Draft Environmental Impact Statement Appendices

Rosebud Mine Area B AM5
Colstrip, Montana

September 2020

DEQ
Montana Department
of Environmental Quality

APPENDICES

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Appendix A – List of Westmoreland Rosebud's Area B AM5 Permit (C1984003B) Application Package Documents

Table 1. Area B AM5 Permit (C1984003B) MSUMRA Completeness and Acceptability Review Documents

Document Name[1]	Date	Author
Permit Amendment Application Package (Application)	February 17, 2017	Western Energy
1st Round Completeness Deficiency	March 28, 2017	DEQ
1st Round Completeness Deficiency Response	April 20, 2017	Western Energy
2nd Round Completeness Deficiency	May 23, 2017	DEQ
2nd Round Completeness Deficiency Response	May 23, 2017	Western Energy
Completeness Determination	May 24, 2017	DEQ
1st Round Acceptability Deficiency	September 20, 2017	DEQ
1st Round Acceptability Deficiency Response	December 6, 2017	Western Energy
2nd Round Acceptability Deficiency	April 5, 2018	DEQ
2nd Round Acceptability Deficiency Response	July 30, 2018	Western Energy
3rd Round Acceptability Deficiency	November 26, 2018	DEQ
3rd Round Acceptability Deficiency Response	March 22, 2019	Western Energy
4th Round Acceptability Deficiency	July 12, 2019	DEQ
4th Round Acceptability Deficiency Response	November 5, 2019	Western Energy
5th Round Acceptability Deficiency	February 24, 2020	DEQ
5th Round Acceptability Deficiency Response	April 28, 2020	Western Energy
6th Round Acceptability Deficiency	July 24, 2020	DEQ

[1]***View permit documents by going to:*** http://svc.mt.gov/deq/myCOALPublic/ ***or request from DEQ:*** http://deq.mt.gov/Public/RequestPublicRecords

Table 2. Area B AM5 Permit (C1984003B) Permit Application Package (PAP) Documents

PAP Component	Contents
Permit (Note: Permit subchapters correspond to subchapters of MSUMRA's implementing regulations, ARM 17.24.301-1309)	
Subchapter 3	Definitions and Strip Mine Permit Application Requirements
Subchapter 4	Mine Permit and Test Pit Prospecting Permit Procedures
Subchapter 5	Backfilling and Grading Requirements
Subchapter 6	Transportation Facilities, Use of Explosives and Hydrology
Subchapter 7	Topsoiling, Revegetation, and Protection of Wildlife and Air Resources
Subchapter 8	Alluvial Valley Floors, Prime Farmlands, Alternate Reclamation and Auger Mining
Subchapter 9	Underground Coal and Uranium Mining
Subchapter 10	Prospecting
Subchapter 11	Bonding, Insurance, Reporting, and Special Areas
Subchapter 12	Special Departmental Procedures and Programs
Subchapter 13	Miscellaneous Provisions
Appendices	
Appendix A	Cultural Resources A-1: Area F - Class III Cultural & Paleontological Resource Inventory 2010-10 A-2: Additional Area - Class III Cultural & Paleontological Resource Inventory 2012-01 A-3: Area F NRHP report 46 Archaeological Properties 2013-11
Appendix B	Hydrology
Appendix C	Climatology
Appendix D	Overburden Quality
Appendix E	Baseline Vegetation Report and Wetland Delineation Report E-1: Area F – 2006 Baseline Vegetation Survey E-2: Area F – 2013 Rosebud Mine Wetlands Delineation Maps
Appendix F	Wildlife
Appendix G	Baseline Soils
Appendix H	Leases (Confidential)
Appendix I	Groundwater Model I-A: Rosebud Mine Groundwater model I-B: Area F Groundwater Model
Appendix J	Protection of the Hydrologic Balance
Appendix K	Geology
Appendix L	Well Logs
Appendix M	Facilities Sampling Plan
Appendix N	Fish and Wildlife N-1: Fish and Wildlife Report
Appendix O	Probable Hydrologic Consequences (PHC) O-1: Sediment Yield Modeling
Appendix P	Monitoring and Quality Assurance Plan

Table 2. Area B AM5 Permit (C1984003B) Permit Application Package (PAP) Documents	
PAP Component	**Contents**
Appendix Q	Alluvial Valley Floors (AVF) Q-1: Baseline Evaluation for Alluvial Valley Floor Determination Q-2: Alluvial Valley Floor Determination
Appendix R	Aquatic Survey
Appendix S	Steep Slope Inventory
Appendix T	Pond Designs and As-Builts
Appendix U	Sediment Yield Monitoring
Exhibits	
A	Approximate Mine Plan
B	Approximate Postmine Topography with Drainage Basins (500 scale)
C	Approximate Revegetation and Wildlife Enhancement Plan
D	Approximate Hydrologic Control Plan
E	Premine Vegetation Survey
F	Cultural Resource Sites (Confidential)
G1, G2, G3, G4, and G5	Reclamation Bond and Bond Calculations
H	Surface and Groundwater Monitoring Sites
I and I1	Reclamation Cross Sections and Locations
J	Approximate Reclamation Plan
K	Aerial Photograph
L1 and L2	Surface and Mineral Ownership Maps
M	Coal Conservation Plan Map
N1 and N2	Premine and Postmine Drainage Profiles
O	Haul Road Design Plan, Profile, and Details
P1 and P2	Phase I and Phase II County Road Relocations
Q1, Q2, and Q3	Drill Hole and Geological Cross Sections and Locations
R1, R2, R3, R4, and R5	Overburden Isopach, Rosebud Coal Isopach and Bottom Elevation, and McKay Coal Isopach and Bottom Elevation
S	Surface Geology
T1 and T2	Premine and Postmine Slope Histogram and Slope Aspect Wire Diagram
U and U1	Premine Topography with Drainage Basins (1000 scale and 5000 scale)

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Appendix B – List of Surface Water and Ground Water Rights

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Appendix B – List of Surface Water and Ground Water Rights

Water Rights Number	Source	Priority Date (yr/mo/day)	Owner	Purpose	County	Township Range	Section	Quarter Section	Reservoir?	Maximum Flow Rate (gpm)	Maximum Volume (Ac-ft)	Maximum Acreage (Acres)	Well Depth (feet)
205	GROUNDWATER	UNKNOWN	FARLEY INC	STOCK	Rosebud	1N40E	13	NENENWNE	N				
212	GROUNDWATER	18991230	FARLEY RANCH	DOMESTIC	Rosebud	1N40E	14	NWNWNWNW	N				40
213	GROUNDWATER	18991230	FARLEY INC	DOMESTIC	Rosebud	1N40E	14	NWNWNWNW	N				
216	GROUNDWATER	18991230	FARLEY INC	STOCK	Rosebud	1N40E	15	NWSWNWNW	N				
229	GROUNDWATER	19600101	FARLEY'S INC	STOCK	Rosebud	1N40E	29	NWNWSWNE	N	5			232
231	GROUNDWATER	UNKNOWN	L FARLEY	STOCK	Rosebud	1N40E	35	SWNWNWSE	N	3			30
7024	GROUNDWATER	UNKNOWN	BAILERY J	STOCK	Rosebud	1S41E	2	NWNWNENE	N				81
7025	GROUNDWATER	UNKNOWN	BAILEY J	STOCK	Rosebud	1S41E	5	NENESESW	N	2			80
11984	GROUNDWATER	19630101	FARLEYS INC	STOCK, DOMESTIC	Rosebud	1N40E	18	SESWNWNE	N	20			20
11986	GROUNDWATER	19840209	FARLEYS INC	STOCK	Rosebud	1N40E	18	SWSW	N	15			110
11988	GROUNDWATER	19630101	FARLEYS INC	STOCK, DOMESTIC	Rosebud	1N40E	18	NWSWSESE	N	20			225
12020	GROUNDWATER	19470101	NORTHERN PACIFIC RAILWAY COMPANY	STOCK	Rosebud	1N41E	31	NESENENE	N	10			150
139748	GROUNDWATER	19910801	MCRAE DOUG	UNKNOWN	Rosebud	1N41E	20	NWNE	N				320
212086	GROUNDWATER	20040518	ASHENHURST RANCH INC	STOCK	Rosebud	1N40E	22	NENE	N	8			480
212090	GROUNDWATER	20040518	ASHENHURST RANCH INC	STOCK	Rosebud	1N40E	28	SENE	N	15			65
42A 108275 00	UNNAMED TRIBUTARY OF LEE COULEE	19481201	WPP LLC	STOCK	Rosebud	1N41E	19	SENESW	Y				
42A 108296 00	GROUNDWATER	19451231	WPP LLC	STOCK	Rosebud	1S41E	5	NESESW	N	10			150
42A 108301 00	GROUNDWATER	19491231	WPP LLC	STOCK	Rosebud	1N41E	33	SWSWNW	N	20			70
42A 108302 00	LEE COULEE	19481201	WPP LLC	STOCK	Rosebud	1N41E	33	SWSENW	Y				
42A 108357 00	GROUNDWATER	19601231	WPP LLC	STOCK	Rosebud	1N40E	29	SWNWNE	N	8			
42A 108358 00	GROUNDWATER	19571231	WPP LLC	STOCK	Rosebud	1N40E	23	NWSENW	N	6			100
42A 108359 00	SPRING, UNNAMED TRIBUTARY OF RICHARD COULEE	19111231	WESTERN ENERGY CO	STOCK	Rosebud	1N40E	19	SWSWSE	N				

