

Appendix I

Hydrostatic Test Plan

Prepared for:

Bison Pipeline LLC

Hydrostatic Test Plan

AECOM, Inc.
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Hydrostatic Test Plan

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Hydrostatic Test Plan

Significant changes from Bison’s Hydrostatic Test Plan submitted in October 2009, and used for the Final Environmental Impact Statement (EIS) analysis, are identified in the Table below. These changes, except for added tables, are highlighted with **bolded text** in the body of this report.

Significant Revisions to Bison’s Hydrostatic Test Plan Since October 2009	
Section	Description of Modifications
1.0	Stated that FERC’s Final EIS is anticipated to represent the official Biological Assessment for the Project
1.0	Stated that special requirements to protect sensitive species and habitats from impacts associated with hydrostatic test water withdrawals are included in the Plan
1.0	Clarified that Bison’s Reclamation Plan will also provide additional mitigation measures and erosion and sediment control methods that will be implemented during construction to minimize potential impacts during construction, hydrostatic testing, and reclamation of the Project
1.1 (formerly 2.1)	Updated Table 1.1-1 (formerly Table 2.1-1) to include latest water sources and potential alternative water sources
1.1 (formerly 2.1)	Deleted text regarding the potential use of coalbed methane (CBM) water for a source of hydrostatic testing water
1.1.1 (formerly 2.3)	Moved discussion of pre-testing of selected river and highway crossing pipe sections. Added Table 1.1-2 to summarize locations and approximate volumes of pre-testing water
1.2 (formerly part of Section 2.1)	Modified language regarding general testing procedures. Added Table 1.2-1 to tabulate Test Sections locations and approximate volumes
1.2	Clarified that Bison may request agency permission for small volume withdrawals from waterbodies that support sensitive species. If withdrawals are authorized, Bison will severely restrict withdrawal rates, and the pump intakes will be screened with 0.1 fine mesh screen to avoid entrainment or impingement of fish or debris
1.2 (formerly part of Section 2.1)	Deleted sentence that stated “In some cases, the alternative water source(s) may replace more than one primary water source”.
1.2	Added new information about aquatic nuisance species and referenced Bison’s Aquatic Nuisance Species Management Plan. Clarified that a 0.1-inch screen will be used on the pump intakes

Significant Revisions to Bison's Hydrostatic Test Plan Since October 2009	
Section	Description of Modifications
1.2	Clarified that Bison will use a flotation device on the intake end of the hose to pump water from several feet below the water surface, to minimize stream bank disturbance and sediment uptake. Bison will move the intake and flotation device into and out of the water by an excavator boom and cable. No equipment will enter the water during water withdrawal.
1.2	Clarified that water withdrawn for hydrostatic testing will be allowed to remain in the pipeline for up to 30 days (or as permit conditions allow) before being discharged
1.2	Clarified that Bison will obtain water samples for analysis from each source before filling the pipeline, to document the existing water quality of the source
1.2	Noted that the pipe used for the Project is internally coated with an inert epoxy and would not be expected to leach any potential chemicals of concern into the hydrostatic test water
1.3 (formerly Section 2.4)	Removed text references to specific mileposts at which discharge of hydrostatic test water is proposed. This information is provided in Table 1.1-1
1.3 (formerly Section 2.4)	Revised dates of expected discharge from late September-November 2010, to August-November 2010
1.3 (formerly Section 2.4)	Clarified that the Contractor will be required to follow all permit requirements for withdrawal and discharge of test waters
1.3 (formerly Section 2.4)	Clarified that water will be returned to the same 3 rd level HUC (4 th level HUC in Wyoming) from which it was originally withdrawn
1.3 (formerly Section 2.4)	Clarified that hydrostatic test water will be discharged through an energy dissipater (e.g., welded steel baffling device) in vegetated upland areas within the existing Construction ROW
1.3 (formerly Section 2.4)	Clarified that the rate of discharge flow will be controlled to prevent erosion (including rilling, the formation of small gullies and excessive erosion)
1.3 (formerly Section 2.4)	Clarified that Bison will notify a BLM representative (FERC/BLM compliance monitor, AO, or other local BLM representative) at least one week in advance of any hydrostatic test water discharge event on BLM lands

