



**Enbridge Pipelines (North Dakota) LLC  
Grenora Station Upgrade Project**

**Environmental Mitigation Plan**

**September 2011**

**Enbridge Pipelines (North Dakota) LLC  
Grenora Station Upgrade Project**

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## INTRODUCTION

This Environmental Mitigation Plan (EMP) outlines environmental policies, procedures, and mitigation measures developed by Enbridge Pipelines (North Dakota), LLC (Enbridge or Company) for its Grenora Station Upgrade Project. The EMP is intended to mesh with applicable federal, state and local environmental protection and erosion control specifications and practices including those outlined in the North Dakota Department of Transportation (ND DOT) *Erosion and Sediment Control Handbook* (June 2004) and the *Guide to Temporary Erosion-Control Measures for Contractors, Designers, and Inspectors* (ND Department of Health – Division of Water Quality, June 2001). This EMP is designed to address typical circumstances and may be amended by Enbridge as necessary to address site-specific conditions.

Effective management of change is critical to the overall success of any project. During construction, an Enbridge Environment representative will evaluate each proposed change request to determine if the potential for further environmental impact exists. The Enbridge Environment representative will review applicable federal, state, and local permits and consult with agencies as needed to ensure that this EMP, in combination with any applicable permit, will continue to provide a baseline of environmental protection regardless of said change request..

Enbridge will provide appropriate environmental oversight to ensure company and contractor compliance with the measures of this EMP and requirements of applicable federal, state, and local permits. In certain instances, Enbridge Environment representative may be enlisted to assist in implementing the requirements of the EMP, and, if deemed necessary, shall exercise the authority to order corrective mitigation actions to restore compliance with regulatory requirements, the EMP and landowner agreements.

## **1.0 EROSION AND SEDIMENTATION CONTROL**

The goal of temporary erosion and sedimentation control measures is to prevent sediment from entering streams, wetlands, lakes, drainage ditches (dry or flowing), or other waterbodies. Erosion and sediment control devices must be installed and maintained per ND DOT and ND Department of Health – Division of Water Quality standards. Enbridge will, at all times, maintain erosion and sedimentation control structures as effectively as possible. All non-functional erosion control features will be repaired, replaced, or supplemented with functional materials as soon as field conditions allow access, but no later than 24 hours after discovery.

### **1.1 PROJECT ACCESS**

Access to the project area will be from public roadways and Enbridge-approved access roads only. The contractor will be responsible for creating signs or other methods to identify approved access roads in the field and to ensure that access is confined to only the approved roads.

### **1.2 PROJECT REQUIREMENTS**

All construction equipment and vehicles will be confined to the approved project site.

### **1.3 PERMITS**

Enbridge will obtain the necessary permits (federal, state, and local) for the project. Permit requirements may be more stringent than the requirements of this EMP. In all cases the more restrictive requirements will apply.

### **1.4 SITE PREPARATION**

As needed, site preparation involves the clearing of brush, trees, and vegetation from the project area to prepare for grading operations, if needed. The clearing crew will typically stack merchantable timber in upland areas and either burn, chip, and/or remove excess brush and non-merchantable wood. Care will be taken to minimize tree removal.

Grading generally follows clearing and involves leveling the site to create an even working surface for equipment and vehicles. Topsoil is segregated in selected areas where soil productivity is an important consideration.

#### **1.4.1 Temporary Sediment Barriers**

Temporary sediment barriers may be constructed with silt fence (36-inch or greater) and/or staked straw bales (see Exhibits 1.1 and 1.2). If temporary sediment barriers are removed to allow equipment access, the barriers will be replaced at the end of the day.

Temporary sediment barriers will be installed and maintained at the base of sloped approaches to streams, wetlands, and roads, and at the edge of the site as needed to prevent siltation of waterbodies downslope of the construction site (e.g., swales and side slopes).

When the depth of sediment reaches about one-third to one-half of the height of a sediment barrier, the barrier will be replaced and/or the sediment removed. Nonfunctional sediment-

control measures will be repaired, replaced, or supplemented with functional features as soon as possible, but under no circumstance more than 24 hours after discovery.

#### **1.4.2 Noise and Dust Control**

The Contractor will take all reasonable steps to control construction-related noise and dust near residential areas and other areas as directed by Enbridge.

#### **1.5 BACKFILLING**

In areas where topsoil has been segregated, the subsoil will be replaced first, and the topsoil will be spread uniformly over the area from which it was removed, re-establishing pre-existing contours. In upland areas, an earth crown may be left over the trench line to allow for future settling of the backfill material. No crown will be left in swales, drains, or wetlands.

### **2.0 WETLAND METHODS**

Due to the unstable nature of some wetland soils, construction activities may differ somewhat from those described for upland areas. Wetland disturbances will be minimized to the extent practicable and/or special construction techniques will be used to minimize the disturbance to plants and soils and to protect wetland hydrology.