Water Rights Number	Source	Priority Date (yr/mo/day)	Owner	Purpose	County	Township Range	Section	Quarter Section	Reservoir?	Maximum Flow Rate (gpm)	Maximum Volume (Ac-ft)	Maximum Acreage (Acres)	Well Depth (feet)
42A 108402 00	SPRING, UNNAMED TRIBUTARY OF RAPE COULEE	19111231	WPP LLC	STOCK	Rosebud	1S40E	1	NENWSW	N				
42A 108403 00	SPRING, UNNAMED TRIBUTARY OF RICHARD COULEE	19111231	GREAT NORTHERN PROPERTIES LTD PRTNRSHP	STOCK	Rosebud	1S40E	1	NENENE	N				
42A 145437 00	UNNAMED TRIBUTARY OF LEE COULEE	19411231	WESTERN ENERGY COMPANY	STOCK	Rosebud	1N40E	26	NWNESE	Y				
42A 145438 00	UNNAMED TRIBUTARY OF RICHARD COULEE	19421231	WESTERN ENERGY COMPANY	STOCK	Rosebud	1N40E	21	SESWSW	Y				
42A 145439 00	UNNAMED TRIBUTARY OF RICHARD COULEE	19421231	WESTERN ENERGY COMPANY	STOCK	Rosebud	1N40E	27	SENWNW	Y				
42A 145440 00	LEE COULEE	19421231	WESTERN ENERGY COMPANY	STOCK	Rosebud	1N40E	22	SWNWNW	Y				
42A 145441 00	UNNAMED TRIBUTARY OF RICHARD COULEE	19401231	WESTERN ENERGY COMPANY	STOCK	Rosebud	1N40E	28	SENWSW	Y				
42A 145442 00	UNNAMED TRIBUTARY OF RAPE COULEE	19461231	WESTERN ENERGY COMPANY	STOCK	Rosebud	1N40E	33	NESESW	Y				
42A 172068 00	GROUNDWATER	19300601	SCOTT BRADAC	STOCK	Rosebud	1S41E	3	NWNENW	N	2			
42A 172075 00	UNNAMED TRIBUTARY OF LEE COULEE	19300601	BIG SKY COAL CO	STOCK	Rosebud	1N41E	32	SESWSE	Y				
42A 172076 00	UNNAMED TRIBUTARY OF LEE COULEE	19400601	SCOTT BRADAC	STOCK	Rosebud	1S41E	2	SENENE	Y				
42A 181539 00	RAPE COULEE	19471231	BROADUS INC	STOCK	Rosebud	1S40E	2	SWNWSE	Y				
42A 181540 00	SPRING, UNNAMED TRIBUTARY OF RAPE COULEE	19471231	BROADUS INC	STOCK	Rosebud	1S40E	2	NWSENE	N	1			
42A 181541 00	GROUNDWATER	19530606	BROADUS INC	STOCK	Rosebud	1S40E	2	SWNESW	N	6			

Water Rights Number	Source	Priority Date (yr/mo/day)	Owner	Purpose	County	Township Range	Section	Quarter Section	Reservoir?	Maximum Flow Rate (gpm)	Maximum Volume (Ac-ft)	Maximum Acreage (Acres)	Well Depth (feet)
42A 181542 00	UNNAMED TRIBUTARY OF RAPE COULEE	19471231	BROADUS INC	STOCK	Rosebud	1S41E	8	NESWNW	Y				
42A 181543 00	GROUNDWATER	19471231	BROADUS INC	STOCK	Rosebud	1S41E	8	SWSWNE	N	6			
42A 181544 00	RICHARD COULEE	19471231	BROADUS INC	STOCK	Rosebud	1S41E	8	NESENE	Y				
42A 183337 00	UNNAMED TRIBUTARY OF RICHARD COULEE	19540930	WESTERN ENERGY CO	STOCK	Rosebud	1N40E	30	NENESW	Y				
42A 183488 00	SPRING, UNNAMED TRIBUTARY OF RICHARD COULEE	19460430	WESTERN ENERGY CO	STOCK	Rosebud	1N40E	20	SENESE	N	10			
42A 183489 00	GROUNDWATER	19600701	BOOTH LAND & LIVESTOCK CO	STOCK	Rosebud	1N40E	29	SWNWNE	N	8			
42A 183490 00	SPRING, UNNAMED TRIBUTARY OF RICHARD COULEE	19420331	WESTERN ENERGY CO	STOCK	Rosebud	1N40E	30	SWNWNW	N				
42A 183491 00	SPRING, UNNAMED TRIBUTARY OF RICHARD COULEE	19420531	WESTERN ENERGY CO	STOCK	Rosebud	1N40E	30	NENENW	N	10			
42A 27204 00	UNNAMED TRIBUTARY OF LEE COULEE	19160720	BIG SKY COAL CO	IRRIGATION	Rosebud	1N41E	31	NENENE	N			10	
42A 27210 00	LEE COULEE	19090610	BIG SKY COAL CO	IRRIGATION	Rosebud	1N41E	32	NENENW	N	1360		80	
42A 27316 00	UNNAMED TRIBUTARY OF LEE COULEE	18831001	BIG SKY COAL CO	STOCK	Rosebud	1N41E	30	SW	N				
42A 27316 00	UNNAMED TRIBUTARY OF LEE COULEE	18831001	BIG SKY COAL CO	STOCK	Rosebud	1N41E	32	NW	N				
42A 27317 00	LEE COULEE	18831001	BIG SKY COAL CO	STOCK	Rosebud	1N40E	24	S2	N				
42A 27317 00	LEE COULEE	18831001	BIG SKY COAL CO	STOCK	Rosebud	1N40E	25	NE	N				

