語 14 10 T 14 16 14 16 the state of the state 17 15 14 -----OUTLINED THE STRATES 2.101-10 18 18 16 15 1.1 and the second 1.51 17 20 15 1-1-11 14 22 USE 18 16 15 S and colored to 24 17 15 1.1.2.2 14 和手作等。 17.5 17 26 16 15 28 - FA-18 16 15 1.112 30 The Real of 19 17 16 in all all 35 20 18 17 16 40 ----20 PREFORMED 18 17 16 The state 45 21 19 18 16 50 Citeria . 22 20 18 17 55 Section The Section 21 19 18 and the second 60 ----------22 20 19 65 - ----24 21 20 70 22 States and the SCOUR 25 20 75 SEC 1 12. 20 20 26 23 5 5 in filite al and the 1.1. 21 1. 2. 4. 3. 80 24 22 Sec. 1 90 and the second second Cart St. Presson 26 24 1000 C. Harrison and a large 100 28 25 in the second 110 and the second The first 27 1 1 . 2 ----125 HOLE 29

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Table 8-6.1 - Length -La (feet)

Type A Riprap Apron

Notes: 1. Bold face outlined boxes indicate minimum La to be used for a given pipe diameter or span. 2. Rounding and interpolating are acceptable.

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October 2000

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ConnDOT Drainage Manual

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CIVIL 1 August 2011 Project No.: 3092

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Worksheet Flow Element Method Solve For	DMH1 TO Bioretention Circular Channel Manning's Formula Channel Depth		A C-A-	-#Z_	
Input Data		-			
Mannings Coef	fic 0.013	-			
Channel Slope	050000 ftlft				
Diameter	15.0 in				
Discharge	2.21 cfs	-			
Results		_			
Depth	0.33 ft	_			
Flow Area	0.3 tt•				
Vetted Perime	1.35 ft				
Top Width	0.00 ft				
Critical Depth	0.59 ft				
Percent Full	26.4 %				
Critical Slope	0.005587 ftlft				
Velocity	8.51 ftls	Lt.<;G		MILE MIFFORM	
Velocity Head	1.13 ft				
Specific Energ-	1.46 ft				
Froude Numbe	3.09				
Maximum Disc	15.54 cfs				
Discharge Full	14.44 cfs				
Slope Full	0.001171 ftlft				
Flow Type I	upercritical				

OUTLET PROTECTION-OUTLET VELOCITY14 feet/sec

	OUTLET PIPE DIAMETER OR SPAN (in)									
DISCHARGE	12	15	18	24	30	36	42	48	54	60
(cfs)										
0-5	10	(10)	130000	USE			19.133			
6	12	11		部設設			an an an an	and the second		的基本的 (1983) 1997年1月1日 1997年1月1日
7	國際運	13	12				加引起		一個的	
8		14	13	12		MIN	IMUM			
9	A CONTRACTOR		14	13	and a start of the	1	11、二十二日の			
10		変要な	15	13				記録		
11			16	14		a terran	LEN		GTH	
12				14,						
14				16	14					
16	調合は	1,71,07,5	in the	17	15	14	in the state		OUTL	INED
18	Skanin Star			18	16	15			0.00	
20	「中国」が行う				17	15	14	A State of the second		
22	ACCONTRACTOR	USE			18	16	15	A state of the sta	A State of the state of the	
24	a the second s				1.1.1	17	15	14		
26		The E				17	16	15		1.11.2.4
28					-FAL	18	16	15		
30	and the fi				and the second	19	17	16		
35	A STATE OF				- Contraction	20	18	17	16	
40			PR	FORM	IED 👘	and the state	20	18	17	16
45	and the second s						21	19	18	16
50							22	20	18	17
55	33.87	1.		The second second	C. 6. 15 7		di transferi	21	19	18
60		1						22	20	19
• 65							and the second s	24	21	20
70		A		A CONTRACTOR	SCO	OUR		25	22	20
75					A - w - a - a - a - a - a - a - a - a - a	and a state	. And a second	26	23	21
80								a state for	24	22
90	Sent in	11 Marian	Sy shiper	all the		and talk star	Instanting the		26	24
100					- in the second				28	25
110							. Later	and an in the second		27
125	E State	1.		enter as			HOLE	The second prime	in the second	29
130		的形式曲	1. 19.22		10.21 A.	And See				30

Table 8-6.1 - Length-La (feet)

Type A Riprap Apron

Notes: 1. Bold face outlined boxes indicate minimum La to be used for a given pipe diameter or span. 2. Rounding and interpolating are acceptable.

