

**United States Department of the Interior
Office of Surface Mining Reclamation and Enforcement**

Spring Creek Mine

**Federal Coal Lease MTM 94378
Mining Plan Modification**

Environmental Assessment

June 2, 2016



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1.0 Purpose and Need

1.1 Introduction

The Environmental Assessment for the Spring Creek Mine Federal Coal Lease MTM 94378 Mining Plan Modification (EA) has been prepared by the Office of Surface Mining Reclamation and Enforcement (OSMRE), Western Region. This environmental assessment is related to developments associated with the U.S. Department of the Interior (DOI) Assistant Secretary, Land and Minerals Management (ASLM) 2012 federal mining plan modification approval for the Spring Creek Mine (SCM) for federal coal lease MTM 94378, as applied for by Spring Creek Coal Company (SCC). The 2012 federal mining plan modification approval was challenged by two sets of plaintiffs in two separate legal actions and those two challenges were consolidated into a single case in the United States District Court for the District of Montana (Montana District Court). On January 21, 2016, the Montana District Court issued a decision largely adopting the Magistrate Judge's findings and recommendations and holding that OSMRE had failed to fulfill certain of its obligations under the National Environmental Policy Act (NEPA) when it approved the 2012 federal mining plan modification. *WildEarth Guardians, et al. v. U.S. Office of Surface Mining Reclamation and Enforcement, et al*, Civil No. 14-13-SPW (D. Mont. 2016). According to the Montana District Court's order, OSMRE had failed to notify the public after it had issued its Finding of No Significant Impact (FONSI) for the federal mining plan modification in contravention of 43 CFR § 46.305(c). The Montana District Court also held that OSMRE had failed to adequately explain in its FONSI that OSMRE had taken a "hard look" at the environmental effects of approving the 2012 federal mining plan modification. Because of these procedural deficiencies in OSMRE's NEPA compliance, the Montana Court ordered OSMRE to prepare an updated EA within 240 days to analyze the environmental effects of the mining plan amendment for lease MTM 94378. The Montana District Court did not vacate the 2012 federal mining plan modification, but instead deferred vacatur for 240 days (September 17, 2016) to provide OSMRE time to prepare the updated EA. As indicated in the 2016 Montana Court Decision, the deferral of the vacatur for 240 days would allow OSMRE the opportunity to correct the NEPA violations without having detrimental consequences for SCC and its employees. Copies of the Magistrate Judge's October 23, 2015 recommendation and the District Court's January 21, 2016 opinion and order are provided in **appendix A**.

OSMRE is the lead federal agency responsible for development of this EA because, under the Surface Mining Control and Reclamation Act of 1977 (SMCRA), OSMRE has the authority to make a recommendation to the ASLM regarding federal mining plan modifications (OSMRE 1999). Using criteria outlined in OSMRE's Handbook for Implementing the National Environmental Policy Act (OSMRE 1989), the DOI's Departmental Manual (DM) Part 516 (DOI 2004), and the Council on Environmental Quality (CEQ) Regulations for Implementing the Procedural Provisions of the National Environmental Policy Act (CEQ 2005), OSMRE determined that this EA could tier to and incorporate by reference analyses included in the Environmental Assessment for Spring Creek Coal Lease by Application MTM 94378 EA# MT-020-2007-34 (hereafter 2006 LBA EA, BLM 2006), which was prepared by the Bureau of Land Management (BLM). OSMRE was a cooperating agency on the 2006 LBA EA. The 2006 LBA EA was the NEPA analysis document utilized by OSMRE to recommend approval of the 2012 SCC federal mining plan modification.

OSMRE has not reevaluated all potential impacts previously analyzed in the 2006 LBA EA. Rather, this EA will rectify those specific procedural deficiencies in OSMRE's documentation and approval

of the NEPA analysis for the 2012 federal mining plan modification and will also analyze potential changes to the extent or nature of those potential impacts previously evaluated, based on information included in State Mining Permit (SMP) C1979012 (SCC 2014) and new information related to the environmental consequences specific to this action. Disturbance and permit-boundary changes incorporated at the SCM since June 27, 2012 have been included in this EA.