Water Rights Number	Source	Priority Date (yr/mo/day)	Owner	Purpose	County	Township Range	Section	Quarter Section	Reservoir?	Maximum Flow Rate (gpm)	Maximum Volume (Ac-ft)	Maximum Acreage (Acres)	Well Depth (feet)
42A 27317 00	LEE COULEE	18831001	BIG SKY COAL CO	STOCK	Rosebud	1N41E	29	SW	N				
42A 27317 00	LEE COULEE	18831001	BIG SKY COAL CO	STOCK	Rosebud	1N41E	30	NW	N				
42A 27317 00	LEE COULEE	18831001	BIG SKY COAL CO	STOCK	Rosebud	1N41E	30	S2	N				
42A 27317 00	LEE COULEE	18831001	BIG SKY COAL CO	STOCK	Rosebud	1N41E	32	N2	N				
42A 27318 00	SPRING, UNNAMED TRIBUTARY OF LEE COULEE	18831001	BIG SKY COAL CO	STOCK	Rosebud	1N41E	28	NWSWSW	N				
42A 27319 00	SPRING, UNNAMED TRIBUTARY OF LEE COULEE	18831001	BIG SKY COAL CO	STOCK	Rosebud	1N41E	30	SWSWNE	N				
42A 27320 00	UNNAMED TRIBUTARY OF LEE COULEE	19391231	BIG SKY COAL CO	STOCK	Rosebud	1N41E	32	SESWSE	Y				
42A 27321 00	UNNAMED TRIBUTARY OF LEE COULEE	19261231	BIG SKY COAL CO	STOCK	Rosebud	1N41E	32	NWSWNE	Y				
42A 27332 00	MILLER COULEE	18831001	GREENLEAF LAND AND LIVESTOCK CO	STOCK	Rosebud	1N41E	20	NE	N				
42A 27333 00	SPRING, UNNAMED TRIBUTARY OF LEE COULEE	18831001	BIG SKY COAL CO	STOCK	Rosebud	1N41E	28	SWSESE	N				
42A 27335 00	MILLER COULEE	19441231	GREENLEAF LAND AND LIVESTOCK CO	STOCK	Rosebud	1N41E	20	SENENE	Y				
42A 27337 00	GROUNDWATER	19461001	BIG SKY COAL CO	STOCK	Rosebud	1N41E	30	SENWNW	N	3			90
42A 27338 00	LEE COULEE	18831001	BIG SKY COAL CO	STOCK	Rosebud	1N40E	24	SW	N				
42A 27338 00	LEE COULEE	18831001	BIG SKY COAL CO	STOCK	Rosebud	1N40E	25	NE	N				
42A 27339 00	GROUNDWATER	19451231	BIG SKY COAL CO	STOCK	Rosebud	1N40E	24	SESWSW	N	3			
42A 27340 00	UNNAMED TRIBUTARY OF LEE COULEE	19671231	BIG SKY COAL CO	STOCK	Rosebud	1N40E	24	SWNENE	Y				

Water Rights Number	Source	Priority Date (yr/mo/day)	Owner	Purpose	County	Township Range	Section	Quarter Section	Reservoir?	Maximum Flow Rate (gpm)	Maximum Volume (Ac-ft)	Maximum Acreage (Acres)	Well Depth (feet)
42A 27341 00	UNNAMED TRIBUTARY OF LEE COULEE	19381231	BIG SKY COAL CO	STOCK	Rosebud	1N40E	24	SWNESW	Y				
42A 27342 00	UNNAMED TRIBUTARY OF LEE COULEE	19381231	BIG SKY COAL CO	STOCK	Rosebud	1N40E	25	SWNWSE	Y				
42A 27343 00	GROUNDWATER	19531231	BROADUS INC	STOCK	Rosebud	1S41E	6	SWSWSW	N	5			
42A 27344 00	GROUNDWATER	19531231	BROADUS INC	STOCK	Rosebud	1S41E	6	NENENE	N	5			
42A 27345 00	SPRING, UNNAMED TRIBUTARY OF RICHARD COULEE	18831001	SCOTT BRADAC	STOCK	Rosebud	1S41E	4	NWNWSE	N				
42A 27346 00	RICHARD COULEE	18831001	BROADUS INC	STOCK	Rosebud	1S41E	6	E2NE	N				
42A 27347 00	RAPE COULEE	18831001	BROADUS INC	STOCK	Rosebud	1S41E	6	SWSW	N				
42A 42803 00	GROUNDWATER	19830319	WPP LLC	STOCK	Rosebud	1N40E	35	NWNWSE	N	5	1.5		
42A 44177 00	GROUNDWATER	19820406	FARLEYS INC	STOCK	Rosebud	1N40E	35	SWSWNE	N	12	4.5		
42A 47132 00	GROUNDWATER	19820510	SCOTT BRADAC	STOCK	Rosebud	1S41E	2	NWNENE	N	15	1.3		
42A 52220 00	GROUNDWATER	19830321	BOOTH BROS LAND & LIVESTOCK	STOCK	Rosebud	1N40E	14	SWSWSW	N	10	1.68		
42A 58905 00	GROUNDWATER	19850322	BIG SKY COAL CO	STOCK	Rosebud	1N40E	30	SESW	N	25	3.4		120
42A 58906 00	GROUNDWATER	19850322	BIG SKY COAL CO	STOCK, INDUSTRIAL	Rosebud	1N41E	30	NESE	N	35	9.01		97
42A 5967 00	MILLER COULEE	19750715	GREAT NORTHERN PROPERTIES LTD PRTNRSHP, WPP LLC	STOCK, IRRIGATION, FLOOD CONTROL	Rosebud	1N41E	21	SWNESE	Y	198	6.21	2	
42A 8206 00	SPRING, UNNAMED TRIBUTARY OF LEE COULEE	19400415	MONTANA, STATE OF BOARD OF LAND COMMISSIONERS TRUST LAND MANAGEMENT DIVISION	STOCK	Rosebud	1N40E	36	NENWSE	N				

Water Rights Number	Source	Priority Date (yr/mo/day)	Owner	Purpose	County	Township Range	Section	Quarter Section	Reservoir?	Maximum Flow Rate (gpm)	Maximum Volume (Ac-ft)	Maximum Acreage (Acres)	Well Depth (feet)
42A 8207 00	UNNAMED TRIBUTARY OF LEE COULEE	19400415	MONTANA, STATE OF BOARD OF LAND COMMISSIONERS TRUST LAND MANAGEMENT DIVISION	STOCK	Rosebud	1N40E	36	NWNENE	Y				
42KJ 108499 00	GROUNDWATER	19811230	BNSF RAILWAY CO	STOCK	Rosebud	1N40E	15	SWNWNW	N	5			
42KJ 162808 00	UNNAMED TRIBUTARY OF UNNAMED TRIBUTARY OF EAST FORK ARMELLS CREEK	19351231	WESTERN ENERGY CO	STOCK	Rosebud	1N41E	17	NWNWNW	Y				
42KJ 183242 00	SPRING, UNNAMED TRIBUTARY OF UNNAMED TRIBUTARY OF EAST FORK ARMELLS CREEK	19210303	BOOTH BROS LAND & LIVESTOCK	STOCK	Rosebud	1N40E	18	NENWNW	N				
42KJ 183290 00	GROUNDWATER	19460930	BOOTH BROS LAND & LIVESTOCK	STOCK	Rosebud	1N40E	17	NENENW	N	8			145
42KJ 183306 00	UNNAMED TRIBUTARY OF ARMELLS CREEK, EAST FORK	19360828	BOOTH BROS LAND & LIVESTOCK	STOCK	Rosebud	1N40E	17	SENESE	Y				
42KJ 183322 00	GROUNDWATER	19501231	BOOTH BROS LAND & LIVESTOCK	STOCK	Rosebud	1N40E	12	SESWSE	N	20			
42KJ 183326 00	ARMELLS CREEK, EAST FORK	19180618	BOOTH BROS LAND & LIVESTOCK	STOCK	Rosebud	1N40E	14	N2NW	N				
42KJ 183327 00	UNNAMED TRIBUTARY OF UNNAMED TRIBUTARY OF EAST FORK ARMELLS CREEK	19500831	BOOTH BROS LAND & LIVESTOCK	STOCK	Rosebud	1N40E	14	SWNWNW	Y				

Water Rights Number	Source	Priority Date (yr/mo/day)	Owner	Purpose	County	Township Range	Section	Quarter Section	Reservoir?	Maximum Flow Rate (gpm)	Maximum Volume (Ac-ft)	Maximum Acreage (Acres)	Well Depth (feet)
42KJ 183328 00	GROUNDWATER	19141231	BOOTH BROS LAND & LIVESTOCK	STOCK	Rosebud	1N40E	14	NWNWNW	N	50			
42KJ 183487 00	GROUNDWATER	19541220	BOOTH BROS LAND & LIVESTOCK	STOCK	Rosebud	1N40E	18	SESESE	N	10			220
42KJ 183536 00	GROUNDWATER	19141231	BOOTH BROS LAND & LIVESTOCK	DOMESTIC	Rosebud	1N40E	14	NWNWNW	N	50	3	1	
42KJ 183541 00	UNNAMED TRIBUTARY OF UNNAMED TRIBUTARY OF EAST FORK ARMELLS CREEK	19470831	BOOTH BROS LAND & LIVESTOCK	IRRIGATION	Rosebud	1N40E	18	SWSESE	N		27.6	12	
42KJ 183542 00	UNNAMED TRIBUTARY OF ARMELLS CREEK, EAST FORK	19160515	BOOTH BROS LAND & LIVESTOCK	IRRIGATION	Rosebud	1N40E	18	SWNESW	Y		50.0	25	
42KJ 183553 00	SPRING, UNNAMED TRIBUTARY OF ARMELLS CREEK	19210303	BOOTH BROS LAND & LIVESTOCK	IRRIGATION	Rosebud	1N40E	18	NENWNW	N		23	10	
42KJ 42802 00	GROUNDWATER	19820319	WPP LLC	STOCK	Rosebud	1N40E	15	SWNWNW	N	5	2.25		
42KJ 68082 00	GROUNDWATER	19880705	STEVEN C PEMBLE	DOMESTIC, LAWN & GARDEN	Rosebud	1N40E	18	SWSE	N	10	7.25	2.5	300
42KJ 80635 00	GROUNDWATER	19920615	GARY J EERNISSE	DOMESTIC, STOCK	Rosebud	1N40E	18	SESWSE	N	14	1.03		120
42KJ 8204 00	UNNAMED TRIBUTARY OF ARMELLS CREEK, EAST FORK	19400415	MONTANA, STATE OF BOARD OF LAND COMMISSIONERS TRUST LAND MANAGEMENT DIVISION	STOCK	Rosebud	1N40E	16	SWNESE	Y				