Significant Revisions to Bison's Hydrostatic Test Plan Since October 2009	
Section	Description of Modifications
1.3 (formerly Section 2.4)	Stated that no treatment of hydrostatic test water for aquatic nuisance species is proposed, since the water will be discharged to an upland area in the same watershed as the water was taken and at a sufficient distance to prevent the overland transport of any aquatic nuisance species into a water feature
1.4 (formerly Section 2.5)	Modified the Section describing Bison's Hydrostatic Test Leak Contingency Plan, and stated that: "in the event of hydrostatic test failure leaks, erosion control measures, such as temporary diffusers, will be placed to reduce overland flow velocity and erosion to the maximum extent possible in areas where they can be safely placed by construction personnel. All erosion damages would be repaired"
Attachment A	Added Attachment A - Typical Hydrostatic Test Dewatering Structures

1.0 Introduction

This Hydrostatic Test Plan provides an overview of the methods and guidelines for conducting hydrostatic testing operations for Bison Pipeline LLC's (Bison's) Bison Pipeline Project (Project). Once the pipeline is constructed, in order to ensure that it is capable of safely operating at the design pressure and in compliance with United States (U.S.) Department of Transportation (DOT) regulations, Bison must pressure-test the pipeline in accordance with Code of Federal Regulations (CFR) Part 192 requirements. The contractor is required to comply with the environmental requirements of this Hydrostatic Test Plan and all federal and state permits and approvals, including the Project's Biological Assessment (BA). **The BA is anticipated to be the Federal Energy Regulatory Commission's (FERC's) Final Environmental Impact Statement (FEIS) for the Project. Subsequent to the completion of pipeline design and engineering and prior to hydrostatic test operations along the Project, this Hydrostatic Test Plan may be updated and finalized in consultation with the selected construction contractor. If this Hydrostatic Test Plan is further updated, it will be provided again to applicable regulatory agencies.**

Special requirements to protect sensitive species and habitats from impacts associated with hydrostatic test water withdrawals are included below. In addition, Bison's Upland Erosion Control, Revegetation, and Maintenance Plan (Bison's Plan), Wetland and Waterbody Construction and Mitigation Procedures (Bison's Procedures), **and Bison's Reclamation Plan** provide additional mitigation measures and erosion and sediment control methods that will be implemented by the Bison's contractor during construction to minimize potential impacts during construction, hydrostatic testing, and reclamation of the Project.

1.1 Test Water Source

Bison's contractor will withdraw water from a number of surface water sources along the Project route to hydrostatically test the pipeline in several separate sections following construction. Bison will obtain hydrostatic test water from potential sources identified in **Table 1.1-1** and will acquire the permits necessary to use the water from these sources. Bison expects hydrostatic testing operations to occur, and water to be withdrawn from the sources listed below, from August to November 2010, as required by the Project construction schedule.

Table 1.1-1 - Potential Sources and Volumes of Hydrostatic Test Water for the Project										
Data contained within this table are based on the REV Lv18 centerline shapefile issued 02/12/2010										
Test Sections ^a	Source Waters	Potential Alternate Sources	Approximate Source Mile Post (MP) / Station	Source Waters Location (County, State)	Source/ Discharge Watershed (HUC)	Average Historic Daily Flow Rate, August Through September in Cubic Feet per Second (cfs) ^c	Approximate Max Water Volume Available (gallons) ^d	Approximate Uptake Volume (gallons) ^e	Approximate Discharge (MP/Station) ^f	Discharge Number and Approximate Discharge Volume (gallons) ^g
1 - 2	W1 – Love Land	W2 – Love Land	8.81 ^b / 479+32	Campbell, WY	Source - Upper Powder Watershed (10090202)	N/A	10,100,000	8,539,035	8.81 / 479+32	#10 – 1,741,872
					Discharges – Upper Powder Watershed (10090202) & Middle Powder Watershed (10090207)				45.91 / 2345+08	#9 – 6,797,163
3 – 7	W12 – Double E. Ranch	W13 – Double E Ranch	45.91 ^b / 2345+08	Campbell, WY	Source – Middle Powder Watershed (10090207) Discharges - Little Powder Watershed (10090208)	N/A	6,500,000	6,134,821	77.19 / 4004+36	#6 – 46,134,821
7A – 10	Gardner Reservoir	Philippi Reservoir	MP 108.70 ^b / 5650+00	Carter, MT	Little Missouri Basin (101102) - 3 rd Level HUC	N/A	East Pond – 78,204,240 gallons capacity (240 acre-feet) West Pond – 127,081,890 gallon capacity(390 acre-feet)	6,577,784	MP 127.14 / 6628+50	#7 – 3,109,181
									MP 145.05 / 7575+00	#8 – 3,468,603
11 – 15	Little Missouri River	Phillippi Reservoir	MP 182.60 / 9567+00	Bowman, ND	Little Missouri Basin(101102) - 3 rd Level HUC	6.23	23,880,000	7,303,570	MP 178.18 / 9335+00	#4 – 6,451,770
									MP 182.60 / 9567+00	#5 – 851,800
									MP 213.92 / 11241+58	#3 – 7,734,740