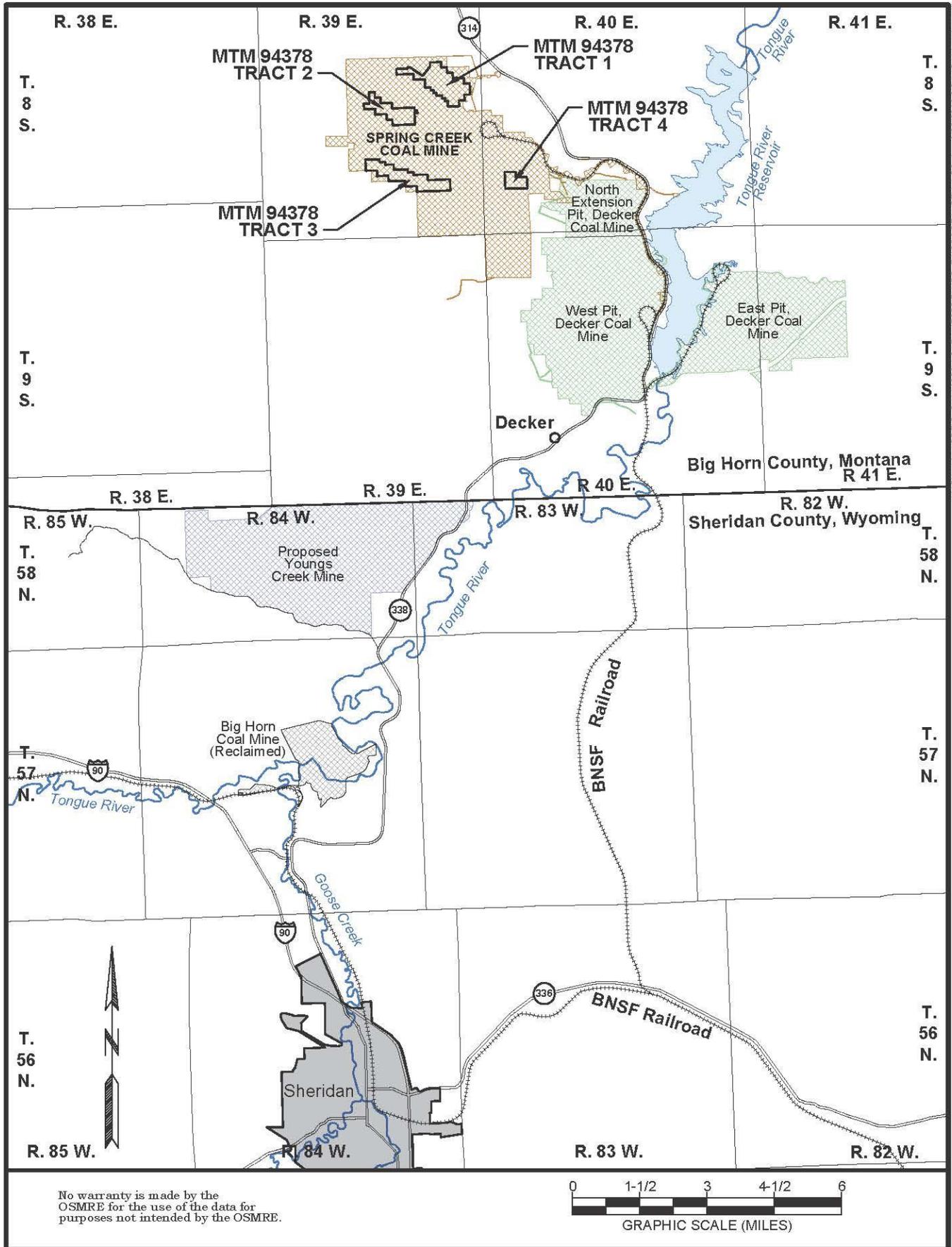
1.2 Background

The SCM is located in Big Horn County, Montana, approximately 32 miles north of Sheridan, Wyoming (**map I-1**). Coal has been mined on a commercial scale at the SCM since 1979. Ownership of the surface and mineral estate within the permit boundary was thoroughly discussed in section 3.11 of the 2006 LBA EA and surface and mineral estate ownership has not change since 2006. According to information provided by SCC (SCC 2016), the SCM is currently recovering coal under eight distinct coal leases, as indicated below and shown on **map I-2**:

1. State Coal Lease 1099-00,
2. State Coal Lease 1100-00,
3. State Coal Lease 1101-00,
4. State Coal Lease 1088-05,
5. Federal Coal Lease MTM 069782,
6. Federal Coal Lease MTM 088405,
7. Federal Coal Lease MTM 094378, and
8. Scrutchfield Coal Lease (private coal).

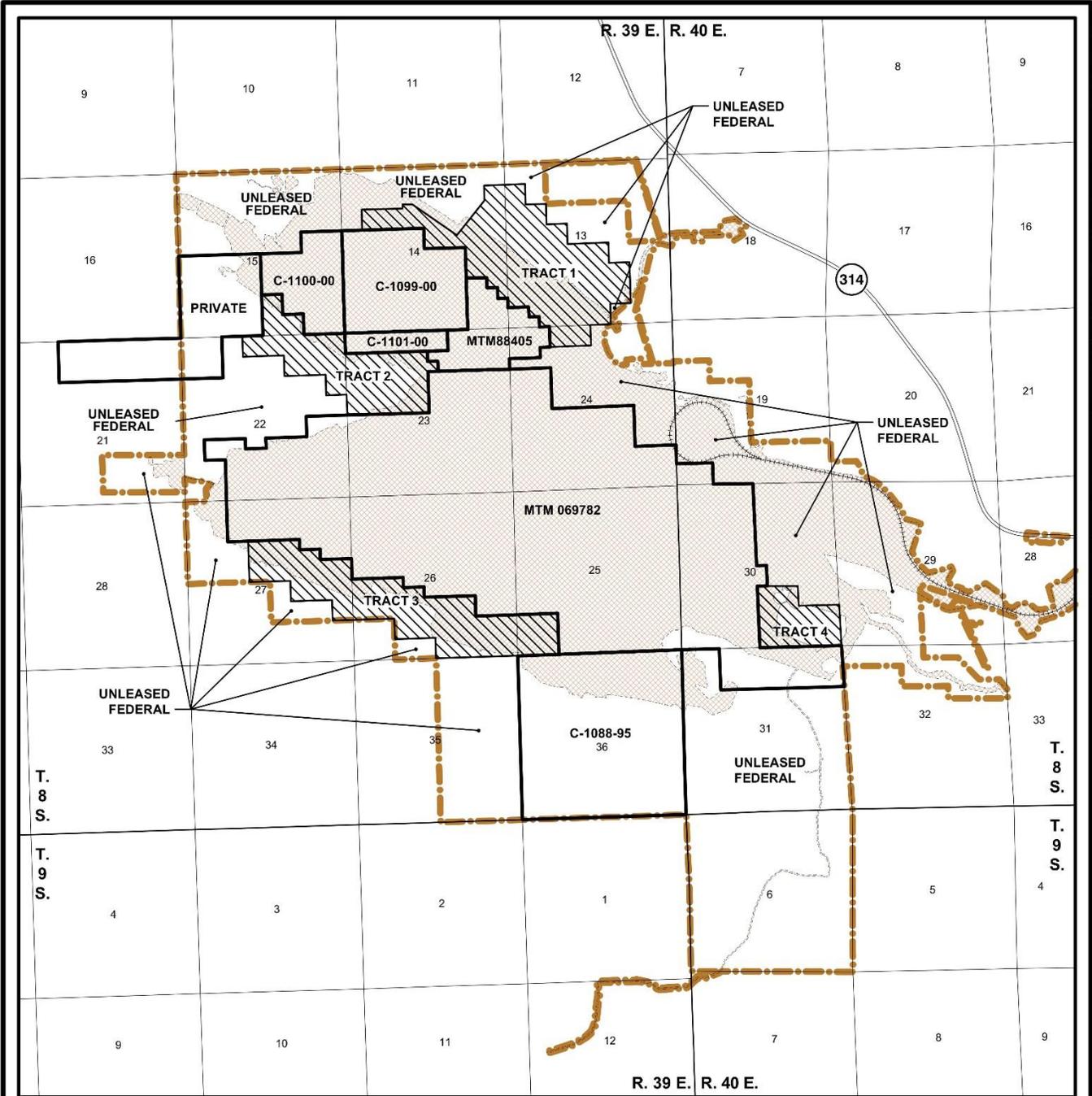
Coal is mined using conventional surface-mining methods and shipped from an onsite railroad loading facility to electric utilities and industrial customers in the northwest, midwest, northeast, and southwest United States, various Canadian provinces, and exported to Asian utility customers via the Westshore Terminal in British Columbia, Canada (Cloud Peak Energy [CPE] 2015). In 2014, approximately 73 percent of coal from the SCM was shipped to U.S. markets, approximately 24 percent went to Asian markets, and approximately three percent went to Canadian markets. As approved in the 2012 federal mining plan modification, SCC could continue mining operations (mining, processing, and shipping coal) through approximately 2025.

Chapter I - Purpose and Need



Map I-1. General Location of the Court-Ordered EA Tracts.