Water Rights Number	Source	Priority Date (yr/mo/day)	Owner	Purpose	County	Township Range	Section	Quarter Section	Reservoir?	Maximum Flow Rate (gpm)	Maximum Volume (Ac-ft)	Maximum Acreage (Acres)	Well Depth (feet)
42KJ 8205 00	GROUNDWATER	19400415	MONTANA, STATE OF BOARD OF LAND COMMISSIONERS TRUST LAND MANAGEMENT DIVISION	STOCK	Rosebud	1N40E	16	NWNESE	N	8			
42KJ 8209 00	UNNAMED TRIBUTARY OF ARMELLS CREEK, EAST FORK	19400415	MONTANA, STATE OF BOARD OF LAND COMMISSIONERS TRUST LAND MANAGEMENT DIVISION	STOCK	Rosebud	1N40E	16	E2SWNE	Y				
42KJ 8210 00	GROUNDWATER	19400415	MONTANA, STATE OF BOARD OF LAND COMMISSIONERS TRUST LAND MANAGEMENT DIVISION	STOCK	Rosebud	1N40E	16	NENENE	N	10			
BUN9100	GROUNDWATER	UNKNOWN	UNKNOWN	STOCK	Rosebud	1N40E	24		N				
BUN9120	GROUNDWATER	UNKNOWN	UNKNOWN	STOCK	Rosebud	1N40E	26		N				
BUN9200	GROUNDWATER	UNKNOWN	UNKNOWN	UNKNOWN	Rosebud	1N40E	14		N				
BUN9210	GROUNDWATER	UNKNOWN	UNKNOWN	STOCK	Rosebud	1N40E	26		N				

Appendix C – Rosebud Coal Mine Greater Sage-Grouse Mitigation Plan

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ROSEBUD COAL MINE
AM5 GREATER SAGE-GROUSE MITIGATION PLAN

PROJECT ID NUMBER: 2750

PREPARED FOR:

Western Energy Company
P.O. Box 99
Colstrip, Montana 59323
Contact: Richard Spang
406/748-5189

PREPARED BY:

ICF
405 West Boxelder Road, Suite A-5
Gillette, Wyoming 82718
Contact: Roy Fenster
307/468-4762

December 2018

ICF. 2018. Rosebud Mine, AM5, Greater Sage-Grouse Mitigation. November. (ICF P0968.18) Gillette, Wyoming. Prepared for Western Energy Company.

Contents

Tables

Figures

Acronyms and Abbreviations

°F	Fahrenheit
AM5 or Area B Extension South	Proposed Amendment to Area B SMP 1984003B
MDEQ	Montana Department of Environmental Quality
MFWP	Montana Fish, Wildlife, & Parks
mi^2	square miles
MNHP	Montana Natural Heritage Program
Western Energy	Western Energy Company

Introduction

Western Energy Company (Western Energy) operates the Rosebud coal mine in southeastern Montana near the town of Colstrip. The Rosebud Mine is a surface mine that has been in operation since 1968. The proposed amendment to the Area B Surface Mine Permit (SMP C1984003B), AM5, is located in Rosebud County, adjacent to the southern boundary of the existing Rosebud Mine permit area and approximately 5 miles southwest of Colstrip in Rosebud County, Montana. The proposed tract overlaps all or portions of Sections 13, 17, 20–29, and 33–36, T1N:R40E. AM5 would increase the Area B permit area by 9,108 acres and the disturbance area by 5,547 acres, this results in a total permit area of 15,161 acres and 11,202 acres of disturbance. The wildlife survey area included the entire proposed AM5 tract and a surrounding perimeter that encompasses 54.3 mi^2 or 34,789 acres.

Generally, the process of mining and reclamation at the Rosebud Mine follows the following sequence:

1. vegetation is cleared
2. topsoil is salvaged and either directly hauled to regraded areas or stockpiled for future use
3. blasting techniques are employed to loosen and move some of the overburden to the previous open pit
4. dragline removes remainder of overburden and exposes coal
5. blasting techniques are employed to fracture coal
6. coal is extracted by a truck and loader fleet
7. open pit is backfilled with spoil (blasted overburden)
8. surface is graded to approximate original contour
9. topsoil is placed
10. revegetation by seeding and hand planting

Surface ownership within the wildlife survey area is a mixture of private and state land. The area is relatively remote and only accessed via old mine roads associated with the Big Sky Mine from the east, extended mine roads on the Rosebud Mine from the north, or numerous rural dirt roads associated with the other surrounding ranches and private lands. Current principal land uses in the general vicinity include a long history of mining, as well as recreation (e.g., hunting), ranching, and agriculture.

Wildlife monitoring based on guidance from the Montana Department of Environmental Quality (MDEQ) is ongoing and has been conducted annually in portions of the Rosebud Mine from 1973 through 2018. The proposed Area B Extension South tract overlaps the south-central extent of the current Rosebud Mine annual wildlife monitoring area (permit areas and a 1.0-mile perimeter) and the western portion of the no longer active Big Sky Mine and its historical 1.0-mile wildlife survey area. Monitoring was conducted at the Big Sky Mine annually from 1974 through 2015, after which monitoring was no longer required by MDEQ due to the mine's inactive status. Monitoring included standardized wildlife surveys for big game, game birds, breeding birds, and nesting raptors. However, all animal species (including any federally listed species and other species of concern listed with the Montana Fish, Wildlife, & Parks [MFWP] and Montana Natural Heritage Program [MNHP]) were also incidentally recorded in all years.

Study Area Habitat Characteristics

The proposed AM5 tract is within the Northwestern Great Plains Ecoregion.[1] The climate is semi-arid, averaging 15.0 inches of precipitation annually, with the majority occurring between April and October. The 50-year mean maximum and minimum temperatures in July and January were 88.1 degrees Fahrenheit (°F) and 9.5°F, respectively.

AM5 lies near the base and to the east of the Little Wolf Mountains, and elevation ranges from approximately 3,160 to 3,820 feet above sea level. Topography is a series of alternating drainages and prominent ridgelines, primarily running northwest to southeast. Topography in the southwestern and southern extent is composed of taller steeper slopes and narrower valleys. More open valleys and rolling topography occur in the central-western, extreme northern, and northeastern portions of the area.

Minor ridgelines and hillsides border drainages found in these areas as well. Ridgelines throughout the area are characterized by moderately steep slopes with exposed rock outcrops (primarily clinker, but some sandstone) accompanied by some large areas of flat terrain on top of ridgelines.

Drainages are generally azonal alluvial soils, often loamy in texture. Several named and unnamed drainages, including Lee Coulee, Richard Coulee, and Rape Coulee flow from the northwest throughout the area towards Rosebud Creek. The East Fork of Armells Creek also flows west to east along the northern margin of the area. Water availability is limited to ephemeral runoff associated with the more prominent drainages.

The area is dominated by woodlands interspersed with large open grasslands at the higher elevations and level to rolling grasslands interspersed with sagebrush and woody draw habitats along the numerous drainages at the lower elevations. High-elevation woodlands primarily consist of sparse to dense stands of ponderosa pine (*Pinus ponderosa*).