The intent of these procedures is to minimize construction-related disturbance and sedimentation of wetlands and to restore wetlands as nearly as possible to pre-construction conditions (if applicable).

#### **2.1 SPILL PREVENTION**

No storage of hazardous materials, chemicals, fuels, lubricating oils, or concrete coating activities will be permitted in, or within 100 feet of any wetland. Attempts will be made to refuel all construction equipment in an upland area at least 100 feet from a wetland boundary. Where conditions require that construction equipment (e.g., pontoon-mounted backhoes, trench dewatering pumps) be refueled in a wetland or within 100 feet of any wetland boundary, these activities will be performed under the guidance of the Enbridge Environment representative in accordance with applicable regulatory requirements.

#### **2.2 GRADING**

Grading activities will be confined to the project site. Grading outside the project site is only permitted where required to ensure safety and restore contours after backfilling.

Sedimentation control devices (e.g., silt fence) will be installed and maintained in proper working order to prevent the flow of sediment into wetlands from spoil piles or sloped approaches that are adjacent to the wetlands.

##### **2.2.1 Sediment Controls**

Sediment control practices will be installed as described in Section 1.4.1, according to the specifications presented in Exhibits 1.1 and 1.2.

## **2.3 BACKFILLING/RESTORATION**

Subsoil material removed during construction will be replaced so that no crown remains in wetland areas. Any excess backfill material will be removed to an upland area approved by Enbridge. Segregated topsoil will be returned to its pre-construction horizon, restoring original contours. As needed, temporary slope breakers will be installed near the boundary between the wetland and adjacent sloped approaches, to prevent sediment flow into wetlands.

### **2.3.1 Temporary Revegetation**

Where necessary, disturbed wetland areas will be revegetated per ND DOT specifications or per recommendations of other appropriate state and federal agencies. No fertilizer, lime, or mulch will be applied in wetlands.

## **3.0 HIGHWAY, ROAD AND TRAIL AREAS**

Roadway crossings will be maintained in a condition which will prevent tracking of mud onto the roadway. Stabilized construction entrances will be installed to facilitate mud removal. If mud is tracked onto a roadway, it will be shoveled or swept off the road, and placed within a sediment barrier as soon as possible. Temporary sediment barriers (*e.g.*, silt fence and/or double-staked straw bales) will be installed as needed on sloped approaches to road crossings where vegetation has been disturbed (see Exhibit 3.1).

## **4.0 CONSTRUCTION DEWATERING AND HYDROSTATIC TESTING**

### **4.1 CONSTRUCTION DEWATERING**

Dewatering may be necessary to create a dry excavation/work area during construction activities. Dewatering will be performed in accordance with applicable appropriation and discharge permits and conducted in a manner which will prevent soil erosion and off-site sedimentation.

To prevent run-off into streams, wetlands, drainage ditches, etc., dewatering discharge will be directed to a well-vegetated upland area (see Exhibit 4.1). If a suitable upland area is not available, discharges shall be directed through a non-woven sediment filter bag or a straw bale/silt fence dewatering structure which discharges into a vegetated area (see Exhibits 4.1 and 4.2). Filter bags and dewatering structures shall be maintained in a functional condition throughout dewatering activity; (*e.g.*, clogged or ripped bags must be replaced) and accumulated sediment from the filter bags shall be disbursed in an approved upland location.

### **4.2 HYDROSTATIC TEST DISCHARGES**

Hydrostatic testing involves filling pipe segments, tanks, and related infrastructure with water acquired in accordance with applicable permits, raising the internal pressure level, and holding that pressure for a specific period of time per federal DOT specifications. Water used for hydrostatic testing typically will be taken from, and returned to, local streams and rivers. After the hydrostatic test is completed, the line will be depressurized and the water expelled. During withdrawal and discharge, the water will be sampled as required by permits to determine if

contaminants are present. Water volumes must be measured and recorded. Contractor will consult with the Enbridge Environment representative regarding suitability of the dewatering discharge location. The Enbridge Environment representative must approve the location prior to any discharge, for those not permitted to be discharged directly to the source or other waterbody.

If site conditions or engineering constraints make adhering to these hydrostatic testing procedures and documentation impractical, Enbridge will propose alternative provisions to the regulatory agency issuing the NPDES discharge permit. Any such alternative will provide an equal or greater level of protection to the environment than the condition from which Enbridge or its Contractor seeks relief.

#### **4.2.1 Refueling**

The operation and refueling of hydrostatic test equipment will be in accordance with the conditions outlined in Enbridge's Spill Plan.

#### **4.2.2 Permit Requirements**

Hydrostatic testing will be conducted in accordance with applicable appropriation and discharge permits obtained by Enbridge.

#### **4.2.3 Siting of Test Manifolds**

Hydrostatic test manifolds will be installed where necessary to ensure proper test pressures. However, the selected location of test manifolds is based on engineering requirements to meet proper test pressures and incorporates changes due to topography. Where feasible, Enbridge will incorporate minor adjustments to the test manifold locations to avoid placement in wetlands and riparian areas. However, completely avoiding the placement of a test manifold in a wetland may not always be possible. The contractor will install appropriate erosion control measures where the Enbridge Environment representative determines that topographic conditions, primarily elevation changes, require test sections to be located in a wetland or riparian area.

