Schafer Declaration
EXHIBIT 7

MONTANA BOARD OF ENVIRONMENTAL REVIEW

IN THE MATTER OF:	)	
APPEAL AMENDMENT AM4	)	
WESTERN ENERGY	)	
COMPANY, ROSEBUD STRIP	)	**CAUSE NO. BER 2016-03 SM**
MINE AREA B	)	
PERMIT NO. C1984003B	)	
_____	)	

DECLARATION OF DR. WILLIAM M. SCHAFER IN SUPPORT OF RESPONDENT-INTERVENORS' OPPOSITION TO PETITIONERS' MOTION FOR SUMMARY JUDGMENT

I, William M. Schafer, PhD, declare under the penalty of perjury as follows:

1. I, William M. Schafer, am a scientist with over 35 years of work in the environmental field, including experience in environmental geochemistry, hydrology, and soil science. I earned my Bachelor of Science in Watershed Science from Colorado State University, my Masters in Soil Science from the University of California at Davis, and my Ph.D. in Soil Science from Montana State University. I am the founder and principal of Schafer Limited LLC, an environmental consulting practice that specializes in environmental geochemistry, vadose zone and surface water hydrology, and soil science.

2. I served on the faculty at Montana State University from 1976 to 1985, first as a research scientist specializing in land reclamation research on coal-mined lands in the Northern Great Plains, and then as a state soil scientist with the Montana Agricultural Experiment Station and the Extension Service. I also taught courses at Montana State University on mine reclamation. Since 1985, I have taught short courses on a number of subjects, including mine closure, acid rock drainage prediction, and the groundwater impacts of petroleum exploration, to name a few. I have also authored or co-authored well over 50 articles and publications on hydrology, geochemistry, and soil science.

3. In addition to teaching, I have also served as project manager or technical director for over 200 projects involving the environmental aspects of mining. This includes work for numerous state and federal agencies including the Montana Department of Environmental Quality ("DEQ"), the United States Forest Service, the Bureau of Land Management, and the Bureau of Mines. I have attached a more extensive summary of my experience and qualifications to this Affidavit.

4. I am familiar with Western Energy Company's ("Western Energy's") Rosebud Mine and with Rosebud Strip Mine Area B Permit Number C1984003B issued to Western Energy on December 4, 2015 ("AM4 Permit"). The Rosebud Mine is located near Colstrip, Montana and supplies coal to the nearby Colstrip Power Generating Station. I have reviewed water quality records collected and maintained by Western Energy and data collected by the United States Geological Survey as part of its surface water monitoring program for the entire state, which includes data on East Fork Armells Creek, Rosebud Creek, and their tributaries. I understand the hydrological consequences associated with the AM4 Permit.

5. On June 3 2014, DEQ issued its Seventh Round Acceptability Deficiency. The Coal Bureau expressed concerns that increasing levels of chloride in East Fork Armells Creek were due to the use of magnesium chloride to suppress dust. I evaluated whether using calcium lignin sulfonate as an alternative would increase levels of sulfate in East Fork Armells Creek, and concluded, based on the solubility of calcium lignin sulfonate and its likelihood to degrade, that it would not have a measureable effect on East Fork Armells Creek. *See* Addendum to the Comprehensive Evaluation of Probable Hydrologic Consequences Areas A, B and C ("PHC"), Attachment 3.

I evaluated these impacts and provided that information to Western Energy, which in turn submitted my data to DEQ as part of the Addendum to the Comprehensive Evaluation of Probable Hydrologic Consequences Areas A, B, and C.

The Water Discharged from the Rosebud Mine has Equivalent or Lower Concentrations of Pollutants than the Naturally Occurring Water in East Fork Armells Creek.

6. I have also evaluated the impact of discharges from outfalls permitted under the Montana Discharge Elimination System permit renewal for permit Number 0023965 held by Western Energy Company. Although that permit is not specific to AM4, it governs discharges from the Rosebud Mine, which includes AM4.

7. I ran statistical (Mann-Whitney) tests to assess differences between the mine's effluent water quality and the quality of water flow in East Fork Armells Creek, West Fork Armells Creek, and Rosebud Creek (the "receiving waters"). The data demonstrated that the quality of water discharged from the Rosebud Mine does not statistically differ from the receiving waters, and what little difference might exist would certainly not cause harm to the streams or their uses.