In late summer 2012, the Chalky wildfire spread throughout the southwestern and southern portions of the area; thus, a significant portion of the pine stands present are composed of dead standing trees with a relatively open canopy and short to sparse undergrowth. However, some scattered patches of unburned pine stands also exist in areas where the wildfire did not extend (particularly in the northeast). Some stands of ponderosa pine also occur at the lower elevations and along most creek drainages but are generally sparser and mixed with individuals or small stands of green ash (*Fraxinus pennsylvanica*), boxelder (*Acer negundo*), or cottonwoods (*Populus* spp.). Many of the larger stands of cottonwoods present along Richard Coulee and Rape Coulee were also burned in the Chalky wildfire but are still standing.

Large expanses of grassland habitat extended throughout the lower elevations, especially along the northwestern and southeastern ends of Richard Coulee and the northwestern portion of Lee Coulee. Herbaceous cover throughout the survey area varied from dense among the rolling hills and draws to sparse or bare along many of the steeper ridgelines or in the burned areas. The majority of grasses throughout the survey area ranged from approximately 6 to 32 inches in height.

[1] Environmental Protection Agency. 1993. Ecoregions of the United States. Derived from J. W. Omernik, Ecoregions of the Coterminous United States; Scale 1:7,500,000. *Annals of the Association of American Geographers* 77:118–125.

Common grasses within the project area included wheatgrasses (*Agropyron* and *Pascopyron* spp.), needle-and-thread (*Hesperostipa comata*), junegrass (*Koeleria macrantha*), Japanese brome (*Bromus japonicus*), bluegrass (*Poa* spp.), green needlegrass (*Stipa viridula*), crested wheatgrass (*Agropyron cristatum*), and cheatgrass (*Bromus tectorum*).

The survey area also overlaps with previously mined areas at the former Big Sky Mine. As a result, approximately 3.2 mi^2 of reclaimed grassland exist within the central-eastern margin of the proposed AM5 tract and extended wildlife survey area. Grass cover in that area is dense and ranges in height from 12 to 38 inches.

Dominant shrubs in the area include big sagebrush (*Artemisia tridentata*) and silver sagebrush (*Artemisia cana*). Sagebrush communities typically occurred along the slopes at the lower elevations in a patchy mosaic of sparse to moderately dense stands. Sagebrush height generally varied from 12 to 30 inches (averaging 24 inches).

The majority of the sagebrush habitats occurred along the northwestern extent of Lee Coulee, the central stretch of Richard Coulee, and the southeastern portion of Rape Coulee on the drier east- and south-facing slopes. Dense, but less common shrubs were also observed in woody draw habitats. Those species included chokecherry (*Prunus virginiana*), snowberry (*Symphoricarpus alba*), gooseberry and currant (*Ribes* spp.), and serviceberry (*Amelanchier alnifolia*). Skunkbush sumac (*Rhus trilobata*) was also present at some of the higher elevations, and typically associated with rocky outcrops.

Seven major vegetation types including: conifer, grassland, improved pasture, mixed shrub, revegetation, sagebrush, and woody draw were classified within the proposed AM5 tract and extended wildlife study area.

Table 1. Vegetation Types[1] and Wildlife Habitat Acres within the Proposed AM5 Tract and Surrounding Area

Original Permit Designation	Corresponding Vegetation Types	Total Acres
Lowland		
Grassland	• Grassland	0
Deciduous Tree/Shrub	• Woody Draw	0
Upland		
Grassland	• Grassland	7,244.1
Big Sagebrush	• Sagebrush	281.8
Silver Sagebrush	• Sagebrush	827.0
Skunkbush Sumac	• Conifer/Sumac	1,056.8
Deciduous Tree/Shrub	• Woody Draw	92.3
Mixed Shrub	• Mixed Shrub	332.6
Conifer	• Conifer/Sumac	5,927.4
Wetlands - Wet Meadow	• Wetland	14.7
Disturbed Grassland	• Improved Pasture	28.7
Revegetation	• Revegetation	1,331.5
Wildlife Habitat Features:		
Sandstone Rock		5.2
Pond		22.6

[1] See Appendix E, *Area B Extension South Amendment (BESA) Baseline Vegetation Evaluation 2013 & 2016.*

Greater Sage-Grouse

The Montana Sage Grouse Habitat Conservation Program has reviewed the proposed project. The greater sage-grouse is of high management concern, and the conservation of the species and associated habitats is outlined in Executive Order 12-2015. Because of concerns regarding this species, Rosebud Mine biologists watch for and record all observations and sign of this species in all mine areas and associated wildlife survey areas during annual field surveys.

Historic occurrence of greater sage-grouse within the vicinity of the Rosebud Mine is rare, with the most recent documented sighting in 1999. This species has only been documented on leks in the historic mine-wide survey area in two previous years since annual monitoring began in 1973. Two male sage grouse were repeatedly observed at a sharp-tailed grouse lek (lek #20) in 1984, and one male was seen at the lek throughout spring 1985. However, lek #20 is outside the current Rosebud Mine wildlife survey area and has been for many years.

No sage grouse have been recorded within AM5, the current Rosebud Mine wildlife survey boundary, or the Big Sky Mine wildlife survey areas during the previous monitoring at these sites.

Program Analysis and Deviations from EO 12-2015

The proposed AM5 project area is located entirely within General Habitat for sage grouse. Stipulations recommended in EO 12-2015 are designed to maintain existing sage grouse populations and levels of suitable sage grouse habitat by regulating uses and activities in General Habitat in a manner that sustains sage grouse abundance and distribution in Montana.

Delineated General Habitat areas are important for maintaining the abundance and distribution of sage grouse across Montana, but not identified as Core or Connectivity Areas.[2] Development scenarios in General Habitat are more flexible than in Core Areas but must still be designed and managed to maintain sage grouse populations and habitats.

Potential EO stipulation deviations for this project include surface occupancy (NSO), seasonal use timing stipulations, and vegetation removal timing stipulations. No active sage grouse leks are located within 4 miles of the proposed AM5 (Figure 1). The nearest active leks are TR-004 (approximately 15 miles northwest corner of AM5) and RO-004 (approximately 14 miles northeast corner of AM5).

This project is fully consistent with EO 12-2015; therefore, no site-specific multipliers were applied to the HQT Score.

[2] MCA 76-22-103(7).

Figure 1. 2750 - Rosebud Mine Area B AM5 Disturbance Limit, Active Leks and 4-Mile Buffer, and HQT Basemap.