#### **4.2.4 Water Sampling**

Water discharged from hydrostatic tests will be sampled as required by state-issued water appropriation or discharge permits. The contractor will assist Enbridge in obtaining these samples and will be responsible for complying with all permit conditions.

### **5.0 SITE RESTORATION AND PERMANENT EROSION CONTROL MEASURES**

Site restoration will begin as soon as soil conditions permit seed bed preparation and seed germination. Every effort will be made to begin site restoration, including installation of permanent erosion control measures, as soon as practicable.

#### **5.1 FINAL CLEANUP AND GRADING**

Final cleanup will begin with removal of all construction-related debris and material which is not an integral part of the facility (including litter generated by construction crews) from the project

area. After cleanup is completed, the disturbed areas shall be graded to restore the contours of the land to previous conditions.

## **5.2 PERMANENT EROSION CONTROL MEASURES**

After final grading, slopes greater than 5% in areas other than cropland will be stabilized with permanent erosion control structures. Erosion control measures for specific physical land features are described below.

### **5.2.1 Swales**

Swales across the construction site will be restored to original contours wherever practicable. Swales will be revegetated or lined with rock according to project specifications.

### **5.2.2 Drainage Ditches and Intermittent Streams**

Drainage ditches and intermittent streams will be permanently restored and stabilized with erosion control blanket, permanent seeding, or other appropriate measures.

## **5.3 REVEGETATION**

Permanent revegetation will involve preparing the seedbed and seeding disturbed areas. The construction site will be seeded as soon as possible after backfilling, weather and soil conditions permitting. Soil amendments (fertilizer and lime) will be applied as specified by Enbridge, in consultation with regulatory agencies. Specific seed mixes, application rates, and seeding dates will take into account recommendations of appropriate state and federal agencies.

Mulch will be applied according to the following specifications:

- After seeding, slopes greater than 5 percent or dry, sandy areas will be mulched with 2 tons per acre of straw or hay or as otherwise directed by Enbridge.
- All areas of dormant seeding must be mulched with 2 tons per acre of hay or straw or as otherwise directed by Enbridge.
- Mulch will be anchored after placement to minimize loss by wind and water. If soil conditions allow, a mulch anchoring tool or farm disc set in the straight position will be used to crimp the mulch to a depth of 2 to 3 inches. Liquid tackifiers may be used with advance written approval from Enbridge.

Where conditions allow (e.g., unsaturated and unponded areas), wetlands will be revegetated after final grading with annual ryegrass and then allowed to revegetate naturally, unless otherwise directed by regulatory agencies

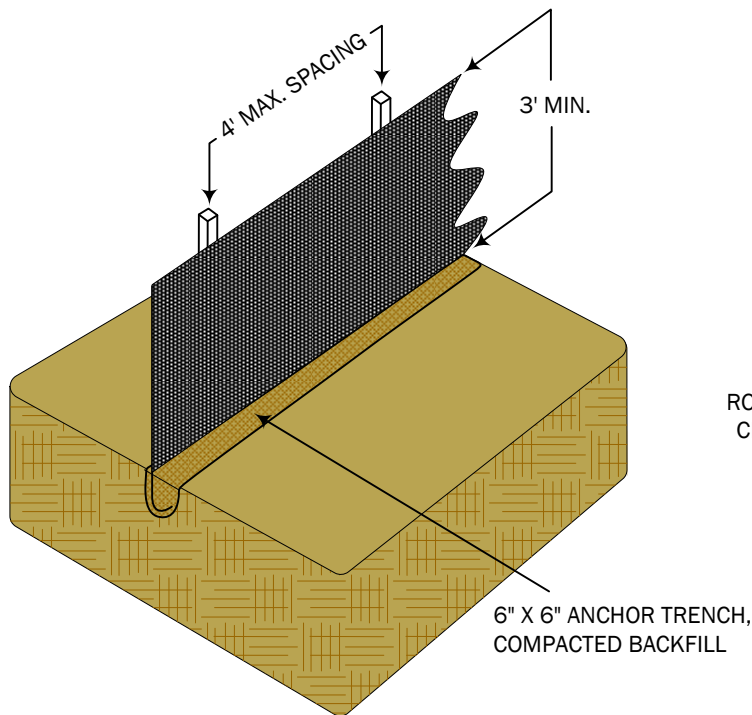
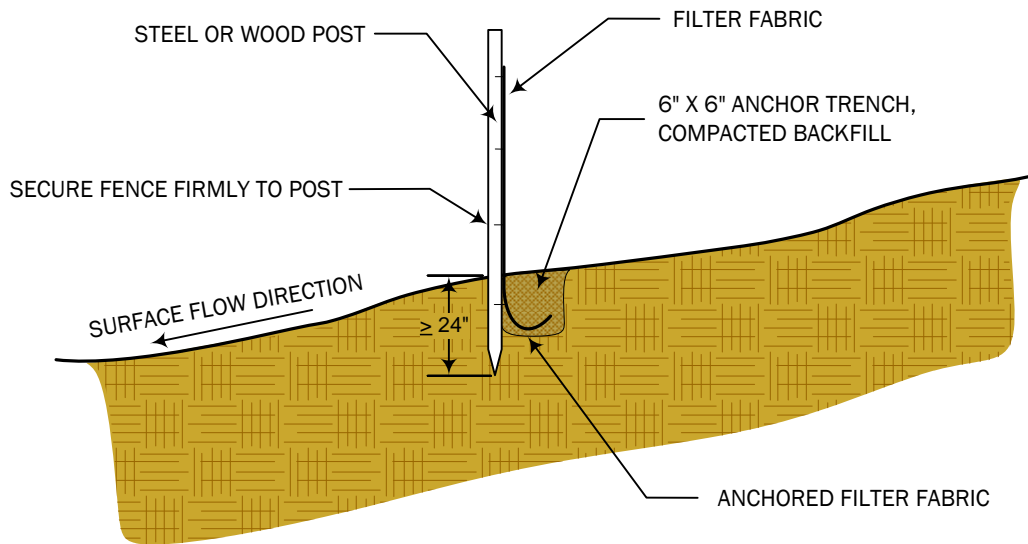
## **5.4 ROAD REPAIR**