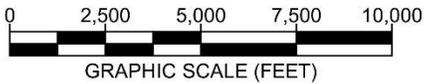
Chapter I - Purpose and Need



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No warranty is made by the OSMRE for the use of the data for purposes not intended by the OSMRE.



LEGEND

- Spring Creek Coal Mine Permit Boundary
- MTM 94378 Tracts
- C-1088-95 State Lease Numbers
- MTM 069782 Federal Lease Numbers
- Disturbed Areas Thru 2015

Map I-2. Configuration of the Proposed Court-Ordered EA Tracts and Coal Leases within the Spring Creek Coal Mine Permit Boundary.

In anticipation of needed additional coal reserves, SCC, operator of the SCM, filed an application in 2005 with BLM to lease federal coal in four separate tracts, under leasing on application regulations (also known as LBA regulations) at 43 Code of Federal Regulations (CFR) §3425.1 and the provisions of the Energy Policy Act of 2005 (Government Publishing Office [GPO] 1982 and Public Law No: 109-58 2005, respectively). The four tracts were applied for as maintenance tracts for the SCM to maintain operation at the mine's current average annual level of production, and were assigned case file number MTM 94378. BLM prepared the 2006 LBA EA to satisfy LBA NEPA requirements for LBAs. The 2006 LBA EA analyzed the potential impacts associated with approving the lease of the federal coal associated with MTM 94378, which would allow SCM to continue producing coal at the current rate instead of ceasing production, as recoverable coal reserves were nearly exhausted. As stated previously, OSMRE was a cooperating agency on this EA. Based on the NEPA evaluation included in the 2006 LBA EA, BLM concluded that the coal within the tracts was acceptable for leasing and that maximum economic recovery of the federal coal would be achieved by mining the tracts. BLM selected a modification of the 2006 LBA EA Proposed Action that removed approximately 89.9 acres of federal coal from the proposed lease that was associated with a prairie falcon eyrie and a rock art site in Tract I. The modified tracts included approximately 1,117.7 acres of federal coal.

After providing the public a 30-day public comment period and after conducting a public hearing on the proposed lease sale in Billings, MT, BLM issued a FONSI for the modified lease on March 2, 2007. The only comment received during the 30-day public comment period and BLM's December 6, 2006 public meeting in Billings, MT was one verbal comment at the public hearing in support of the project. BLM offered lease MTM 94378 for competitive auction on April 17, 2007. The lease of federal coal associated with MTM 94378 was issued to SCC on November 9, 2007 with an effective date of December 1, 2007. The MTM 94378 tracts as leased are shown on **map 1-2**.

SCC requested a permit revision from the Montana Department of Environmental Quality (MDEQ) to include the federal coal from the newly acquired MTM 94378. SCC submitted the permit application package (PAP) to MDEQ on January 23, 2008 under the approved Montana State Program for a permit revision (Amendment Application 00183) for SMP C1979012. The PAP included modifications to include coal from MTM 94378 and from previously approved MTM 069782 and MTM 088405, which would open access to MTM 94378. MDEQ determined SCC's application to be administratively complete on August 6, 2009. MDEQ completed a checklist EA pursuant to the Montana Environmental Policy Act (MEPA) to assess the potential environmental impacts of the PAP in May 2011 (MDEQ 2011a). While checklist EAs generally provide a less detailed form of NEPA analysis, the MDEQ checklist EA fulfilled MEPA requirements based on the level of analysis and the anticipated degree of public involvement, which depended on the significance of the potential or identified environmental impacts (Montana Legislature 2002). Following a public comment period during which no comments were received, MDEQ approved the permit revision on June 21, 2011 (MDEQ 2011b).

SCC also received mining authorization for federal lease MTM 94378 from OSMRE through the federal mining plan modification process. The federal mining plan modification was initially proposed by SCC in 2008. Following a consultation and review process, OSMRE issued a FONSI on June 5, 2012 recommending to the ASLM approval of the SCM federal mining plan modification. The ASLM approved the federal mining plan modification on June 27, 2012, which added federal lease MTM 94378 (1,117.7 acres) to the previously approved federal mine plan area that included all of leases MTM 069782 and MTM 088405. Mining within the MTM 94378 tracts has been ongoing since the federal mining plan modification was approved in 2012 and, as of Spring Creek Mine LBA EA

December 2015, approximately 18.4 million tons (Mt) of the 103.2 Mt of federal coal had been recovered and 124.2 acres have been disturbed associated with recovering the LBA coal had been disturbed within the four tracts. The 2006 LBA EA projected the additional disturbance from MTM 94378 to be 799.4 acres. The actual permitted additional disturbance from MTM 94378 was 627.9 acres, leaving 503.7 acres to be disturbed. The 2012 federal mining plan modification boundary and the federal coal lease tracts in relation to the SCM, including the current disturbance, are shown on **map I-2**.

Table I-1 provides a comparison of the tonnages of federal coal *added* as a result of the approval of the MTM 94378 federal coal lease, the 2011 revision to SMP C1979012, the 2012 federal mining plan modification, and the 2015 tonnages with and without the federal mining plan approval. It is important to note that the estimates of recoverable federal coal included in the MDEQ's 2011 environmental assessment for SCC's Pearson Creek Amendment for SMP C1979012 and OSMRE's 2012 federal mining plan decision document (MPDD) differ from the amount of recoverable federal coal included in federal lease MTM 94378 approved by BLM in 2007. The 5.3 Mt difference in the amount of recoverable coal is due to the reanalysis of geologic data by SCC and the subsequent refinement of estimates of the federal coal available for recovery. For the purposes of this environmental analysis, the recoverable tons of 103.2 Mt from the 2007 BLM approval of MTM 94378 lease sale were chosen to conservatively estimate the environmental effects of the project.

1.2.1 Statutory and Regulatory Background

For existing approved federal mining plans that are proposed to be modified, OSMRE prepares a MPDD for a federal mining plan modification. The ASLM reviews the MPDD and decides whether or not to approve the federal mining plan modification, and if approved, what, if any, conditions may be needed. Pursuant to 30 CFR Part 746 (GPO 2015), OSMRE prepared and submitted an MPDD to the ASLM recommending approval of SCM's 2012 federal mining plan modification (GPO 2012c). OSMRE's recommendation regarding the reevaluation of the federal mining plan modification will be based, at a minimum, on

1. the PAP,
2. the Resource Recovery and Protection Plan (R2P2),
3. information prepared in compliance with NEPA, including this EA,
4. documentation demonstrating compliance with the applicable requirements of federal laws, regulations, and executive orders other than NEPA,
5. comments and recommendations or concurrence of other federal agencies and the public,
6. findings, recommendations, and contractual commitments and requirements of BLM with respect to lease MTM 94378, the R2P2, and the Mineral Leasing Act of 1920, as amended (MLA),
7. findings and recommendations of MDEQ with respect to the mine permit revision application and the Montana State program, and
8. the findings and recommendations of OSMRE with respect to the additional requirements of 30 CFR Chapter VII, Subchapter D (30 CFR Parts 740 to 746).