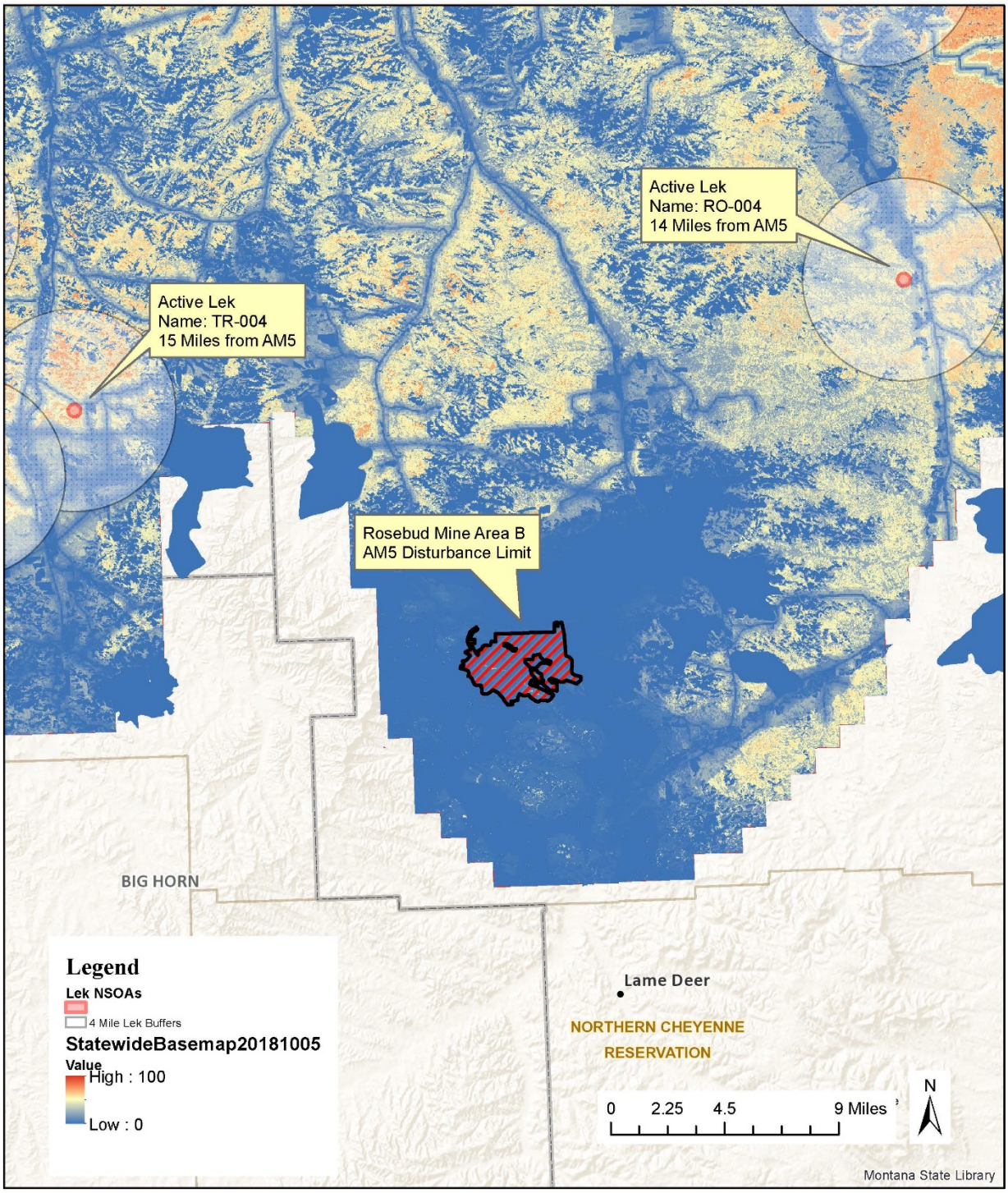

Figure 1. Rosebud Mine AM5 project location, nearest active leks with 4-mile buffers, and the Montana HQT Basemap showing relative functional acre values.

Mitigation

The Program worked with Western Energy to review the proposed AM5 project. Although there were no active sage grouse leks within four miles at the time of this review, direct and indirect impacts to sage grouse habitat will occur with the proposed AM5 project. For this Mitigation Plan, all references to the *Montana Mitigation System Habitat Quantification Tool Technical Manual for Greater Sage-Grouse* (HQT) and the *Montana Mitigation System Policy Guidance Document for Greater Sage-Grouse* refer to the October 2018, Version 1.0 documents.

Avoidance

Avoidance is defined as avoiding an impact from a proposed debit project altogether by not taking a certain action or parts of an action.[3] The entirety of this project is located within General Habitat, therefore direct and indirect impacts from this project to sage grouse habitat will not be avoided under the AM5 expansion.

Minimization

Minimization is defined as minimizing impacts by limiting the degree or magnitude of the action and its implementation.[4] Indirect project impacts to sage grouse habitat would be minimized under the AM5 expansion by locating roads within the Disturbance Limit of the project and continuing to use ground power cables rather than build overhead power lines during the life of the project. Removing the minimum amount of vegetation required for work under the AM5 expansion would also minimize impacts to sage grouse habitat.

Reclamation

Included in the AM5 amendment application to the Area B SMP C1984003B is a reclamation plan[5] with associated vegetation map[6] and reclamation map[7] which depict the post-mine, reclaimed state.

Reclamation is defined as rectifying the impact by repairing, rehabilitating, or restoring the affected environment.[8]

Reclamation for coal mines in Montana is required in the Montana Code, Title 82, Chapter 4, Part 2:[9]

"*The operator shall commence the reclamation of the area of land affected by the operator's operation as soon as possible after the beginning of strip mining or underground mining of that area in accordance with plans previously approved by the department*"

[3] Montana Mitigation System Policy Guidance Document for Greater Sage-Grouse October 2018, Version 1.0.

[4] Montana Mitigation System Policy Guidance Document for Greater Sage-Grouse October 2018, Version 1.0.

[5] AM5 Amendment to Area B SMP 1984003B Section 17.24.313 Reclamation Plan.

[6] AM5 Amendment to Area B SMP 1984003B Exhibit C – Post-mine Vegetation Plan.

[7] AM5 Amendment to Area B SMP 1984003B Exhibit J – Approximate Reclamation Plan.

[8] Montana Mitigation System Policy Guidance Document for Greater Sage-Grouse October 2018, Version 1.0.

[9] MCA 82-4-234.

Per MCA 82-4-234, reclamation of AM5 will proceed as soon as possible. The following is a general overview of the plan for reclamation.

Soil

Soil materials will be salvaged with mobile equipment in advance of overburden blasting and pit excavation. The extent and depth of salvaged soils will be based on pre-mine soil surveys and the past intensive Western Energy pre-salvage soil sampling program. To the maximum extent possible, salvaged soil materials will be immediately redistributed.

The vegetation map shows the approximate locations for each post-mining reclamation type. These locations were selected after examining pre-mining topographic associations for each reclamation type and selecting comparable areas on the post-mine topography. Final locations may be adjusted during the regrading process as opportunities to develop appropriate topography (e.g. slope, aspect, position on slope, extent of feature, etc.) for selected reclamation types are identified. This is particularly applicable to reclamation types requiring more specific topographic features, aspect, substrates, etc. (e.g. mixed-shrub, conifer, etc.). Cropland and pastureland land uses, in addition to specific topographic limitations, require addition of wildlife enhancement features.[10] This requirement will be met by the inclusion of a combination of grassed waterways with various shrub plantings, incised drainages with concentrated woody species plantings, irregular field shapes, and/or placement near native vegetative and topographic escape cover as appropriate.

Soil laydown depths will be of a thickness consistent with the soil resource availability and appropriate for the reclamation type. Actual soil laydown will vary across a reclamation unit in an attempt to resemble a pattern consistent with natural soil depth (e.g. shallower on ridge tops and deeper in swales and depressions). The average depth will be within a given variance, defined for each reclamation type, from the average laydown depth. Variability of the soil laydown depths within a reclamation type will be dependent on the desired vegetative results. For instance, in a cropland area where uniform production is desired soil laydown depths will be restricted to a narrow variance from the target laydown depth. In the grasslands where more vegetative diversity is desired, a larger variance from the target depth will be allowed, and the number of sample soil laydown depths that must be within the variance interval will be reduced. For reclamation types where the establishment of woody species is desired, a greater variance from the target soil laydown depth is allowable and the number of sample laydown depths that must be within the variance interval is further reduced.

To promote vegetative diversity by increasing establishment of woody species and forbs, suitable spoil (as defined in MDEQ Soil, Overburden and Regraded Spoil Guideline), sandy or sandy loam subsoil, or scoria may be used as a soil substitute[11]). Sites identified to have similar slope complexity and aspect as native sites supporting the desired woody species will be selected for soil substitution. When available, tree substrate, including pockets of deeper tree subsoil and sandy or otherwise suitable overburden may be salvaged and direct hauled or stockpiled as needed to provide additional suitable conifer root zone material. This same practice may be used to provide additional rooting material to promote establishment of shrubs, particularly skunkbush.

[10] MCA 82-4-322(9).

[11] Montana Department of Environmental Quality (MDEQ). 1998. Soil Overburden and Regraded Spoil Guidelines – December 1994. Updated August 1998.

Vegetation

Recognizing that wildlife considerations are still important on the grazing lands, Western Energy has included shrub species in all seed mixes except pastureland. Soil substitution and variable soil laydown depths will also encourage shrub establishment and survival within the various reclamation types further compensating for the reduced shrubland and conifer acres. Post-mine tree and shrub stand size and shape will vary to generally resemble pre-mine shrub/tree stands. Shrub and tree planting rates assume a 50 percent mortality rate. The average plant spacing is 12 feet on center at a density of 300 plants per acre; however, the spacing of actual plantings will vary, in order to simulate natural conditions.

It is anticipated that the relatively small size of the stands and the often linear or irregular shape of the stands will expedite natural invasion of herbaceous species.