Enbridge shall repair private roads and lanes damaged when moving equipment or obtaining access to the right-of-way to previous conditions.

## **5.5 REPAIR OF DAMAGED CONSERVATION PRACTICES**

All soil conservation practices (such as terraces, grassed waterways, etc.) that are damaged by the construction activities will be restored to previous conditions to the extent practical.

# **EXHIBITS**



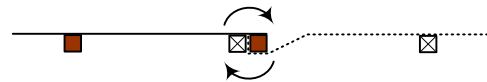
**ATTACHING TWO SILT FENCES**



PLACE THE END POST OF THE SECOND FENCE INSIDE THE END POST OF THE FIRST FENCE.



ROTATE BOTH FENCE POST 180 DEGREES CLOCKWISE TO CREATE A TIGHT SEAL BETWEEN THE FABRIC MATERIAL.



DRIVE BOTH POSTS AT LEAST 10' INTO GROUND AND BURY FLAP.



**NOTES:**

1. SILT FENCE FABRIC SHOULD CONFORM TO THE AASHTO M288 96 SILT FENCE SPECIFICATION.
2. THE POSTS USED TO SUPPORT THE SILT FENCE FABRIC SHOULD BE A HARDWOOD MATERIAL WITH THE FOLLOWING MINIMUM DIMENSIONS: 50 MILLIMETERS (2 INCHES) SQUARE (NOMINAL) BY 1.2 METERS (4 FEET) LONG. FOR STRUCTURAL STABILITY, METAL POSTS SHOULD BE USED IN AREAS THAT WILL POND WATER.
3. PERPENDICULAR TO THE DITCH FLOWLINE, EXCAVATE A TRENCH THAT IS AT LEAST 150 MILLIMETERS (6 INCHES) DEEP BY 100 MILLIMETERS (4 INCHES) WIDE. EXTEND THE TRENCH IN A STRAIGHT LINE ALONG THE ENTIRE LENGTH OF THE PROPOSED DITCH CHECK. PLACE THE SOIL ON THE UPSTREAM SIDE OF THE TRENCH FOR LATER USE. ANOTHER COMMON AND LESS LABOR INTENSIVE INSTALLATION METHOD USES A TRENCHER OR CHISEL PLOW TO INSTALL THE SILT FENCE. THE SILT FENCE WILL LAST LONGER AND IS LESS LIKELY TO BLOW OUT UNDERNEATH.
4. ROLL OUT A CONTINUOUS LENGTH OF SILT FENCE FABRIC ON THE DOWNSTREAM SIDE OF THE TRENCH. PLACE THE EDGE OF THE FABRIC IN THE TRENCH STARTING AT THE TOP UPSTREAM EDGE OF THE TRENCH. LINE ALL THREE SIDES OF THE TRENCH WITH THE FABRIC. BACKFILL OVER THE FABRIC IN THE TRENCH WITH THE EXCAVATED SOIL, AND COMPACT. AFTER FILLING THE TRENCH, A MINIMUM OF 900 MILLIMETERS (36 INCHES) OF SILT FENCE FABRIC SHOULD REMAIN EXPOSED.