8. In the few instances where mine discharges differ in quality from the receiving streams, the mine's effluent has a lower concentration of relevant pollutants than the receiving waters. For instance, the tests showed that sulfate and total dissolved solids were lower in the mine's discharges than in East Fork Armells Creek; only the concentration of selenium was higher in the effluent than in East Fork Armells Creek, but I concluded that it would not have a material effect on East Fork Armells Creek. Likewise, tests of outfalls located in Rosebud Creek found that effluent had the same concentrations of total dissolved solids and electrical conductivity as Rosebud Creek itself—only sulfate was higher.

9. These permitted discharges do not have a negative impact on uses of surface water including fish or wildlife downstream from the discharge or irrigation use of Rosebud Creek.

10. The Montana Department of Environmental Quality reports on the status of stream segments in Montana regarding their attainment of water quality standards. In the most recent report (MDEQ 2016), Lower East Fork Armells Creek (the reach of East Fork Armells Creek from Colstrip to the confluence with the Yellowstone River) was reported to have elevated specific conductance and total dissolved solids, total nitrogen, nitrate plus nitrite as nitrogen and chloride. *See* Assessment Unit MT42K002_110, Appendix A, page 164.

11. As was discussed previously, discharge water from the mine is lower in TDS and specific conductance than average levels in East Fork Armells Creek. As a result, the mine is not a potential cause of increases in these constituents in East Fork Armells Creek.

Any Increase in Nitrogen in East Fork Armells Creek is Likely Due to the Local Municipal Wastewater Treatment Facility, lawn fertilizers, and/or the Presence of Cattle, Not to Mining.

12. Some activities at the mine have the theoretical potential to increase nitrogen and nitrate loading in East Fork Armells Creek. Blasting operations, such as those used at mines, typically utilize a combination of ammonium nitrate and fuel oil to break up overburden. If blasting is not conducted properly, some nitrate can remain in the overburden and be leached into groundwater and/or stormwater. However, monitoring results of effluent from the mine demonstrate that stormwater discharge is not contributing nitrogen and nitrate to East Fork Armells Creek (based on water quality records from Rosebud Mine).

13. Instead, the source of nitrogen causing elevated levels of total nitrogen and nitrate in East Fork Armells Creek is likely the local municipal wastewater treatment facility, the presence of cattle grazing and watering near East Fork Armells Creek, or some combination of the two.

Municipal wastewater treatment facilities would be expected to release nitrate in their discharge water. The local facility would affect Lower East Fork Armells Creek and not Upper East Fork Armells Creek. This effect is consistent with the data. The presence of cattle grazing and watering near East Fork Armells Creek is another likely source of nitrogen. Both urine and manure release abundant ammonia as they decompose, which then can readily convert to nitrate in riparian soil or surface water.

The Confluence of Water from East Fork Armells Creek and West Fork Armells Creek 17 Miles North of the Mine Site Will Not Have an Effect on Armells Creek's Water Quality.

14. East Fork Armells Creek joins the West Fork about 17 miles north of Colstrip. The Mine, and specifically AM4, is not likely to cause a measurable impact on water quality in either the drainage or on the mainstem of Armells Creek. My analysis considered two time periods: operational and post-closure.

15. During mine operations, discharges from the mine have similar to lower concentrations of most constituent pollutants than East Fork Armells Creek. As such, any discharge would, on average, cause either no change or an improvement in water quality parameters at the downstream point where East Fork and West Fork join.