The diversity of reclamation types present in this plan use the best technology currently available to reclaim environmental resources in the permit area. The methods described in this plan are based on the results of previous investigations, observations, and trials.

Vegetation types are described below:

LOWLAND: This area is associated with reconstructed drainages and lowland surface water run-in sites. These are ephemeral drainage areas that collect surface runoff from surrounding sites and accumulate moisture, effectively increasing soil moisture content. Lowland areas are typically located within larger ephemeral drainages. In general, lowlands are found within drainages between the transition points (the point at which the gentle slope of the drainage bottom transitions from the steeper slopes of the adjacent hillsides) on the valley slopes. Lowland areas contain stabilizing grass, as well as woody species providing food and cover for both wildlife and livestock. Grassland, silver sagebrush, grassland shrub complex, and deciduous tree/shrub reclamation types occur in this topographic position.

Prior to mining, natural topographic position, parent material, and biota of the type resulted in soils of greater depth than generally found in uplands, conifer, and mixed shrub types. Topsoil and subsoil lifts will be redistributed to replicate pre-mine conditions. Topographic position will be replicated by targeting this reclamation type for the area from the main drainage upslope to the lower transition point of the side slope, approximately 10-30 feet above the drainage bottom.

Erosion features found within the native lowland type have little or no topsoil; therefore, soil substitution sites may be incorporated into post-mine reclamation to mimic these sites. Areas of soil substitution will be used for re-establishment of the silver sagebrush-grassland and deciduous trees and shrubs.

UPLAND: These are areas that occur on level, nearly level and moderate slopes. They are more xeric than the lowlands, but do have sites of elevated moisture levels, including snow catchment areas the lee sides of hillocks and ridges, incised drainages, dry washes, and small basins. Uplands are interspersed with various shrub associations that provide utility for both wildlife and livestock. Grassland, shrub-grassland (skunkbush sumac, shrub complex, silver sagebrush and big sagebrush types), mixed shrub and deciduous tree/shrub reclamation types occur in the uplands.

Soils on the pre-mine upland sites were not as deep as those found on lowland sites. With the exception of skunkbush sumac areas, soils will be salvaged in two approximately 12-inch lifts. Pockets of deeper soils will be created during reclamation to promote thick vegetative diversity. These pockets will

be located on the lee sides of hillocks and ridges and other areas where soil material naturally accumulates due to their landscape position (i.e. deposition from wind and water erosion). Soil depths in these pockets will vary; however, they will not exceed 36 inches ± 6 inches. Since erosion features found within the upland type have little or no topsoil, soil substitution sites will be incorporated into post-mine reclamation to mimic these sites. Areas of soil substitution will be used for re-establishment of the shrub-grassland, mixed shrub and deciduous tree/shrub reclamation types.

AGRICULTURE AND PASTURELAND RECLAMATION TYPES:

Cropland: Agricultural development in the Colstrip vicinity includes various small grains and hay. While this reclamation type is primarily intended for livestock usage or as cash crops, agricultural fields will be utilized by various wildlife species on a seasonal basis. Specific locations and post-mine acreages of Agricultural areas are described in the Alternative Reclamation Plan for Cropland and Special Use Pastures.

Pastureland: This type was formerly referred to as Special Use Pasture and includes areas seeded or inter-seeded to native or introduced species (or in combination). These lands provide seasonal or special use for livestock on a more intensively managed basis than would occur if the land was grazing land. Pasturelands are typically limited in species diversity and are often nearly a monoculture. Occasional cutting of the forage species for livestock feed may be done for management of the stand or for emergency/supplemental livestock feed.

OTHER RECLAMATION TYPES:

Sandstone outcrops and cliffs are a common feature of the pre-mine landscape and are used by many wildlife species. Raptor and cliff dwelling bird species use them for nesting and/or hunting perches. Several other species (i.e. sagebrush lizards and scorpions) are also associated with these structures, which are usually impacted during the mining process. Two post-mine types (rock piles and cliffs) are designed to mitigate these impacts. Other wildlife habitat features included in post-mine reclamation planning include water features such as ponds and wet meadows. Such water features were present in the pre-mine landscape either as naturally formed features or ranching infrastructure, such as stock ponds and irrigation excavations. These features will provide both vegetation diversity and surface water for use by livestock and/or wildlife.

Compensatory Mitigation and the Habitat Quantification Tool Process

Compensatory mitigation is defined as actions that provide compensation for unavoidable adverse residual impacts to species or their habitat and when taken in advance of the impact through activities that preserve, enhance, restore, and/or establish habitat through the Montana Mitigation System.[12]

The HQT (Montana Mitigation System Habitat Quantification Tool Technical Manual for Greater Sage-Grouse October 2018, Version 1.0) was used to calculate the total debit obligation for this project. The analysis was conducted on November 13, 2018. The HQT assessment area associated with the development project's impacts was the Disturbance Limit. This is the area within the Permit Boundary where the actual activity and surface disturbance for the project will occur under the terms of the permit(s). See Figures 2 and 3 below.

[12] Montana Mitigation System Policy Guidance Document for Greater Sage-Grouse October 2018, Version 1.0.

The Program discussed options for meeting this obligation with Western Energy, including permittee-responsible actions, purchasing credits from third-party private entities, making a financial contribution to the Stewardship Account, or some combination thereof. Western Energy informed the Program that they have selected the Stewardship Account contribution option.

Multipliers are applied to the Raw HQT Score (Montana Mitigation System Policy Guidance Document for Greater Sage-Grouse October 2018 Version 1.0) to account for: (1) risk and uncertainty through a Reserve Account; (2) net conservation gain where federal authorization is required (not applicable here); (3) advance payment if a cash payment is made to the Stewardship Account; and (4) site specific impacts when EO stipulations are violated.

Multipliers considered for this project:

- Risk and The Reserve Account Contribution of 20% will be applied to the Raw HQT Score for the Reserve Account multiplier. It is mandatory. This accounts for the fact that impacts are estimated. Actual impacts could be greater or smaller. The Reserve Account also functions as a shared insurance pool so that credits may be replaced if credit sites do not produce as many credits as predicted or credits are lost due to an Act of God, such as a wildfire.

- Advance Payment of 10% will be applied to the Raw HQT Score for direct and indirect impacts for the life of the project. This is included because Western Energy has selected the in-lieu fee approach by contributing to the Stewardship Account (as provided by the Stewardship Act) rather than undertaking a permittee-responsible approach of securing sufficient mitigation offsets of its own accord. Advance payments are included when a proponent elects to make a contribution because impacts would occur prior to mitigation offsets and there would be a temporary, short term loss of habitat.

- Site-Specific Impacts are addressed through a multiplier of 5% for General Habitat for each aspect of a proposed project that is not consistent with the Executive Order 12-2015 stipulations during either construction or operations phase of a project. Potential stipulations could include No Surface Occupancy (NSO), seasonal use timing for activities, and vegetation removal timing. This project is fully consistent with EO 12-2015; therefore, no site-specific multipliers were applied to the HQT Score.

Figure 2. 2750 - AM5 Expansion (Rosebud): HQT Basemap v1.0.