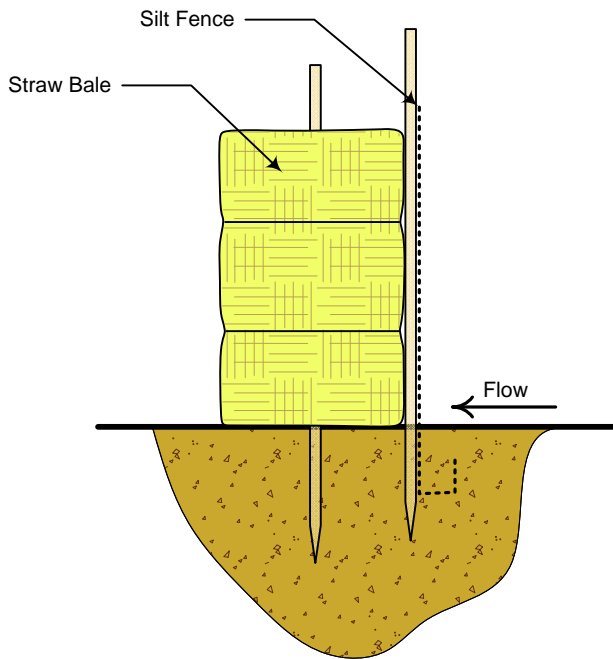
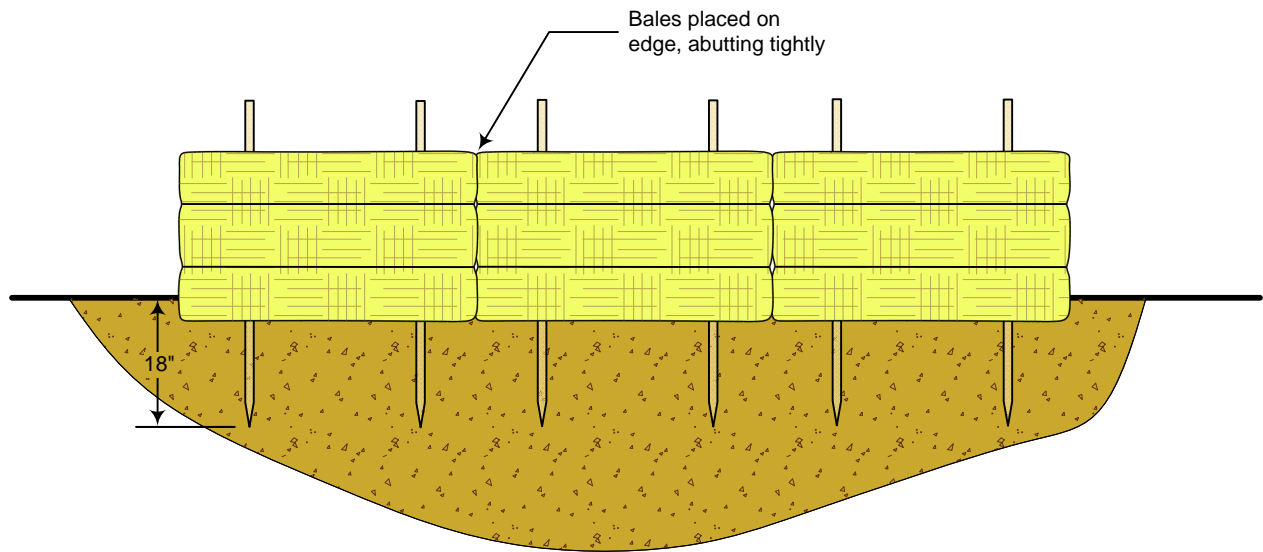


**Exhibit 1.1  
Typical Silt Fence Installation**

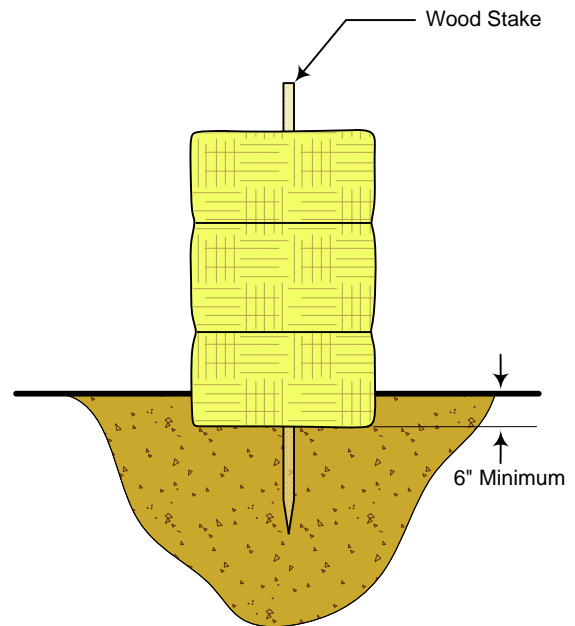
Grenora Station Upgrade Project

Drawn by: **merjent**

09/22/2011



STRAW/HAY BALES & SILT FENCE



STRAW/HAY BALES ONLY

NOTES:

