



4.3 Watercourse Assessment

The pipeline ROW crosses four watercourses along its length, including a tributary to Tupper Creek (S4), Tupper Creek (S2), a tributary to Albright Creek, and a tributary to Keeping Lake. The watercourses are located at the approximate chainages 2+880, 7+100, 13+825 and 22+130 along the ROW. Each watercourse was assessed visually to determine if mitigation and reclamation measures had been undertaken since the second year PCMP assessment, and to determine the effectiveness of the erosion and sediment control (ESC) structures constructed adjacent to the watercourses. The results of the third year PCMP watercourse assessments are documented below and outstanding issues are described by site in Table 3.

Table 3: Outstanding Watercourse Issues Identified During the Third Year PCMP (2011)

Location	Outstanding Watercourse Issue	Potential Adverse Effect	Proposed Mitigation	Proposed Schedule
Tributary to Tupper Creek (2+880)	Water bars on both north and south banks are ineffective.	Sedimentation into stream.	Install temporary ECS until such time that permanent measures can be completed. Repair water bars to ensure run-off is directed into adjacent forest.	Winter 2012. Spring/Summer 2012 with follow-up monitoring in the Summer/Fall of 2012.
Tributary to Tupper Creek (2+880)	Failing sediment fencing on north and south banks.	Sedimentation into stream.	Reattach sediment fencing to stakes as required and leave in place until vegetation is fully established. Secure sediment fencing into soil where required. Restrict ATV access with fencing or other appropriate means until vegetation has been re-established.	Winter/Spring 2012.
Tributary to Tupper Creek (2+880)	Sediment fencing in vegetated areas on the north bank	Unnecessary and may impact existing vegetation.	Remove where adequate vegetation has been established.	Spring 2012.
Tupper Creek (7+250 to 7+450)	Water bars on south bank is ineffective.	Sedimentation into stream.	Install temporary ECS until such time that permanent measures can be completed. Repair water bars to ensure run-off is directed into adjacent forest.	Winter 2012. Spring/Summer 2012 with follow-up monitoring in the Summer/Fall of 2012.
Tributary to Albright Creek (13+825)	Sediment fencing in vegetated areas.	Unnecessary and may impact existing vegetation.	Remove.	Spring 2012.



4.3.1 Unnamed tributary to Tupper Creek

ESC structures within the riparian buffer along the ROW crossing the unnamed tributary to Tupper Creek (between chainages 2+850 to 2+950) were found to be in disrepair (Appendix C, Photoplate 6). ESC structures should undergo regular maintenance to ensure their effectiveness and the area should have restricted access until the slopes adjacent the tributary have been sufficiently re-vegetated.

Water bars on both sides of the stream are showing signs of failure along the down slope edge of the ROW where the water bar meets the adjacent forested area. At these points, the down slope mound adjacent the trench is of insufficient height relative to the depth of the upslope trench and the edge of the forest. Consequently, run-off captured by the water bar is pooling in these areas rather than flowing into the adjacent forested area. This has resulted in water overtopping the down slope mound of the water bar and running down slope between the forest and the ROW, causing rilling.

Sediment fencing and straw wattles installed in thoroughly vegetated areas should be removed (Appendix C, Photoplate 7).

4.3.2 Tupper Creek

Water bars on the south bank of the creek are showing signs of failure along the down slope edge of the ROW where the water bars meet the adjacent forested area. At these points, the down slope mound adjacent the trench is of insufficient height relative to the depth of the upslope trench and the edge of the forest. Consequently, run-off captured by the water bars is pooling in these areas rather than flowing into the adjacent forested area. This has resulted in water overtopping the down slope mound of the water bars and running down slope between the forest and the ROW, causing rilling (Appendix C, Photoplate 8).

4.3.3 Unnamed tributary to Albright Creek

At the time of the third year PCMP assessment, the unnamed tributary to Albright Creek (chainage 13+825) was flooded in the area of the ROW as a result of beaver activity.. The sediment fencing previously installed at this location remains in place and should be removed (Appendix C, Photoplate 10).

5.0 LAND OWNER COMMENTS

Landowners were contacted by telephone prior to the third year PCMP assessment on October 20, 2011 regarding their concerns related to the results of reclamation activities along the ROW. A second attempt to contact landowners not available for comment prior to the assessment occurred on November 13, 2011. Landowner responses are presented in Table 4.



MURPHY OIL COMPANY LTD. TUPPER PIPELINE THIRD YEAR POST CONSTRUCTION MONITORING

Table 4: Landowner Comments Identified During the Third Year PCMP (2011)

Location	Landowner	Comments
Sec 20, TP 26 Sec 21, TP 26 (0+000 to 4+228)	Stanley Robert Stevens	No issues identified at this time.
NE ¼ Sec 16, TP 26 (4+228 to 4+661)	Her Majesty the Queen One Island Lake Grazing Reserve	The president and secretary of One Island Grazing Reserve were unavailable for comment.
NW ¼ Sec 11, TP 26 NE ¼ Sec 10, TP 26 Sec 15, TP 26 (4+235 to 7+637)	Franz Habersack	Work has been carried out on the ROW to address the issues identified in the first and second year PCMPs. No other issues identified at this time.
SW ¼ Sec 11 TP 26 (7+665 to 8+489)	Ronald Keith Mach	No issues identified at this time.
NW ¼ Sec 2 TP 26 (8+489 to 8+919)	Frank Joseph Gabriel and Agnes Rose Gabriel Occupant: Franz Habersack	Work has been carried out on the ROW since the issues identified in the second year PCMP. Not satisfied with one section of restoration works (chainage 8+550); noted incorrect seed mix used, though full vegetation cover. No other issues identified at this time.
NE ¼ Sec 2 TP 26 (8+919 to 9+756)	Jack Bill Baran and Jacquelynne Beverly Baran	Unavailable for comment.
SE ¼ Sec 1 TP 26 NW ¼ Sec 1 TP 26 (9+781 to 10+574; 10+718 to 11+668)	Justin Greg Yates and Colleen Courtney Yates	Unavailable for comment.
SW ¼ Sec 1 TP 26 (10+574 to 10+718)	Irvin Edward Jacobson Occupant: Karla Fehr	No issues identified at this time.
District Lot 250 SE ¼ 6-75-13 W6M (11+693 to 12+720)	Hughbert Gilbert Bourbeau and Diane Marie Bourbeau	Unavailable for comment.
NW ¼ 31-74-13 W6M (12+802 to 13+239)	Rodney Lee Evashkevich and Patricia May Evashkevich	No issues identified at this time.
E ½ 31-74-13 W6M (13+239 to 14+402)	Patricia Anne Erskine	Unavailable for comment.
S ½ 32; SW ¼ 33; NW ¼ & SE ¼ 28; SW ¼ & E ½ 22 & NE ¼ 12-74-13 W6M (14+402 to 17+950; 20 +697 to 21+793; 26+258 to 26+975)	Alberta Sustainable Resources Occupants: Olaf Eugen Harpe And Tera Harpe (NW ¼ 28-74-13 W6M) Jurgen Wilkening (SW ¼ 33-74-13 W6M)	Dave Pochailo with Alberta Sustainable Resources in Grande Prairie, Alberta stated that he is unaware of any issues and none have been brought forward to him by the occupant Olaf Harpe. Olaf Harpe indicated that all issues previously identified have been resolved and that any vegetation issues currently assessed may be related to heavy rains during Spring 2011.