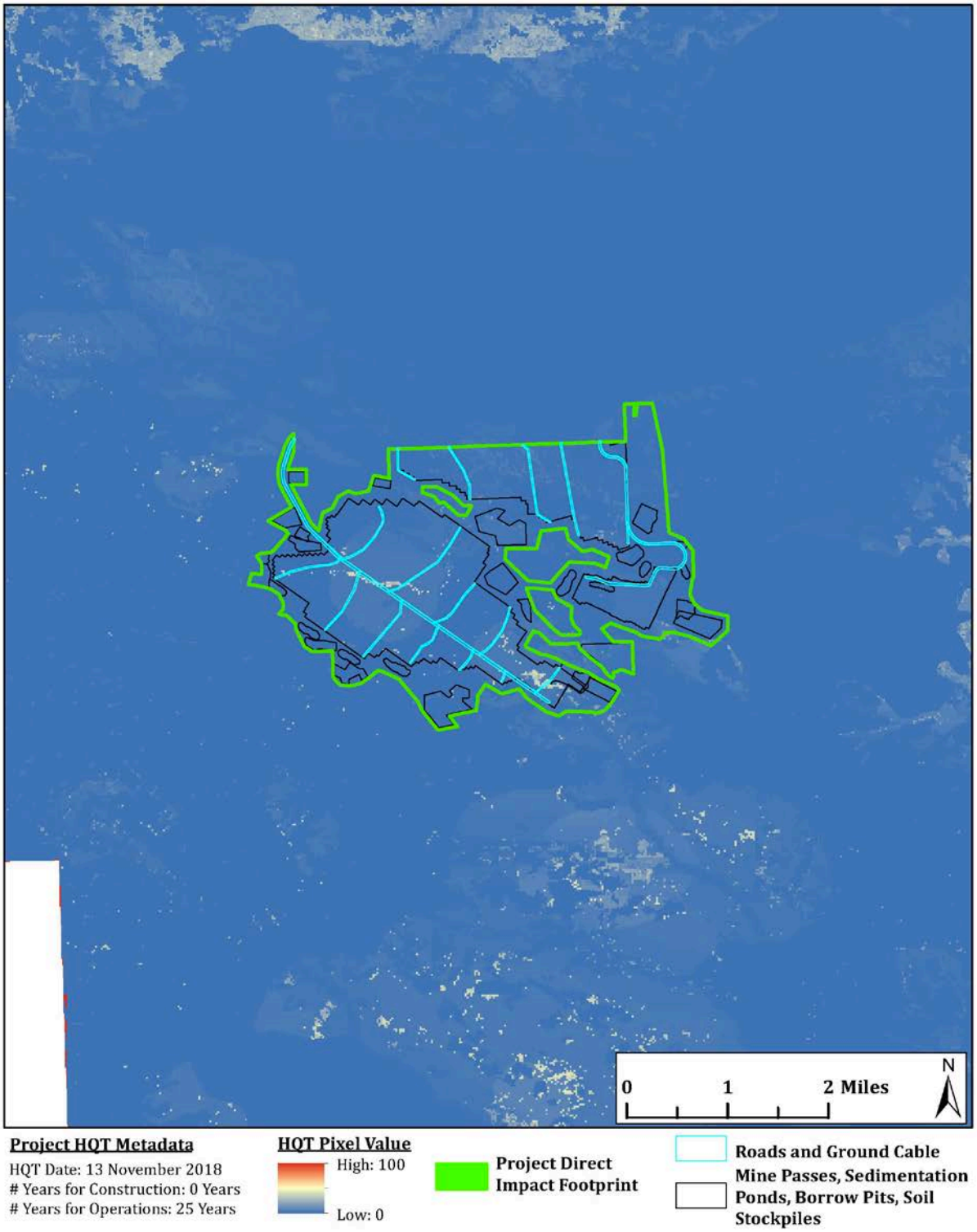

Figure 2. The Montana HQT Basemap, Rosebud AM5 Disturbance Limit, and project disturbance features.

Figure 3. 2750 - AM5 Expansion (Rosebud): HQT Results - 1 Year of Operations.

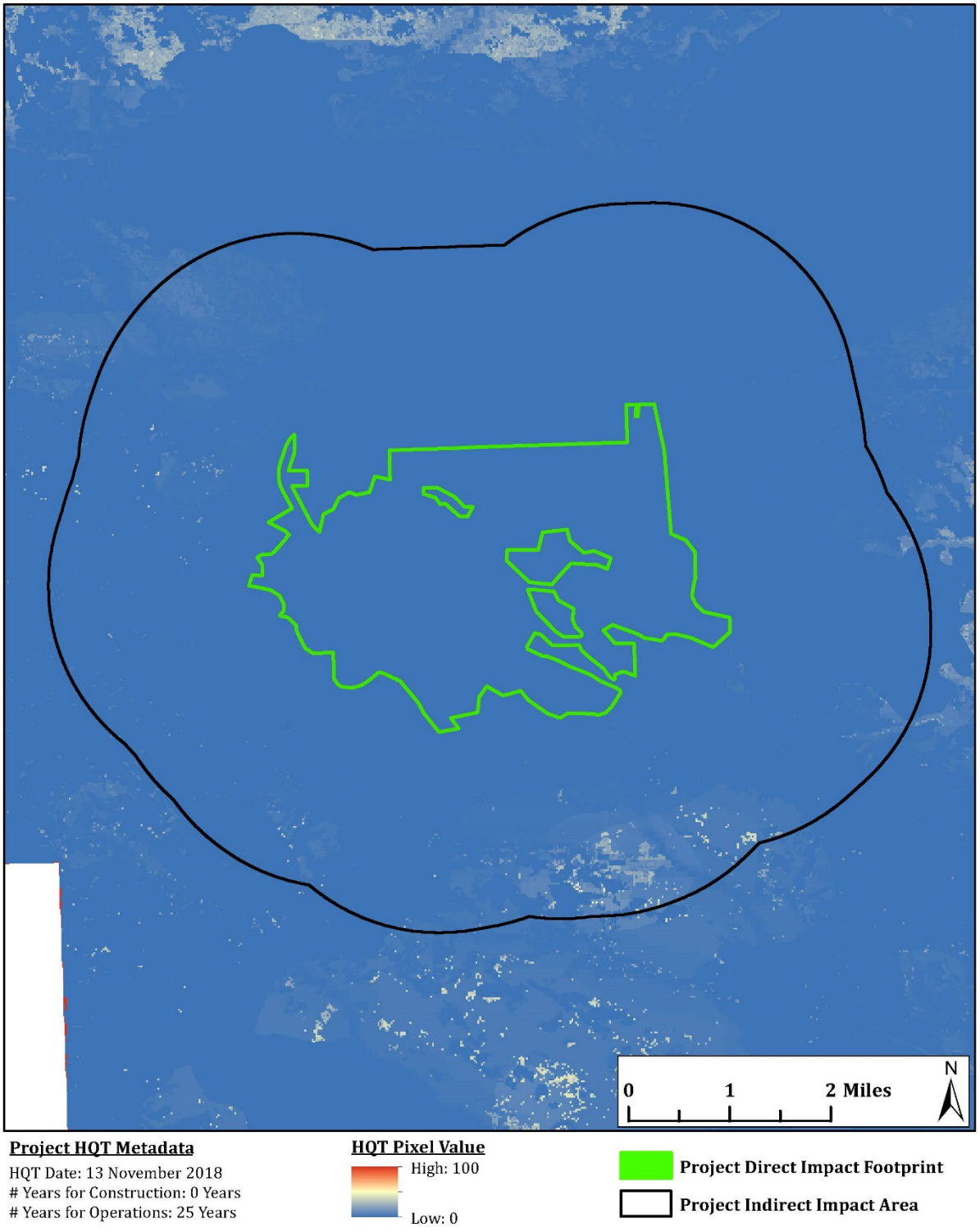

Figure 3. The Rosebud Mine AM5 expansion Disturbance Limits and the HQT Indirect impact buffer area overlaid on the HQT Basemap. The functional acres lost calculation is based on the difference in values between the Basemap and project impact buffer shown here.

HQT and Calculation of Project Impacts

The Program calculated the compensatory mitigation obligation based on Western Energy's decision to make a contribution to the Stewardship Fund. The HQT model run for the AM5 project resulted in a raw score of 3,137.72 functional acres lost due to the direct and indirect impacts for the life of the project. Added to this are the reserve account (20%) of 627.54 debits, and the advance payment (10%) of 313.77 debits for a total debit obligation of 4,079.03. No site-specific Executive Order stipulations apply to this project. Table 2 summarizes the debit obligations for this project.

Table 2: Compensatory Mitigation Debit Obligation Summary

Debit Component	Compensatory Mitigation Obligation
Raw HQT Score	3,137.72
Reserve Account	627.54
Advance Payment[13]	313.77
Site-Specific EO Stipulation	0
Total Debit Obligation	4,079.03
Total Stewardship Fund Contribution after applying Credit Discount Method	**$36,522.91**

Commitments

After working with the Program to fully consider all options for meeting their project debit obligations, Western Energy opted to make a contribution in the full amount of $36,522.91 to the Stewardship Fund for the Rosebud Area B AM5 project. A key condition of this option is that the contribution must be deposited after all permits are issued, but prior to commencing construction.

[13] Advance Payment to the Stewardship Account of 10%.

Appendix D – Comments on the Draft EIS and Responses (to be included in the Final EIS)

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