16. After mine closure, the water levels in the overburden will slowly rise and according to the PHC, some water will discharge to alluvium of East Fork Armells Creek. The net effect of these discharges is predicted to increase the average TDS by about 13 %. *See* PHC Addendum Attachment 1 at 26; PHC Table 16. The TDS levels in East Fork Armells Creek naturally exhibit a wide range in TDS levels (Figure 1) so that the actual effect of the increased alluvial groundwater contribution will vary. During periods when TDS in East Fork Armells Creek is lower than in the alluvial groundwater, the TDS in East Fork Armells Creek will increase. During periods when TDS in East Fork Armells Creek is higher than in the alluvial groundwater,

the TDS in East Fork Armells Creek will decrease. So the overall effect is to reduce the range in TDS levels – increasing the minimum TDS but also decreasing the maximum observed TDS in East Fork Armells Creek. Since any impact to wildlife or livestock use would be associated with high TDS, the increased alluvial discharges would actually improve quality by decreasing the peak TDS values that now occur naturally. Therefore, despite the increase in average TDS the Rosebud Mine is not expected to have an adverse water quality effect at the point where East and West Fork join after mine closure.

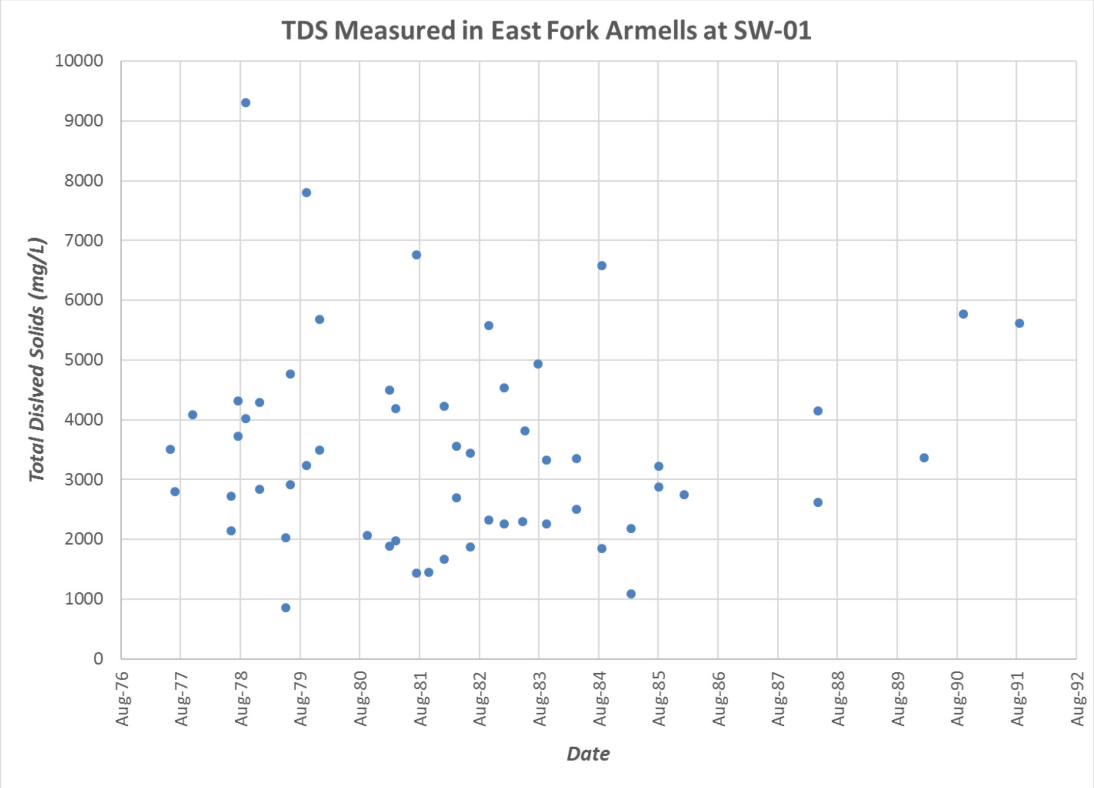

Figure 1. Total Dissolved Solids in East Fork Armells Creek at SW-01.

Discharge from AM4 Will Not Degrade Rosebud Creek.