1. BALE DITCH CHECKS MAY BE CONSTRUCTED OF WHEAT STRAW, OAT STRAW, PRAIRIE HAY OR BROMEGRASS HAY THAT IS FREE OF WEEDS DECLARED NOXIOUS BY THE NORTH DAKOTA STATE BOARD OF AGRICULTURE.
2. THE STAKES USED TO ANCHOR THE BALES SHOULD BE MADE OF A HARDWOOD MATERIAL WITH THE FOLLOWING MINIMUM DIMENSIONS: 50 MILLIMETERS (2 INCHES X2 INCHES) SQUARE (NOMINAL) BY 1.2 METERS (4.0 FEET) LONG. STEEL STAKES MUST BE A MINIMUM 1.5 METERS (5.0 FEET) LONG.
3. TWINE SHOULD BE USED TO BIND BALES. THE USE OF WIRE BINDING IS PROHIBITED BECAUSE IT DOES NOT BIODEGRADE READILY.
4. PERPENDICULAR TO THE DITCH FLOWLINE, EXCAVATE A TRENCH THAT IS 150 MILLIMETERS (6 INCHES) DEEP AND A BALE'S WIDTH WIDE. EXTEND THE TRENCH IN A STRAIGHT LINE ALONG THE ENTIRE LENGTH OF THE PROPOSED DITCH CHECK. PLACE THE SOIL ON THE UPSTREAM SIDE OF THE TRENCH TO SAVE FOR LATER USE.

SOURCE: A GUIDE TO TEMPORARY EROSION-CONTROL MEASURES FOR CONTRACTORS, DESIGNERS, AND INSPECTORS (ND DEPARTMENT OF HEALTH – DIVISION OF WATER QUALITY, JUNE 2001)