Table I-1. Comparison of the Past and Present Actions Related to the Addition of the Remaining Federal Coal Associated with Federal Coal Lease MTM 94378

Item	BLM Approval of 2007 MTM 94378 Lease Sale EA	State Approval of 2011 MDEQ Pearson Creek Amendment	ASLM Approval of 2012 SCM's Federal Mining Plan	Federal Mining Plan Modification Not Approved As of December 31, 2015	Federal Mining Plan Modification Approved As of December 31, 2015
Mineable Federal Coal ²	108.6 Mt	102.9 Mt	102.9 Mt	0 Mt	89.3 Mt
Recoverable Federal Coal	103.2 Mt	97.9 Mt ³	97.9 Mt	0 Mt	84.8 Mt ⁴
Coal Lease Area-Federal Leases	1,117.7 acres	1,117.7 acres	1,117.7 acres	0 acres	1,117.7 acres
Total Area to Be Disturbed	799.4 acres	1,224.0 acres ⁵	1,224.0 acres ⁵	35.5 acres ⁶	503.7 acres ⁷
Estimated Average Annual	15 Mt	20 Mt	19 Mt	5 Mt ⁸	18 Mt
Years Added	6.9 yrs.	4.9 yrs.	5.2 yrs.	0 yrs.	4.7 yrs.

¹ BLM Lease Sale Notice Federal Register 3-30-07 Vol 72, No. 61 Says "total recoverable reserves are estimated to be 108.6 Mt (BLM uses this number as mineable tons for the R2P2 for this reason it is used as "mineable" for this table. $108.6 \times 0.95 = 103.2$ Mt

² Calculated from recoverable coal, assuming a 95 percent recovery factor of mineable coal

³ Includes only recoverable federal coal from MTM 94378. The MDEQ approved Pearson Creek Amendment also added 16.38 Mt of federal coal from MTM 069782 and 3.05 Mt MTM 088405

⁴ This number reflects the amount of recoverable coal from the lease sale MTM 94378 (103.2 Mt) minus the recovery of 18.4 Mt of federal coal from MTM 94378 since 2012

⁵ This number reflects the acres of disturbance approved in the 2012 ASLM Approval of SCM's Federal Mining Plan Modification

⁶ This number reflects the estimated acres within the 627.9 acres to be disturbed to reclaim the MTM 94378 lease are, if the lease is not reapproved

⁷ This number reflects the remaining acres of approved disturbance associated with the four tracts, as of December 31, 2015 (627.9 – 124.2)

⁸ Approximately 2 years at 0 Mtpy to revise the state and federal permits. Annual production to resume at a rate of approximately 5 Mt starting in 2018

1.3 Purpose and Need

On January 21, 2016, the Court held that NEPA violations occurred associated with the ASLM's 2012 approval of SCM's federal mining plan modification, which approved the mining of the federal coal within MTM 94378 and the federal coal within MTM 069782 and MTM 088405 within the boundaries of SMP C1979012. The Court order required OSMRE correct the NEPA violations by preparing an updated EA that takes a hard look at the direct and indirect environmental effects of the SCC federal mining plan amendment and complies with applicable public notice and participation requirements. The order allows the 2012 federal mining plan approval to remain in force for 240 days, from the January 21, 2016 Court decision (September 17, 2016), while the action is considered, but as described in the court's order, the deadline can be extended for good cause. As a result, a need has been identified for OSMRE to re-evaluate its 2012 federal mining plan modification recommendation to the ASLM, pursuant to the requirements of NEPA, so that the ASLM can issue a new decision whether to approve, disapprove, or approve the federal mining plan modification with conditions.

The purpose of the EA is to allow OSMRE the opportunity to take a hard look at the direct and indirect environmental effects of the SCM federal mining plan modification request, and comply with the applicable public notice and participation requirements. The mining sequence included in the 2012 federal mining plan modification approval and reevaluated in this EA primarily involved

federal coal reserves associated with MTM 94378 but also included the federal coal within MTM 069782 and MTM 088405.

I.4 Regulatory Framework and Necessary Authorizations

The following key laws, as amended, establish the primary authorities, responsibilities, and requirements for developing federal coal resources:

1. MLA,
2. NEPA,
3. Federal Coal Leasing Act Amendment, 1976 (FCLAA),
4. Federal Land Policy Management Act of 1976 (FLPMA),
5. SMCRA,
6. Multiple-Use Sustained Yield Act of 1960,
7. Endangered Species Act of 1973 (ESA),
8. Clean Air Act, as amended (CAA),
9. Safe Drinking Water Act, as amended (SDWA),
10. National Historic Preservation Act, as amended (NHPA),
11. American Indian Religious Freedom Act of 1978 (AIRFA), and
12. Migratory Bird Treaty Act of 1918, as amended (MBTA).

In addition, this EA follows guidance in DOI 516 DM (DOI 2004), which, as outlined in 43 CFR Part 46 (U.S. Government Publishing Office [GPO] 2011), is the DOI manual guiding the implementation of the NEPA process. An MPDD will be prepared and submitted to the ASLM for the reconsidered federal mining plan modification.

I.5 Issues Identification

Following a review of OSMRE's 2012 federal MPDD, the 2006 LBA EA, and 2011 MDEQ Checklist Environmental Assessment (MDEQ 2011a) and written findings on the Pearson Creek Amendment, Application 00183 (MDEQ 2011b), OSMRE determined that further analyses were appropriate, based on newly available information and changes to the environmental consequences of the Proposed Action that have occurred since the 2006, 2011, and 2012 analyses mentioned above. Internal discussions within OSMRE identified a preliminary set of issues to be considered during the NEPA analysis. Substantive issues identified during the public scoping period (February 11 through March 12, 2016) were also considered during the document preparation. The public scoping comment letters are included in **appendix E** and the summarized issues and the number of comments received associated with each issue (in parentheses) include

1. water quality (3),
2. air quality (3),
3. wildlife (2),
4. level of NEPA/ NEPA process (8),
5. noise (1),
6. reclamation (2),
7. climate change/global warming (3),
8. adequacy of permitting (2),
9. negative effects (loss of revenue) on economy from any delay or shutdown of mining at SCM (1,883*), and
10. pro mining (1,885*).