October 2000

ConnDOT Drainage Manual

- -
OUTLET

Project Descript	ion		15	1001701	TOP
Worksheet	CB 18+70	toOl	(1>	10+101	
Flow Element	Circular Cl	hanm			
Method	Manning's	Forrr			
Solve For	Channel D	epth			
Input Data		-			
Mannings Coeff	ic 0.013	-			
Channel Slope	050000 ft/ft				
Diameter	15.0 in				
Discharge	1.59 cfs				
		-			
Results					
Depth Flow	0.28 ft	—			
Area Wetted	0.2 ft ²				
Perime Top	1.23 ft				
Width Critica	0.00 ft				
Depth Percent	0.50 ft				
Full	22.4 %				
Critical Slope	0.005340 ft/ft				
Velocity	7.74 ft/s	∠ – 1A'->E	fV10)0IcE.G	(2\P(ZA-\?
Velocity Head	0.93 ft				
Specific Energ-	1.21 ft				
Froude Numbe	3.07				
Maximum Disc	15.54 cfs				
Discharge Full	14.44 cfs				
Slope Full	0.000606 ftlft				
Flow Type >	>upercritica				

Culverts

<u>8.</u>7-7

	OUTLET PIPE DIAMETER OR SPAN (in)									
DISCHARGE	12	15	18	24	30	36	42	48	54	60
(cfs)		0								
0-5	10	(10)	》的正确	USE	調査					11 12 15 1 10 10 10 10 10 10 10 10 10 10 10 10 1
6	12	11	國國證	科学語 目				a the second		
7	記録	13	12			10	制造器			
8		14	13	12		MIN	IMUM			
9	1220	同語	14	13	an in the second	1.2.5.6		All and the		
10		新市 市	15	13				の思想に		Mar Sala
11	an min	and the	16	14		and the second		LEN	GTH	and games
12				14,				Server E	1	
14	and the second			16	14			TAP A PARATA		1.201
16	黑竹草	. مزد باز به	in a new S	17	15	14			OUTL	INED
18				18	16	15				Children and Children
20	animit tide				17	15	14	and store	-1-1-1-11-1-1-1-1-1-1-1-1-1-1-1-1-1-1-	and the state
22		USE			18	16	15		A CALL AND IN	
24			10.00		語を読む	17	15	14		and the second
26	政策が必要				and the second	17	16	15		Time and
28				and the second second	and the second	18	16	15	- Actor	
30			822			19	17	16	等的情况	会合成語とい
35	and the second					20	18	17	16	
40		11: 27	PRI	EFORM	IED	3,2,24	20	18	17	16
45							21	19	18	16
50							22	20	18	17
55	13.58		Start Start	The states	- 6 J			21	19	18
60								22	20	19
- 65			and a start		a sector			24	21	20
70		a state of			SCC	DUR		25	22	20
75			and fight	T.				26	23	21
80	A CALLER	States						C. S. Barris	24	22
90	and the	and a start of	1		the land	the second states and			26	24
100	1	Lo and		17 La 14	ta San I				28	25
110								AT A R. T.		27
125	A. 17 19 17 19	1000	1	e Alter	A strain of		HOLE	The second	A DE LA DE L	29
130	2025-24, 21,	a start of sector	1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	1- 10 - 10 - 10 - 10 - 10 - 10 - 10 - 1		Sector Starts	States 124	40.5 - GL 7 + TS () - 1	ALL AND ALL	30

OUTLET PROTECTION- OUTLET VELOCITY14 feet/sec

Table 8-6.1 -Length - La (feet)Type A Riprap Apron

Notes: 1. Bold face outlined boxes indicate minimum La to be used for a given pipe diameter or span. 2. Rounding and interpolating are acceptable.