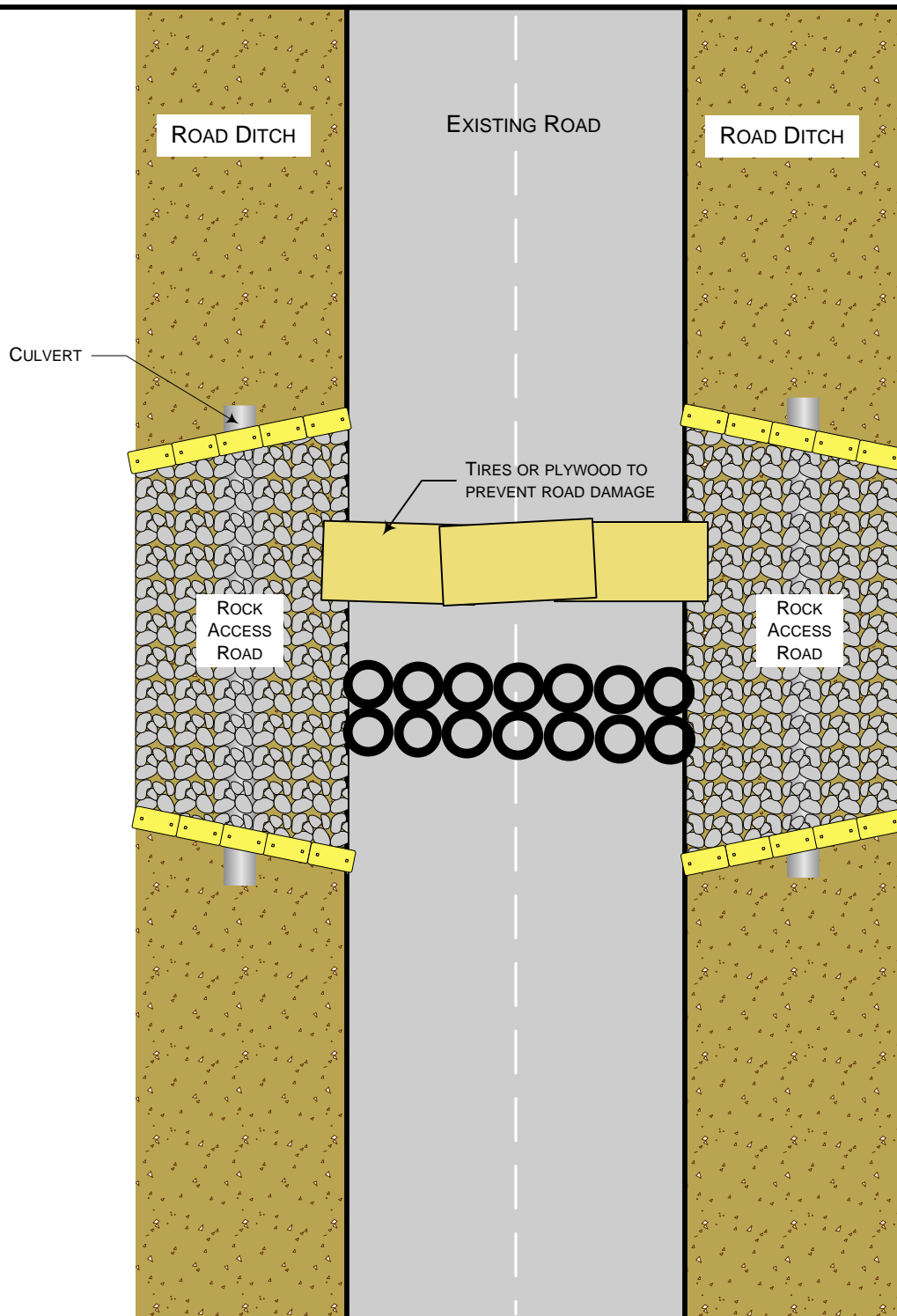


Exhibit 1.2  
Typical Straw Bale Installation

Grenora Station Upgrade Project

Drawn by: Herjent

09/22/2011



**NOTES:**

1. ACCESS RAMPS, AS ILLUSTRATED ABOVE, ARE TO BE INSTALLED ADJACENT TO EXISTING ROADS AT LOCATIONS IDENTIFIED ON THE PROJECT.
2. CONTRACTOR SHALL KEEP ROAD SURFACES IN CLEAN AND SAFE DRIVING CONDITION.
3. PRIOR TO PERMANENT SEEDING, CONTRACTOR SHALL REMOVE ALL IMPORTED FILL MATERIAL AND CULVERT (IF INSTALLED) AND RESTORE THE GROUND TO NATURAL CONTOURS UNLESS OTHERWISE DIRECTED.
4. DIAMETER OF CULVERT TO BE IN ACCORDANCE WITH STATE, COUNTY OR TOWNSHIP REQUIREMENTS.
5. STRAW BALES SHALL BE INSTALLED PER EXHIBIT 1.2.
6. MONITOR CULVERTS FOR SEDIMENT BUILD-UP AND CLEAN AS NECESSARY.