* An asterisk indicates that the number includes form letters comments

1.6 Crosswalk of Resource Areas

Since OSMRE relied heavily on the 2006 LBA EA for its 2012 FONSI and for its subsequent recommendation of approval for the 2012 federal mining plan modification, this EA tiers and incorporates by reference the 2006 LBA EA. Table 1-2 identifies the location of resource discussions included in the 2006 LBA EA and lists their location in this EA, where present. While all of the resources have been considered, not all of the resources have been brought forward to chapter 3 (Affected Environment) for further analysis in this EA. OSMRE determined that affected environment discussions not brought forward to chapter 3 had been sufficiently documented in the 2006 LBA EA, BLM FONSI and Decision Record (DR). The 2006 LBA EA, BLM FONSI and DR are incorporated by reference into this EA and are not reiterated. New issues or affected environment information that could potentially change the environmental consequences discussions originally described in the 2006 LBA EA are included herein. The 2006 LBA EA can be accessed on line at:

http://www.blm.gov/pgdata/etc/medialib/blm/mt/field_offices/miles_city/coal.Par.88925.File.tmp/springcreekEA.pdf.

1.7 Public Involvement

On February 10, 2016, OSMRE posted an announcement of the EA on their Initiatives webpage (OSMRE 2016). The announcement initiated a comment period that extended from February 11 through March 12, 2016. OSMRE also published a notice of intent (NOI) to prepare this EA in both the Sheridan Press and Big Horn County News on February 11 and 25, 2016 initiating a comment period, ending on March 12, 2016. Public outreach and Tribal consultation letters were also sent out to interested parties, stakeholders and tribes that could be affected by the project. OSMRE received written and e-mailed comments from 1,889 entities. A form letter in favor of the SCM accounted for 1,875 comments. Public comments were reviewed and new substantive concerns were considered during the issues identification process. Lists of agencies, tribes, and individuals included on mailing lists and the public scoping comment letters received are included in **appendix E**. OSMRE announced the availability of the EA on their *Initiatives* webpage (OSMRE 2016) on June 2, 2016 and published a notice of availability (NOA) for the EA and unsigned FONSI in the Sheridan Press and the Big Horn County News on June 2, 2016, and June 16, 2016. Public outreach and Tribal consultation letters were also sent out to interested parties, stakeholders and tribes that could be affected by the project. The EA and unsigned FONSI are being provided to the public for review and comment for a 33-day period. The comments will be evaluated and considered before the FONSI is signed and the federal mining plan decision is issued.

Table I-2. Crosswalk of Resources Analyzed in the 2006 LBA Expansion EA ¹ and in OSMRE's 2016 LBAI EA

Resource	2006 Expansion LBA EA ¹ Affected Environment	2016 LBAI Environmental Consequences	2016 LBAI Affected Environment	2016 LBAI Issues Revisited	2016 LBAI Environmental Consequences
General Setting	3.1	4.1.1	Incorporated by reference	No new issues identified	Not carried forward
Topography and Physiography	3.2	4.1.1	Incorporated by reference	No new issues identified	4.2
Geology, Minerals, and Paleontology	3.3 (3.3.1 & 3.3.2)	4.1.2	Incorporated by reference	General refresher	4.3
Air Quality	3.4 (3.4.1 through 3.4.6)	4.1.3	3.1	Update AQ discussions to include new AQ information and add greenhouse gas discussions	4.4
Water Resources	3.5 (3.5.1 & 3.5.2)	4.1.4	3.2 (3.2.1 & 3.2.2)	Update surface and groundwater rights.	4.5
Alluvial Valley Floors	3.6	4.1.5	Incorporated by reference	No new issues identified	4.6
Aquatic Resources (Wetlands)	3.7	4.1.6	Incorporated by reference	No new issues identified	4.7
Soils	3.8	4.1.7	Incorporated by reference	No new issues identified	4.8
Vegetation	3.9	4.1.8	Incorporated by reference	No new issues identified	4.9
Wildlife (Including Threatened and Endangered and Special Status Species)	3.10 (3.10.1 through 3.10.7) Appendices C & F	4.1.9	3.3 (3.3.1 & 3.3.2)	Update raptor nest locations from annual reports; Update Greater sage-grouse discussions; Update T&E and special status species discussions	4.10
Ownership and Use of Land	3.11	4.1.10	Incorporated by reference	No new issues identified	4.11
Cultural Resources	3.12	4.1.11	3.4	Update related to BLM stipulations	4.12
Visual Resources	3.13	4.1.12	Incorporated by reference	No new issues identified	4.13
Noise	3.14	4.1.13	Incorporated by reference	No new issues identified	4.14
Transportation	3.15	4.1.14	Incorporated by reference	No new issues identified	4.15
Hazardous and Solid Waste	3.16	4.1.15	Incorporated by reference	No new issues identified	4.16
Socioeconomics	3.17 (3.17.1 through 3.17.6)	4.1.16	3.5 (3.5.1 & 3.5.2)	Update Economics Discussions to Reflect Current Conditions	4.17
Local Short-Term Uses of Man's Environment and the Maintenance and Enhancement of Long-Term Productivity	Not Addressed	Not Addressed	This resource is not Addressed in chapter 3	Add discussion to chapter 4 , as required in 40 CFR §1502.16	4.18

¹ Environmental Assessment for Spring Creek Coal Lease Modification MTM 94378 (BLM 2006)

2.0 Proposed Action and Alternatives

Under the requirements of NEPA, an EA must evaluate the environmental impacts of a reasonable range of alternatives that meet the project's purpose and need. The DOI's NEPA implementing regulations define reasonable alternatives as those that are "technically and economically practical or feasible and meet the purpose and need of the proposed action" (43 CFR 46.420).

Therefore, this chapter describes the Proposed Action and the No Action Alternative considered and analyzed in detail in this EA. In addition, it identifies alternatives considered but eliminated from detailed analysis.

For the purposes of clarifying the Proposed Action and No-Action Alternative discussions included in this EA, a distinction needs to be made between the 2012 federal mining plan modification approved by the ASLM and MDEQ's 2011 approval of Amendment Application 00183 for SMP C1979012. The 2012 federal modification updated the federal mining plan to add federal coal lease MTM 94378 (1,117.7 acres), which contained approximately 97.9 Mt of recoverable federal coal. The 2012 federal mining plan modification memo also discussed 19.43 Mt of recoverable coal associated with federal coal leases MTM 069782 and MTM 088405 but this federal coal had already been added to SCC's federal mining plan (OSMRE 2012). The 2011 MDEQ permit amendment (Application 183) approval included mining additional federal (117.3 Mt [97.9 Mt from MTM 94378]), state (48.9 Mt), and private (4.5 Mt) recoverable coal that had not been included in the previous revision to SMP C1979012. It is important to note that, due to a reanalysis of geologic and engineering data by SCC, the estimated amount of recoverable coal included in MTM 94378 and referred to in this EA has been increased from 97.9 Mt to 103.2 Mt.