Table 1.1-1 - Potential Sources and Volumes of Hydrostatic Test Water for the Project										
Data contained within this table are based on the REV Lv18 centerline shapefile issued 02/12/2010										
Test Sections ^a	Source Waters	Potential Alternate Sources	Approximate Source Mile Post (MP) / Station	Source Waters Location (County, State)	Source/ Discharge Watershed (HUC)	Average Historic Daily Flow Rate, August Through September in Cubic Feet per Second (cfs) ^c	Approximate Max Water Volume Available (gallons) ^d	Approximate Uptake Volume (gallons) ^e	Approximate Discharge (MP/Station) ^f	Discharge Number and Approximate Discharge Volume (gallons) ^g
16 – 17	Heart River	TBD	MP 282.08 / 14870+96	Stark, ND	Cannonball-Heart-Knife Basin (101302) - 3 rd Level HUC	1.94	13,350,000	10,715,989	MP 282.08 / 14870+96	#1 - 3,904,524
									MP 282.08 / 14870+96	#2 - 6,811,465
<p>Notes:</p> <p>^a Test water from TS No. 3, TS No. 4, and TS No. 5 will be reused for use in TS No. 6 and TS No. 7. Test water from TS No. 7A, TS No. 8, and TS No. 9 will be reused for use in TS No. 10. Test water from TS No. 13 and TS No. 14 will be reused in TS No. 15.</p> <p>^b The water source is located outside of the Construction right-of-way (ROW). MP / Stationing represents closest point to the centerline.</p> <p>^c Historic flow rate data are based upon USGS streamflow data.</p> <p>^d Sufficient water will be withdrawn from these sources to fill one or more test sections. Water from the same source may be pushed along the pipeline to test additional sections, as described in this Hydrostatic Test Plan. Withdrawal rates will be less than or equal to 10 percent of the existing flow rate within each waterbody at the time of withdrawal.</p> <p>^e The uptake volume includes 5% extra for miscellaneous uses: contingency for water use for dust abatement, HDD construction and leaks, etc. The volume does not include HDD pre-test water (Table 1.1-2). Total gallons for hydrostatic testing have been rounded up slightly.</p> <p>^f Discharges will occur in upland areas off the Construction ROW and within EWS, through an energy dissipater.</p> <p>^g Discharge number (#) does not necessarily represent the chronological order of discharge.</p> <p>TBD – To be determined</p>										

Bison will obtain all appropriate permits and authorizations for water withdrawals. Water withdrawn from a source will be returned to its original watershed at the completion of testing operations. Each discharge will be conducted according to conditions established by a discharge permit acquired by Bison in compliance with the requirements of each state. Please refer to Section 1.3 for specific discharge procedures.

1.1.1 Pre-Testing

Selected river crossing pipe sections and one highway crossing using a horizontal directional drill (HDD) technique may be pre-tested for a minimum of 4 hours. Water for pre-testing of a river crossing section may be hauled or taken from the respective river, if it is an approved water withdrawal source. Intakes for the small test sections will be screened with a 0.1-inch fine mesh, and the intake rate/volume will be low enough to prevent impingement of aquatic species or debris on the screen. Since the volume of water utilized in these pre-test sections of pipeline will be relatively small, the water will be discharged overland along the Construction Right-of-Way (ROW) and allowed to soak into the ground, as allowed by the appropriate regulatory agency and in accordance with Bison’s Plan and Procedures. Erosion and sediment control measures will be installed to prevent impacts from the discharge. The location of pre-test water uptake and discharges are provided in Table 1.1-2.