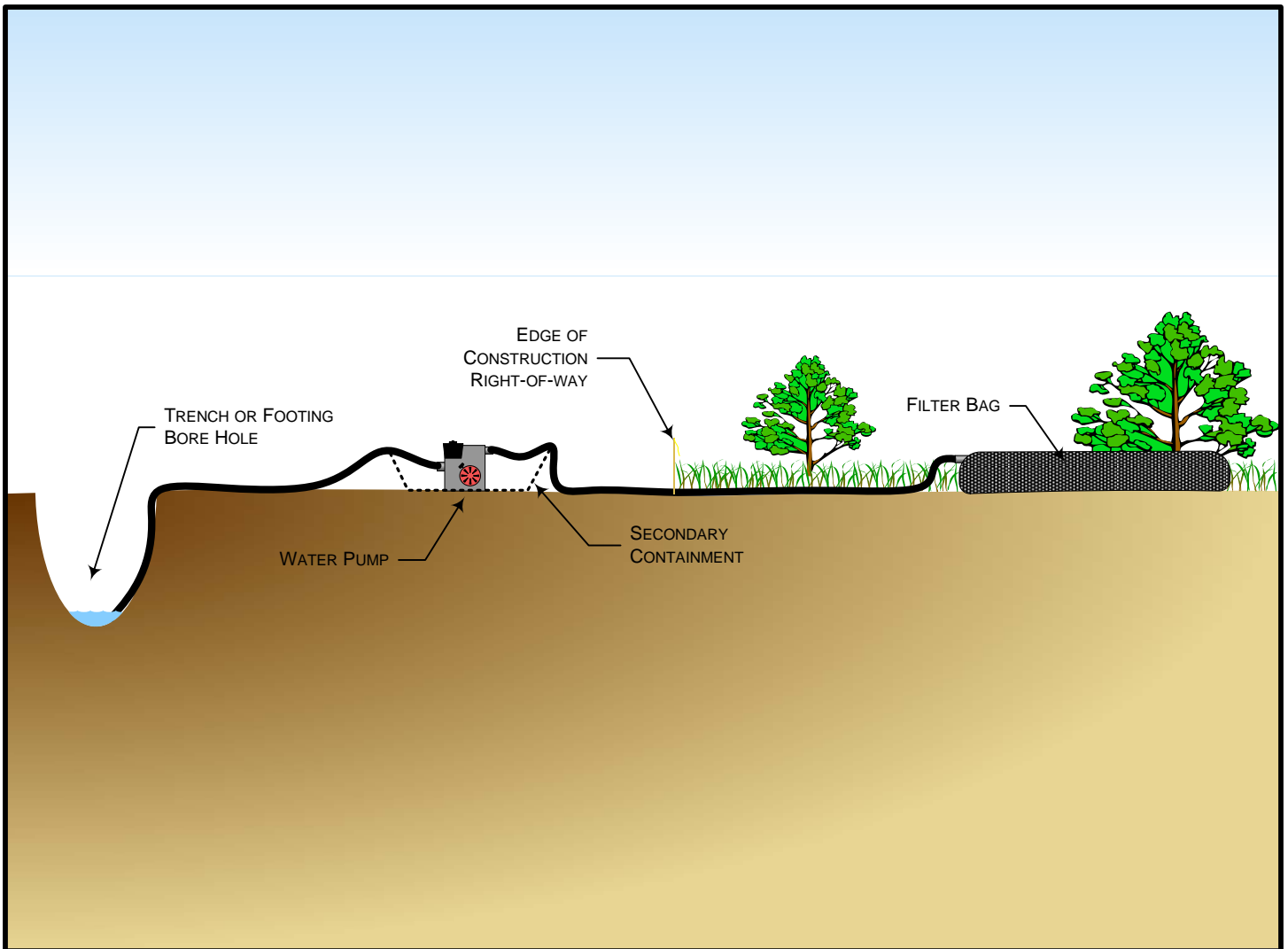


**Exhibit 3.1**  
**Typical Road Crossing –**  
**Sediment Control**

Grenora Station Upgrade Project

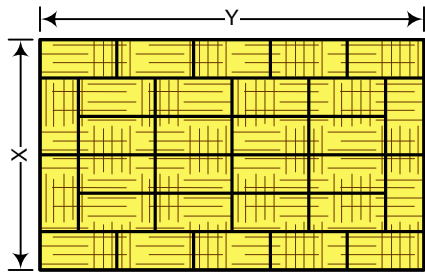
Drawn by: merjent

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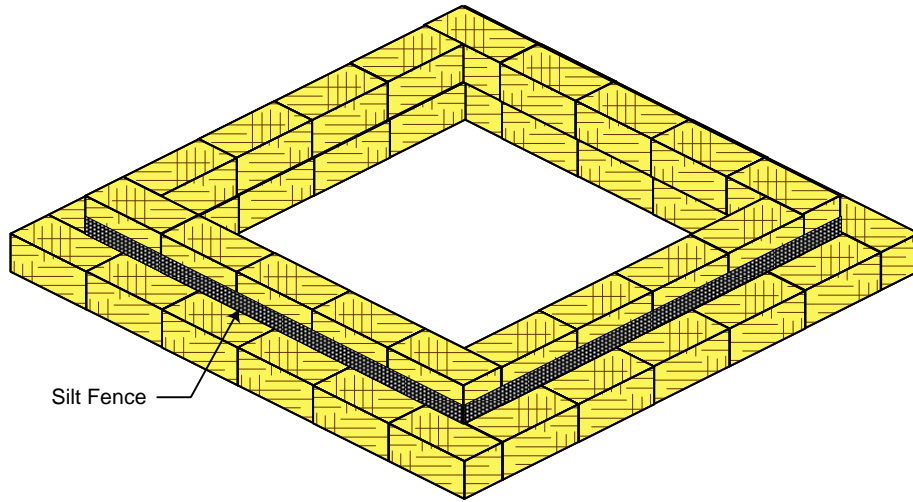
NOTES:

1. WATER PUMPS SHALL BE CONTAINED WITHIN SECONDARY CONTAINMENT DEVICES WHILE WORKING IN WETLAND AREAS.
2. WATER DISCHARGES WILL BE DIRECTED TO WELL VEGETATED UPLAND AREAS.

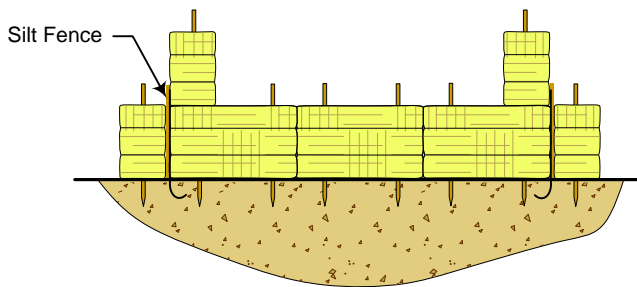


NOTES:

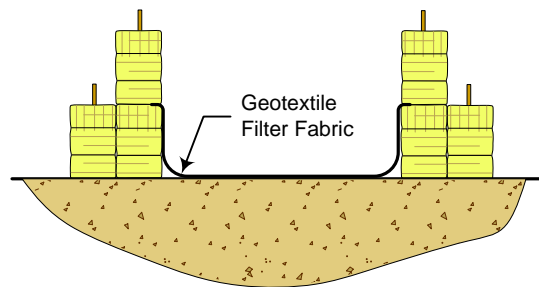
1. ARRANGE THE STRAW BALES TO THE X AND Y DIMENSIONS AS SPECIFIED BELOW.
2. IF BOTTOM OF STRUCTURE IS NOT LINED WITH STRAW BALES (OPTION 1), LINE ENTIRE STRUCTURE WITH GEOTEXTILE FILTER FABRIC.



PERSPECTIVE VIEW



OPTION 1



OPTION 2

MINIMUM SUMP DIMENSIONS (FEET)		MAXIMUM PUMPING RATE
X	Y	GALLONS PER MINUTE
10	20	300
15	20	350
20	20	400
20	25	450
25	25	500
25	30	550
30	30	660