2.1 Description of Alternatives

Since OSMRE relied on the 2006 LBA EA for its 2012 FONSI and for its subsequent recommendation of approval for the 2012 federal mining plan modification, the Proposed Action and No Action Alternative analyzed in this EA reflect the alternatives considered in the 2006 LBA EA. In addition, this EA also reflects the modified alternative selected by BLM when approving the lease of the federal coal associated with MTM 94378 (BLM 2007) and on MDEQ's 2011 written findings to SCC's 2008 PAP for a permit revision to include MTM 94378 (MDEQ 2011c). Descriptions of the alternatives analyzed by this EA are summarized in **table 2-1** and discussed below.

Although coal will be recovered from MTM 94378 between December 31, 2015 and September 2016 (the anticipated ASLM decision date), this quantity is constantly changing. Since utilizing the December 31, 2015 cutoff date would evaluate the greatest potential for impacts, this EA will evaluate impacts based on the quantity of coal remaining as of the December 31, 2015. For the purposes of this analysis, an 18 million tons per year (Mtpy) recovery rate proposed by SCC will be used for the Proposed Action analysis (SCC 2016). Under the No Action Alternative, annual production would be 0 Mt for approximately 2 years while SCC revised the state and federal permits to accommodate for the loss of the federal coal associated with MTM 94378. Annual production would resume at a rate of approximately 5 Mt starting in 2018. The SCM's current Montana Air Quality Permit (MAQP) #1120-12 allows a maximum coal production of 30 Mtpy (MDEQ 2012).

Table 2-1. Summary Comparison of Coal Production, Surface Disturbance, Mine Life, and Employees for the No Action Alternative and Proposed Action Specific to MTM 94378, as of December 31, 2015

Item	2012 Mine Values	December 31, 2015 Projections Under No Action Alternative	December 31, 2015 Projections Under Proposed Action
Remaining MTM 94378 Recoverable Federal Coal	97.9 Mt ¹	0.0 Mt	84.8 Mt
Total Area to Be Disturbed	6,022.0 acres	553.8 acres	6,022.0 acres
Estimated Average Annual Production	19 Mt	5 Mt ²	18 Mt
Remaining Years from Recovering Federal Mine Plan Coal	9.0 yrs. ³	1.4 yrs. ³	5.1 yrs. ³
Average Number of Employees	259	80	282

¹ This amount reflects the tonnage of recoverable coal indicated in the 2012 federal mining plan approval.

² Under the No Action Alternative, annual production would be 0 Mt for approximately 2 years while SCC revised the state and federal permits. Annual production would resume at a rate of approximately 5 Mt starting in 2018

³ Mining of federal coal would be done in sequence with mining other state and private coal leases, which extends the estimated LOM beyond the years indicated

2.1.1 Proposed Action

The Proposed Action reflects the potential impacts of any new decision by OSMRE and the ASLM to re-approve 2012 federal mining plan modification approval that allowed the mining of the federal coal associated with MTM 94378. The 2012 approved federal mining plan modification included adding approximately 97.9 Mt of recoverable federal coal associated with MTM 94378, disturbing an additional 799.4 acres of surface land within the permit area, and conducting mining operations from 2012 through 2025. The 2006 LBA EA projected the additional disturbance from MTM 94378 to be 799.4 acres. The actual permitted additional disturbance from MTM 94378 is 627.9 acres, leaving 503.7 acres to be disturbed. Approximately 18.4 Mt of federal coal had been recovered from MTM 94378 as of December 31, 2015 implying that approximately 84.8 Mt of federal coal remained to be recovered from MTM 94378 under the Proposed Action. An additional 6.8 Mt of federal coal remained in federal leases MTM 069782 and MTM 088405, as of December 31, 2015. A majority of the federal coal included in the Proposed Action would be shipped to coal-fired power plants in the U.S. (SCC 2016). In 2014, approximately 73 percent of coal mined at the SCM was shipped to U.S. markets.

While the impacts analyses included in **chapter 4** span the timeframe from 2012 (after the approval of the federal mining plan modification, through 2025, inclusive of the mining operations and disturbance that have already occurred over the last 4 years) the Proposed Action spans the timeframe from December 31, 2015 through 2025. Mining of federal coal would be done in sequence with mining other state and private coal leases. This sequential mining would extend the estimated life of mine (LOM) to 2025, beyond the 5.1 years estimated in **table 2-1**, which was determined by dividing the tons of federal coal reserves remaining in MTM 94378 by an estimated 18 Mtpy recovery rate.

2.1.2 No Action Alternative

Under the No Action Alternative, ASLM would not approve the 2012 federal mining plan modification described above under the Proposed Action. The 2012 approval would be vacated and the federal coal remaining within the MTM 94378 federal lease tracts as of September 17, 2016 (240 days from the January 21, 2016 order of the U.S. District Court for the District of Montana) would not be recovered. The No Action Alternative spans the timeframe from December 31, 2015 through 2020 and assumes there would be no further coal recovery from

the MTM 94378 tracts beginning in September 2016. If the 2012 mining plan is not reapproved but is instead vacated as contemplated under the No Action Alternative, SCC would be unable in the near-term to complete its required reclamation commitments within the boundaries of the MTM 94378 tracts. According to 30 CFR §746.11, “[n]o person shall conduct surface coal mining and *reclamation operations* on lands containing Federal coal until the Secretary has approved the mining plan” (emphasis added) (GPO 2015). In addition, vacating the 2012 federal mining plan would require revisions to the MDEQ-approved SMP C1979012 and the BLM-approved R2P2 to modify the reclamation plan, maximum economic recovery conditions, and coal recovery plans for areas within boundaries of the SMP C1979012, but outside the MTM 94378 tracts.

As stated above, approximately 18.4 Mt of federal coal were recovered from MTM 94378 from 2012 through December 31, 2015, and approximately 84.8 Mt of recoverable federal coal remains in MTM 94378. Under the No Action Alternative, mining would cease within the boundaries of MTM 94378 and would also cease on other federal and non-federal leases within the SMP boundary for approximately 2 years while SCC reconfigured its mining operations and applied for, and obtained, MDEQ approval for a revised SMP. Assuming that mining at the SCM was still economical without lease MTM 94378 and assuming that MDEQ approved any required revisions to SMP C1979012, coal at SCM would be produced an estimated production rate of approximately 5 Mtpy at the SCM after 2018. No additional federal coal would be recovered from MTM 94378 after September 17, 2016. Under this scenario, SCC would be limited to recovering the remaining federal coal reserves associated with MTM 069782 and MTM 088405 federal leases and coal within state and private leases. A majority of the federal coal included in the No Action Alternative would continue to be shipped to coal-fired power plants in the U.S.