Table 1.1-2 – Pre-Test Water Uptake and Discharge Locations - HDD		
Data contained within this table are based on the REVLv18 centerline shapefile issued 02/12/2010		
Description	Approximate Station of Uptake / Discharge	Approximate Test Volume (gallons)
Uptake / Discharge – I-90*	189+18	36,202
Uptake / Discharge – Little Powder River	3720+56	53,403
Uptake / Discharge – Little Missouri River	9581+24	48,846
Uptake / Discharge – Heart River	14870+96	58,255
Notes: *Municipal water source. **Test volume of water includes 10% extra for leaks and spills		

1.2 General Procedures

Hydrostatic testing will occur within 17 separate hydrostatic test sections across the Project identified in **Table 1.2-1**. Four pre-test segments may also take place as mentioned above. Each test section will require approximately **one to seven** million gallons of water, depending on the length of the test section. Water will be reused across several test sections. To reuse water across test sections, the water will be cascaded to subsequent test sections by means of piping connections. Depending upon the construction schedule and the timing of

hydrostatic test progress along successive test sections, hydrostatic test water may be stored within a test section for up to 30 days.

Table 1.2-1 – Hydrostatic Test Section Locations and Volumes		
Data contained within this table are based on the REVLv18 centerline shapefile, issued on 2/12/2010		
Test Section (TS)	Station Range	Approximate Test Volume(gallons)
1	0-00 to 479+32	1,741,872
2	479+32 to 2345+08	6,797,163
3	2345+08 to 3403+96	3,925,548
4	3403+96 to 3698+00	1,079,589
5	3698+00 to 4004+36	1,129,684
6	4004+36 to 4445+00	1,622,658*
7	4445+00 to 4835+80	1,441,379*
7A	4835+80 to 5005+00	619,145
8	5005+00 to 5650+00	2,372,145
9	5650+00 to 6628+50	3,585,955
10	6628+50 to 7575+00	3,468,603**
11	7575+00 to 9335+00	6,451,770
12	9335+00 to 9567+00	851,800
13	9567+00 to 10310+00	2,725,190
14	10310+00 to 11677+81	5,009,550
15	11677+81 to 13030+90	4,832,094***
16	13030+90 to 14569+30	5,582,442
17	14569+30 to 15901+34	5,133,547

Notes: Stationing is approximate.
 * Test water from TS Nos. 3, 4, and 5 will be reused in TS Nos. 6 and 7
 ** Test water from TS Nos. 7A, 8 and 9 will be reused in TS No. 10.
 *** Test water from TS Nos. 13 14 will be reused in TS No. 15.

During hydrostatic test water withdrawals, the Contractor will maintain adequate flow rates in the waterbody (no more than a ten percent reduction in flow rate), in order to protect aquatic life and provide for downstream uses in compliance with regulatory and permit requirements. In the event that primary test water sources do not contain adequate flow rates to support the hydrostatic test water withdrawal without affecting downstream uses and resources, alternative water sources will be used.

In waterbodies that support sensitive species, Bison will avoid withdrawal of hydrostatic test water, unless specific approval is obtained in advance from the appropriate regulatory or resource agency(ies). Small withdrawals associated with hydrostatic pre-testing of pull sections at HDD locations may be necessary from such waterbodies. **In these cases, the withdrawal rates will be severely restricted, and the pump intakes will be screened with 0.1-inch fine mesh screen to avoid entrainment or impingement of fish or debris.**

Based on consultation with the respective state agencies, Bison prepared an Aquatic Nuisance Species Management Plan that provides cleaning measures to be applied to equipment or equipment components that come into contact with media that may transport these species. The Aquatic Nuisance Species Management Plan provides

state-specific mitigation measures to minimize or limit the spread of invasive aquatic species. Bison will follow the appropriate procedures specified in its Aquatic Nuisance Species Management Plan when crossing waterbodies.

In order to obtain water from a surface waterbody, a fill pump will be placed at the waterbody's edge and connected to a hydrostatic test fill line (steel pipe or hose) placed along the ground and attached to the hydrostatic test header. If there is not an adequate depression in the river bottom and if allowed by the appropriate permitting agency, it may be necessary to dig a small sump to allow the pump intake to be fully submerged. The intake of the pump will be screened **with a 0.1-inch mesh** to prevent entrainment or impingement of debris and fish. The fill pump engine will be placed in a plastic-lined bermed or metal containment area to prevent potential spills or leaks from reaching the ground or the waterbody and will be refueled by hand using small (e.g., 5-gallon) containers. The fill pump will be continuously monitored during operation.