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$$5 > C <; F$$
)C::>.Y c_)c.7s'
L.-c-\$.6. br \O'∟ t"'2LP:2t\P p,q..p

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ConnDOT Drainage Manual

CIVIL 1 August 2011 Project No.: 3092

Ρ	Project Descripti	on				OUT	ET
V	Vorksheet	CB 28+10L	to O				
F	ow Element	Circular Ch	anne				
Ν	/lethod	Manning's I	Form				
S	Solve For	ChannelDe	pth				
I	nput Data						
Ν	Aannings Coeffi	c 0.013					
C	Channe l Slope	010000 ft/ft					
C	Diameter	15.0 in					
D	Discharge	1.85 cfs					
R	lesults						
D	Depth Flow	0.46 ft	_				
A	rea Wetted	0.4 fl ²					
Р	erime Top	1.63 ft					
V	Vidth Critical	0.00 ft					
D	epth Percent	0.54 ft					
F	ull	36.6 %					
С	ritical Slope	$0.005424 \ {\rm ft/fl}$					
V	elocity	4.54 ftls	4-	LAS,£	v1Ac t'::1	SD	cC-t p.:\-'?
V	elocity Head	0.32 fl					-

1.38

>upercritical

6.95 cfs

6.46 cfs 0.000820 ft/fl CCS 2't:, IOL NTLET

Project Engineer: Emily Jones FlowMaster v7.0 [7.0005] untilled.fm2 Curtis Jones & Associates © Haestad Methods, Inc. 37 Brookside Road Waterbury, CT 06708 USA +1-203-755-1666 08/18/11 11:00:50 AM Page 1 of 1

Froude Numbe

Maximum Disc

Discharge Full

Slope Full Flow Type

Culverts



OUTLET PROTECTION-OUTLET VELOCITY14 feet/sec

	OUTLET PIPE DIAMETER OR SPAN (in)									
DISCHARGE	12	15	18	24	30	36	42	48	54	60
(cfs)		~								
0-5	10	(10)		USE	影響			建设合		ALCONTRACT
6	12	11	11000	詞語語			to and the			
7		13	12						- 48	
8		14	13	12		MIN	IMUM			
9		時代	14	13		1		All American		
10	and the season		15	13	-	. The second	で支援			No. 19
11	A	がある	16	14		and the		LEN	GTH	1 2 2 444
12				14,				AND ST		
14	A A A A A A A A A A A A A A A A A A A		記録的	16	14					
16			Section 1	17	15	14			OUTL	INED
18				18	16	15		A PARTY A PROVIDE A PROVIDA PROVIDA PROVIDE A PROVIDE A PROVIDE A PROVIDE A PROVIDE A	1.1	Sec. Sec
20	and the second				17	15	14		the strength	
22		USE			18	16	15			
24	a that a				AND CAN	17	15	14	Section 200	A THE CON
26			and the second	The star	An a start and a start and a start a st	17	16	15		1.1.3.4
28				States a		18	16	15		
30	and the state		<u>教室</u> [2]			19	17	16		
35	14 VI. 10					20	18	17	16	
40	1		PRI	EFORM	IED		20	18	17	16
45							21	19	18	16
50						建建设	22	20	18	17
55	1				66 J.			21	19	18
60					100			22	20	19
· 65								24	21	20
70	新国新	1			SCO	OUR		25	22	20
75			an an provide			a n an		26	23	21
80									24	22
90	Sent:	and the second	1. 444 1. 2	No. The		and the states of	and and		26	24
100		1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1		A Later	timesan			A Constant of the second s	28	25
110			1. 1. 1.				i si dina si	men L. M.		27
125		4.24		einige	121012	-inger a	HOLE	the set	1	29
130	and a second				· Carlos	Are shere		時代のない		30

Table 8-6.1- Length-La (feet)

Type A Riprap Apron

Notes: I. Bold face outlined boxes indicate minimum La to be used for a given pipe diameter or span. 2. Rounding and interpolating are acceptable.

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ConnDOT Drainage Manual

Project Descrip	otion	
Worksheet	CB 28+20F	to O
Flow Element	Circular C	hanne
Method	Manning's	Form'
Solve For	ChannelD	epth
Input Data		
Mannings Coef	fic 0.013	-
Channel S l ope	025400 ft/ft	
Diameter	15.0 in	
Discharge	2.32 cfs	_
Results		
Depth	0.40 ft	
Flow Area	0.3 rt•	
Wetted Perime	1.51 fl	
Top Width	0.00 ft	
Critical Depth	0.61 ft	
Percent Full	32.3 %	
Critical Slope	0.005642 ftlft	
Velocity	6.77 ft/s	6-1
Velocity Head	0.71 fl	
Specific Energ-	1.12 ft	
Froude Numbe	2.21	
Discharge Full	11.07 CTS	
Slope Full	0.001290 ft/ft	
Flow Type	iupercritical	
	aporoniou	