2.1.3 Alternatives Considered but Eliminated from Detailed Analysis

OSMRE considered alternative scenarios to the approval or denial of the federal mining plan modification. However, since OSMRE's decision would be limited to approving, approving with conditions, or denying the mining plan modification, OSMRE concluded that there are no other reasonable action alternatives to the Proposed Action that would meet the agency's purpose and need. The following alternatives were considered but eliminated from detailed analysis. The discussions include reasons the alternatives were eliminated from detailed analysis.

2.1.3.1 Underground Mining Alternative

An alternative to require SCC to use underground mining methods to extract the coal was identified in public comments received during the outreach period, considered by OSMRE, and eliminated from detailed study because MDEQ has approved a surface mining permit for this project using surface mining techniques, and underground mining is inconsistent with the approved permit. The purpose and need for this EA is predicated upon review of a surface mining plan included as part of the MDEQ-approved surface mining permit. An Underground Mining Alternative would, thus, be inconsistent with the Purpose and Need for this action.

Also, lease MTM 94378 is a surface reserve lease only. The lease was sold by the federal government and purchased and held by the SCC with the clear understanding by all parties concerned that the lease would be mined by surface mining methods only (BLM 2007).

This alternative is also economically infeasible at current permitted production rates, and the economics of initiating an underground longwall mining operation in the SCM are not cost effective. The facilities and equipment needed for underground mining are different from surface mining. Because the infrastructure for underground mining is not in place at the SCM, new infrastructure for underground mining would need to be constructed. The capital expenditure to

develop an underground mine would be prohibitive. In addition, all new surface facilities would need to be constructed, including, but not limited to, conveyors, coal stock piles, a wash plant, and maintenance and support facilities. In addition, all new underground mining equipment would need to be purchased such as, but not limited to, a long wall mining system, conveyor systems/drives/power stations, vehicles for transporting employees and supplies, several continuous miners, shuttle cars, large and small ventilation fans, and roof bolters.

In addition, approval by MDEQ of an application for a permit revision would be required to authorize underground mining. The process for SCC to design and engineer a new underground mine and for MDEQ to process a new permit application would take a number of years. Underground mining methods are inconsistent with the approved R2P2 and would result in much lower recovery rates; approximately 75 percent (Kentucky Geological Survey 2012) compared to 95 percent (SCC 2016). These factors also result in this potential alternative being economically unreasonable.

This alternative was not brought forward for detailed analysis because underground mining does not respond to the purpose and need for this action and the economic burden to shift to underground mining would be prohibitive.

2.1.3.2 Low or No Pollutant Emitting Equipment

Public comments suggested considering an alternative that required reduced air emissions at the mine by changing or modifying mining related equipment to equipment which would produce lower air emissions. The SCM is a relatively small contributor of the emissions related to engine combustion (primarily carbon dioxide [CO₂] and oxides of nitrogen [NO_x]) in the region.

The cost to make the switch to equipment powered by a different fuel (such as natural gas or solar powered equipment) for 1,117.7 acres of federal coal would be cost prohibitive for the minimal benefit to the regional air quality. In addition, the use of natural gas powered engines in mining equipment is relatively new and some types of equipment would not be available for replacement with natural gas powered engines. The use of solar power to run large equipment has not been tested and is not considered technologically feasible at this time. Similarly, retrofitting existing equipment with additional emissions control devices would be expensive with limited effect on regional air emissions.

OSMRE has not brought forward this alternative for full analysis because requiring natural gas and solar powered engine technology and retrofitting existing equipment is not economically or technically feasible for all equipment at the SCM; and would likely have substantially similar effects to an alternative that is analyzed.

2.1.3.3 Air Quality Mitigation Alternatives

Some public comments suggested that OSMRE consider alternatives that mitigate air quality impacts, specifically by imposing more stringent emission limits at power plants fueled by the SCM and by requiring oil and gas operators in the region to reduce their emissions. These proposals are not alternatives to the mining plan being considered. The effects of coal combustion are analyzed in the Proposed Action as well as in the No Action Alternative because they are considered to be indirect effects. CEQ regulations at 40 CFR 1508 (b) define “indirect effects” as those which are caused by the proposed action and are later in time or farther removed in distance, but are still reasonably foreseeable. These indirect effects would occur as a result of burning the coal that is mined. The analysis concluded there would not be significant impacts to air resources under the Proposed Action and no mitigation was recommended. Any mitigation

measure proposed by OSMRE imposing more stringent emission limits at generating stations and upon oil and gas operators is beyond OSMRE's authority and its implementation would be highly remote and speculative.

2.2 Existing Conditions (Conditions Common to the Proposed Action and the No Action Alternative)

2.2.1 Mining Plan and Mining Operations

The SCM is currently permitted to mine coal under the ASLM-approved federal mining plan (OSMRE 2012), the MDEQ-approved SMP C1979012 (MDEQ 2014a), and the BLM-approved R2P2 (BLM 2011). SCC continues to use conventional surface-coal mining techniques described in Section 2.1.1 of the 2006 LBA EA. SCC is permitted to mine a maximum of 30 Mtpy under MDEQ MAQP #1120-12 (MDEQ 2012). SCC mined approximately 17.0 Mt of coal in 2015 (SCC 2016). In 2015, the majority of coal mined at the SCM was shipped to coal-fired power plants in the U.S. As stated in **section 1.2**, the SCM currently operates under three federal coal leases, four state coal leases, and one fee coal lease. Federal, state, and fee coal lease areas are depicted on **map 1-2**.

Through December 31, 2015, approximately 305.3 Mt of federal coal reserves have been recovered at the SCM, with a majority (89 percent) of that coal associated with federal coal lease MTM 069782 (SCC 2016). From 2013 through 2015, SCC recovered approximately 52.0 Mt of coal from all permitted operations, at an average rate of 17.3 Mtpy (SCC 2016). Approximately 93 percent of the remaining federal coal within SMP C1979012 is within MTM 94378 (SCC 2016).

2.2.2 Current Bonding and Bond Release Status

SMCRA provides that, as a prerequisite for obtaining or modifying a coal mining permit, permittees must post a reclamation bond to ensure that the regulatory authority will have sufficient funds to reclaim the site if the permittee fails to complete obligations set forth in the approved reclamation plan (OSMRE 2015). As part of SMP C1979012 permit amendment (Application 00183), MDEQ determined that SCM's bond should increase from \$109.6 million to \$114.96 million (MDEQ 2011c). Spring Creek Coal Company submitted a bond rider for an addition \$5.3 million to ensure that reclamation for the amendment area is completed in accordance with the permit, MDEQ rules, and SMCRA and the bond rider was subsequently approved by MDEQ on June 23, 2011 (MDEQ 2011b). The current bond amount is \$119.9 million and was approved by MDEQ on August 4, 2015.