Water withdrawal rates will be monitored to avoid significant impacts to streamflow or downstream water users and resources. The screen around the intake will be fabricated to provide an adequate surface area of fine-mesh screen to reduce the approach velocity to prevent impingement or entrainment of small fish. Bison's Environmental Inspector (EI) will regularly inspect the water intake screen for entrained fish and will contact the United States Fish and Wildlife Service (USFWS) immediately if federally listed aquatic species (e.g., fish or mussels) are found impinged on the **0.1-inch mesh screen. Bison is proposing to use a flotation device on the intake end to pump water from several feet below the water surface. Withdrawing water from this depth will minimize stream bank disturbance. Bison will move the intake and floatation device into and out of the water by an excavator boom and cable. No equipment will enter the water during water withdrawal.**

Water withdrawn for hydrostatic testing will be **allowed to remain in the pipeline for up to 30 days (or as permit conditions allow)** before being discharged.

Additional protective measures that will be implemented during hydrostatic test water filling and discharge operations include the following:

- Bison will obtain water samples for analysis from each source before filling the pipeline, **to document the existing water quality of the source;**
- Staging/work areas for filling the pipeline with water will be located a minimum of 100 feet from the waterbody or wetland boundary if topographic conditions permit. The Contractor will install temporary sediment filter devices adjacent to all streams to prevent sediments from leaving the construction site;
- The intake hose and screen will be kept off the bottom of the waterbody **to prevent uptake of sediment;**

- Refueling of construction equipment will be conducted a minimum distance of 100 feet from the stream or a wetland (or a minimum distance of 500 feet from the stream or wetland on BLM lands); and
- Pumps used for hydrostatic testing within 100 feet of any waterbody or wetland will be operated and refueled within secondary containment as detailed in the Project's Spill Prevention, Control, and Countermeasures (SPCC) Plan.

Finally, the pipe used for the Project is internally coated with an inert epoxy and would not be expected to leach any potential chemicals of concern into the hydrostatic test water.

1.3 Hydrostatic Water Discharge Procedures

Discharge operations are planned to take place from **August 2010 to November 2010**, specific discharge dates being dependent upon the construction schedule of the Project.

Prior to construction, Bison will obtain water withdrawal and discharge permits that may be required by local regulatory agencies. **The Contractor will be required to follow all permit requirements for withdrawal and discharge of test waters.** Upon completion of hydrostatic testing, the hydrostatic test water will be sampled, tested, and treated or filtered, as necessary to reduce pollutant levels or remove suspended particles from the water, as required by applicable discharge permit requirements. If required, additional water quality testing will be conducted throughout discharge operations in accordance with permit conditions.

After satisfactory sampling test results are confirmed, the **water will be returned to the same watershed (3rd-level HUC, 4th-level HUC in Wyoming) from which it was originally withdrawn (Table 1.1-1).** Hydrostatic test water will be discharged through an energy dissipater (e.g., welded steel baffling device) **in vegetated upland areas** within the existing Construction ROW (**Attachment A**). **The rate of discharge flow will be controlled to prevent erosion.** Additional practices, such as the use of plastic sheeting or other material to prevent scour, will be used, as necessary, to prevent **erosion** during dewatering, in accordance with Bison's Plan and Procedures.

If overland flow is likely to occur at the point of discharge, the pathway of the water will be armored. This armoring will be removed along with the energy dissipation structure after discharge is completed. Overland flow will be dissipated at upland discharge locations. The discharge operations will be monitored throughout to ensure compliance with Project permit requirements. **Bison will notify a BLM representative (FERC/BLM compliance monitor, AO, or other local BLM representative) at least one week in advance of any hydrostatic test water discharge event on BLM lands.**

Water will be discharged to an upland area in the same watershed as the water was taken and at a sufficient distance to prevent the overland transport of any aquatic