17. I understand that some have suggested that Western Energy cannot meet the Water Quality Standards for electrical conductivity ("EC") for tributaries to Rosebud Creek. Tributaries

to Rosebud Creek have an EC limit of 500 uS/cm. *See* ARM 17.30.670. The reason that the EC limit is so challenging is that all area surface waters, including Rosebud Creek itself, have natural background EC levels that are higher than 500 uS/cm water quality limit. *See* Figure 2 (below). For example, a graph of EC from various monitoring stations on Rosebud Creek show that EC in Rosebud Creek averages around 1,000 uS/cm on the uppermost station near Kirby and that stations in the middle reaches of Rosebud Creek above Colstrip have average EC values of around 1,500 uS/cm. By the time Rosebud Creek reaches the Yellowstone River, its average EC is around 2,000 uS/cm. The gradual increases in EC from the upper to lower reaches of Rosebud Creek indicate that tributary flows have higher EC values than the mainstem, which accounts for the EC increase. Therefore, discharge of waters from the mine site, given that their TDS and EC values are not significantly different than Rosebud Creek, would not cause any degradation of water in Rosebud Creek.

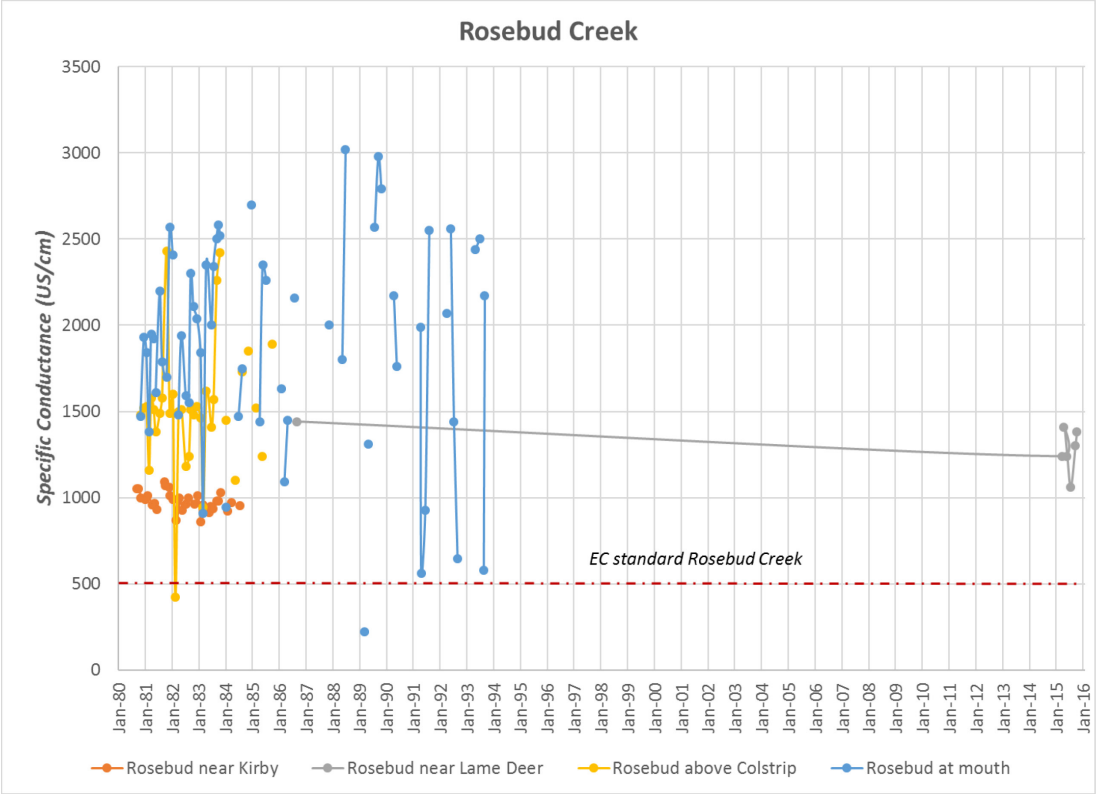

Figure 2. Specific Conductance in Rosebud Creek at upstream and downstream locations.

18. As such there is no evidence that effluent from the Mine would cause a change in total dissolved solids or electrical conductivity in Rosebud Creek or its tributaries. Data indicate that the effluent from the mine is equal to or lower in dissolved solids and electrical conductivity than in streams within the Rosebud drainage.

I declare under penalty of perjury that the foregoing is true and correct.

Executed on July 20, 2016.

William M. Schafer

/s/ William Schafer

References

I. MDEQ. 2016. Montana Draft - 2016 Water Quality Integrated Report.