Culverts

8.7-7

	OUTLET PIPE DIAMETER OR SPAN (in)											
DISCHARGE	12	15	18	24	30	36	42	48	54	60		
(cfs)		5	\ \									
0-5	10 (10	な影響	USE		这些 内4				ALCONTACT OF		
6	12	11							iant.			
7		13	12							- 31 C - 22		
8		14	13	12		MIN	IMUM		1.00			
9	and the set	The second	14	13		1	12. 12. 12. 13. 17. 1. 12. 13. 13. 14.	12 34 17		14.5		
10	she r that is	新設 制設	15	13	· Costa	1	- Proven			Alt State		
11	a Crain		16	14		1 Acres and		LEN	GTH	1 (S +		
12			1.1. 11. 21	14,			100000	GLANE.				
14		d territor		16	14	70 317 M				1.20		
16			alar and	17	15	14			OUTL	INED		
18			1	18	16	15		A STATE	6. 5.			
20				17. 11. 14.	17	15	14		in clark			
22		USE		1.33	18	16	15		and the second second	C CLARKER D		
24	a charles and		10.00 m		1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1	17	15	14	1	and the state		
26	14.4.25			19:000	And the second	17	16	15				
28					Later 1	18	16	15		12.5		
30	Street.			and a	Sec. S	19	17	16	State 1			
35	NUMBER OF			11 SPACE	State.	20	18	17	16			
40	14 2 - 1 -		PR	EFORM	1ED	g a Sta gin	20	18	17	16		
45	and the second				The spin	1000	21	19	18	16		
50	A. 1				in the second		22	20	18	17		
55		See 2	36.95	The state of	C6 . 148		4	21	19	18		
60							12 - 24 - 24 12 - 24 12 14 14 14 14 14 14 14 14 14 14 14 14 14	22	20	19		
- 65	1.17. J	11-1-1-1	and an and a second	and the second	1. 1. 19			24	21	20		
70		· *******	1.14	And Anton	SCO	OUR	a - mat h	25	22	20		
75		1. 1. A.	Near Lote					26	23	21		
80									24	22		
90	San The	All and the	1	All the second		And the state			26	24		
100		and a state	1	「「「	A CONTRACTOR		NO MARK		28	25		
110	11月1月1						and an and a second	men her	的主动建	27		
125		4.14.65	17	e in the			HOLE	1. 1. B.		29		
130	Terre .		12	1- 72				a state the	1.1	30		

OUTLET PROTECTION-OUTLET VELOCITY14 feet/sec

Table 8-6.1 – Length – La (feet)

Type A Riprap Apron Notes: 1. Bold face outlined boxes indicate minimum La to be used for a given pipe diameter or span. 2. Rounding and interpolating are acceptable.

$$VJ := 3:. (s.(?) t- 0)-fLLc;...) \mathbb{Z} \cdot \mathbb{7} ,$$

$$Us::(5 C)W := CO' (qZ-(f)C.A pf')$$

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				102	23	+70L
Project Descript			(1)	2	,	
Worksheet	CB 33+7	OL to O		TD	ou	TLET
Flow Element	Circular	Channe				
Method	Manning	j's Form1				
Solve For	Channe	Depth				
Input Data						
Mannings Coef	fic 0.013					
Channel Slope	010000 ft/ft					
Diameter	15.0 in					
Discharge	1.35 cfs	_				
Results						
Depth Flow	0.39 ft					
Area Wetted	0.3 ft					
Perime Top	1.48 ft					
Width Critical	0.00 ft					
Depth Percent	0.46 ft					
Full Critical	31.0 %					
Slope Velocity	0.005272 ftlt	t Z-V	/<-'£	$.1 \land A.oOt$. G:C>	.rrrfA:'<=>
Velocity Head	4.16 ft/	3			1	
Specific Energ-	0.27 ft					
Froude Numbe	0.66 ft					
Maximum Disc	1.39					
Discharge Full	6.95 cf	3				
Slope Full	6.46 cfs	5				
Flow Type	0.000437 ft/1	t				
	upercritica					