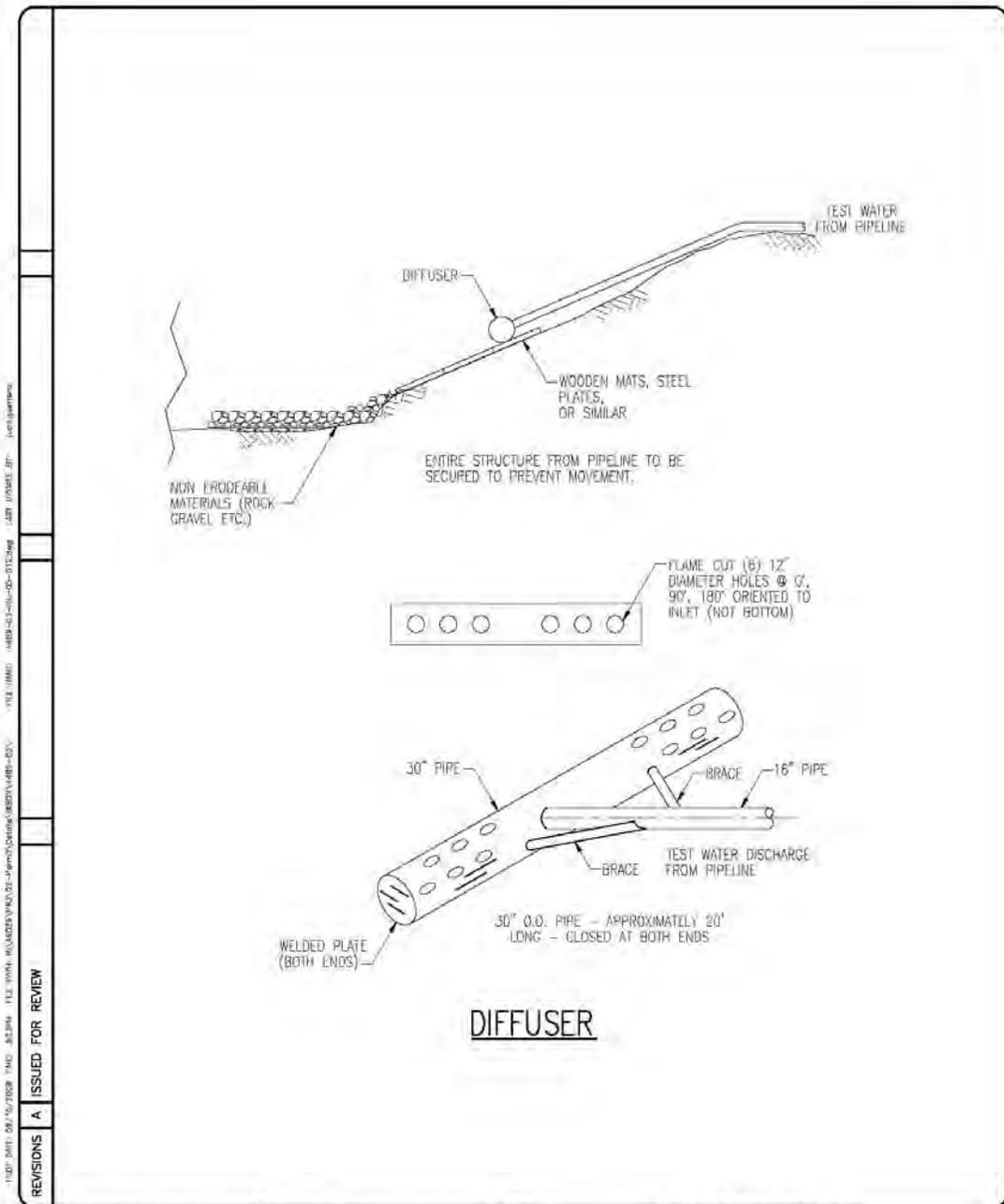
nuisance species into a water feature. For these reasons, no treatment of hydrostatic test water for aquatic nuisance species is required.

1.4 Hydrostatic Test Leak Contingency Plan

If any test section were to fail during hydrostatic testing, Bison's experience is that the water leak that would result would be minor, rather than a catastrophic failure of the pipe. Once the pipe is installed in flat areas within the Construction ROW, any discharges due to leaks would be minimal and due only to the volume of water added to the line fill needed reach test pressure (i.e., if the line goes to zero pressure, the water will remain in the pipe with no leakage). The worst case would occur on steep terrain with a major leak at the bottom of a hill. In that case, the head of water from the leak point to the tops of the surrounding hills would drain out of the pipe. **In the event of hydrostatic test failure leaks, erosion control measures, such as temporary diffusers, will be placed to reduce overland flow velocity and erosion to the maximum extent possible in areas where they can be safely placed by construction personnel. All erosion damages would be repaired.**

Attachment A

Typical Hydrostatic Test Dewatering Structures

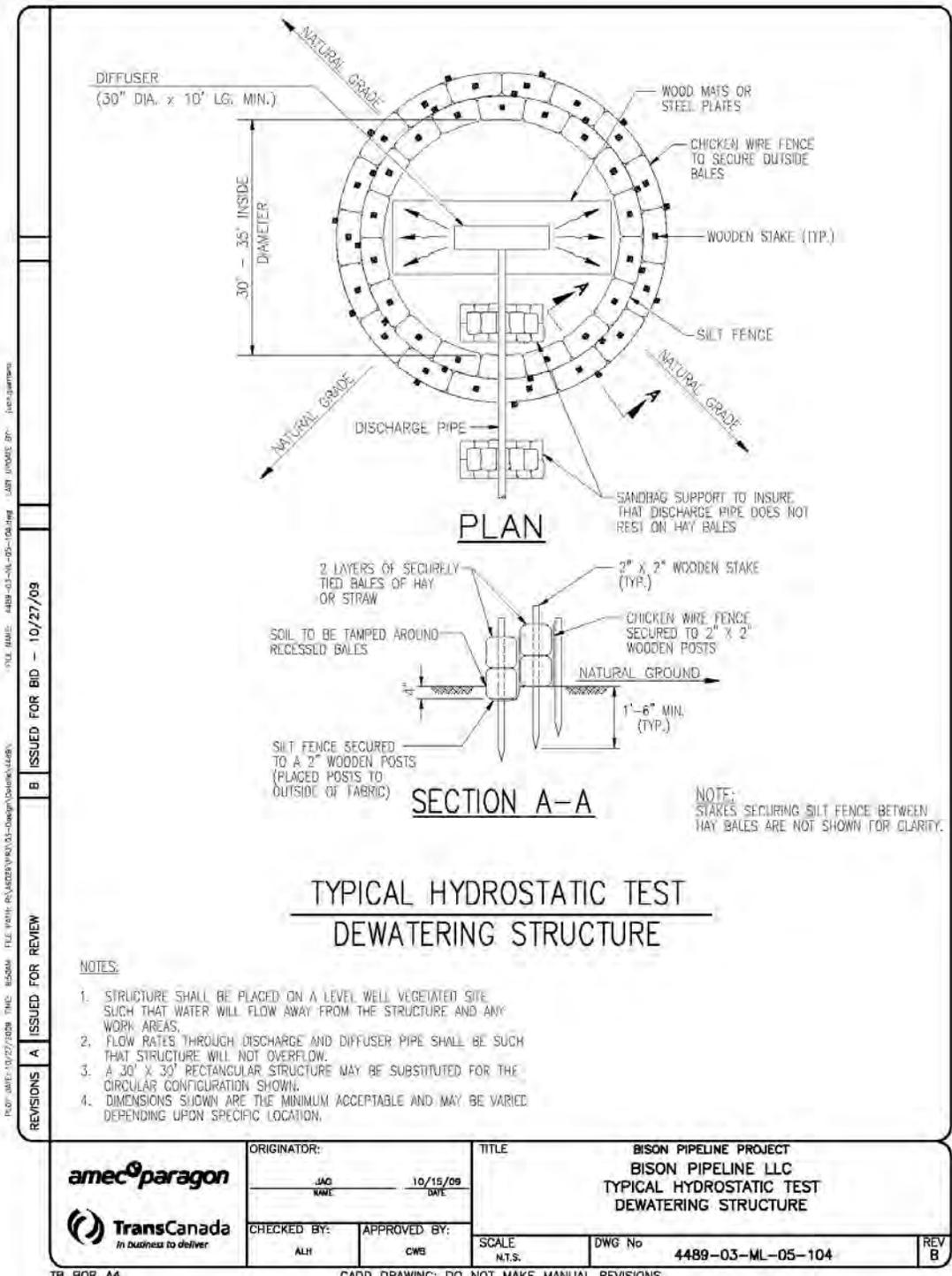


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 REVISIONS A ISSUED FOR REVIEW

	ORIGINATOR:	TITLE		BISON PIPELINE PROJECT BISON PIPELINE LLC TYPICAL HYDROTEST WATER DISCHARGE STRUCTURE
	JAC NAME	09/15/08 DATE		
	CHECKED BY:	APPROVED BY:	SCALE	DWG No
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 PLOT NAME: 4489-03-ML-05-104.dwg (see changes)
 REVISIONS A ISSUED FOR REVIEW B ISSUED FOR BID - 10/27/09

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