There are four phases of bond release that Montana mine operators may request for the release of a performance bond or deposit regarding areas disturbed by coal removal. As outlined in Administrative Rule of Montana (ARM) 17.24.1116 (Bonding: Criteria and Schedule for Release of Bond [Montana Secretary of State 2015]), the four bond release phases for lands disturbed by coal mining are

1. Phase I – when the permittee completes the backfilling, regrading, and drainage control of a bonded area,
2. Phase II – when the permittee has completed soil replacement and spoil and soil tillage, and vegetation is established in accordance with the approved reclamation plan,
3. Phase III – when the revegetation criteria applicable to and consistent with the approved postmining land use is met, and

4. Phase IV – the remaining portion of the bond may be released after the permittee has successfully completed all surface coal mining and reclamation activities and all disturbed lands within any designated drainage basin have been reclaimed in accordance with the Phase I, II, and III requirements.

The acres of reclamation at the SCM from 2012 through December 2015, by bond release phase, are indicated in **table 2-2**.

Table 2-2. Total Mine Disturbance/Reclamation/Bond Release 2012 through December 31, 2015

Year	Total Disturbance	Facility Disturbance	Active Mining Area	Available for Seeding	Soiled & Seeded	Phase I	Phase II	Phase III	Phase IV
2012	4,058.5	975.3	1,983.3	1,099.9	1,066.3	982.0	622.2	0.0	0.0
Ratio of Total	--	24%	49%	27%	26%	24%	15%	0%	0%
2013	4,229.0	988.7	2,095.8	1,144.5	1,097.9	979.7	619.7	0.0	0.0
Ratio of Total	--	23%	50%	27%	26%	23%	15%	0%	0%
2014	4,371.1	996.8	2,171.5	1,202.8	1,173.5	982.0	622.2	0.0	0.0
Ratio of Total	--	23%	50%	28%	27%	22%	14%	0%	0%
2015	4,626.8	1,074.3	2,296.6	1,255.9	1,213.3	1,042	780.2	407	0.0
Ratio of Total	--	20%	45%	23%	27%	28%	23%	16%	0%

Source: 2012 through 2015 Annual Mining Reports for the SCM for SMP C1979012. Total disturbance includes the Facility Disturbance, Active Mining Area, and the area Available for Seeding

2.2.3 Existing Stipulations and Mitigation Measures

Mitigation measures stipulated for MTM 94378 federal coal lease, in the context of resource-specific impacts, are summarized in **appendix B** and further discussed in **chapter 4**. The mitigation measures and stipulations presented in the DR for the 2006 LBA EA remain in effect and would be carried forward if the federal mining plan modification is approved by the ASLM.

3.0 Affected Environment

This chapter discusses the existing conditions of the physical, biological, cultural, and human resources that could be affected by implementation of the alternatives described in **chapter 2** as they relate to the approval of the federal mining plan modification for the SCM. For the purpose of this analysis, the project area is considered the SCM Permit Area and a surrounding study area. Study areas vary by resource and are described below. Elements of the environment specified by statute, regulation, Executive Order, or the Standards for Public Land Health are described and analyzed in this section except where the 2006 LBA EA previously concluded they were not present.

Baseline information presented in the 2006 LBA EA that has not substantively changed is incorporated by reference. Updated information pertaining to the baseline data is presented in this chapter when applicable. Unless otherwise noted below, the baseline conditions described in the 2006 LBA EA as related to the MTM 94378 have not substantively changed, no new data are available, or the condition has only been minimally affected as a result of current mining operations and further presentation of information would not affect the decision-making process. **Table I-2 in chapter I** is a crosswalk table that indicates resources presented in the 2006 LBA EA and those carried forward for discussion in this EA.

3.1 Air Quality

Air Quality regulations applicable to surface coal mining may include the National Ambient Air Quality Standards (NAAQS), Montana Ambient Air Quality Standards (MAAQS), and Prevention of Significant Deterioration (PSD). These regulatory programs are described in section 3.4.1 of the 2006 LBA EA. Additional air quality regulations applicable to surface coal mining include the New Source Performance Standards (NSPS), Hazardous Air Pollutants (HAPs), Mercury and Air Toxics Standards (MATS), and the Federal Operating Permit Program (Title V).

Air quality information specific to the SCM is included in SCC's MAQP #1120-12 (MDEQ/Permitting and Compliance Division (PCD) 2014). Section 3.4 of the 2006 LBA EA includes detailed discussions of air quality issues related the leasing and mining of coal related to MTM 94378. The analysis presented herein serves to summarize attainment/non-attainment areas discussions; update discussions with recent air quality monitoring findings; revise air quality modeling results; and update discussions on carbon monoxide (CO), sulfur dioxide (SO₂), nitrogen dioxide (NO₂), ozone (O₃), fine particulate matter (PM_{2.5}), lead (Pb), and HAPs (specifically mercury [Hg]). Since the completion of the 2006 LBA EA, the MAQP #1120-12 has been revised to increase the maximum permitted production level from 24 Mt to 30 Mt per year, which required new air quality modeling. The results of this modeling are presented in **section 4.4**.

There is substantial scientific evidence that increased atmospheric concentrations of greenhouse gases (GHG) and land use changes are contributing to increases in average global temperatures. GHG are not currently regulated pollutants (not subject to NAAQS or MAAQS regulations) but EPA has established CO₂ emission guidelines for existing fossil fuel-fired electric generating units (EGUs), which is commonly referred to as the Clean Power Plan (CPP), and Montana has formulated a climate action plan that evaluated GHG reduction opportunities in various sectors of Montana's economy (EPA 2015 and Climate Change Advisory Committee [CCAC] 2007, respectively). GHG discussions are included in **section 3.1.4.4** and in **section 4.4**.

3.1.1 National and Montana Ambient Air Quality Standards

As summarized by EPA, the CAA requires the U.S. Environmental Protection Agency (EPA) to establish NAAQS to protect public health and welfare (EPA 2015a). These standards define the

maximum level of air pollution allowed in the ambient air. The CAA established NAAQS for six pollutants, known as “criteria” pollutants, which “... cause or contribute to air pollution which may reasonably be anticipated to endanger public health or welfare and the presence of which in the ambient air results from numerous or diverse mobile or stationary sources” (U.S. Senate 2015). The six, present-day criteria pollutants are Pb, NO₂, SO₂, CO, O₃, and particulate matter (PM₁₀ and PM_{2.5}), where PM₁₀ is coarse particulate with mean aerodynamic diameters less than 10 microns and PM_{2.5} is fine particulate matter with aerodynamic diameter of less than 2.5 microns.

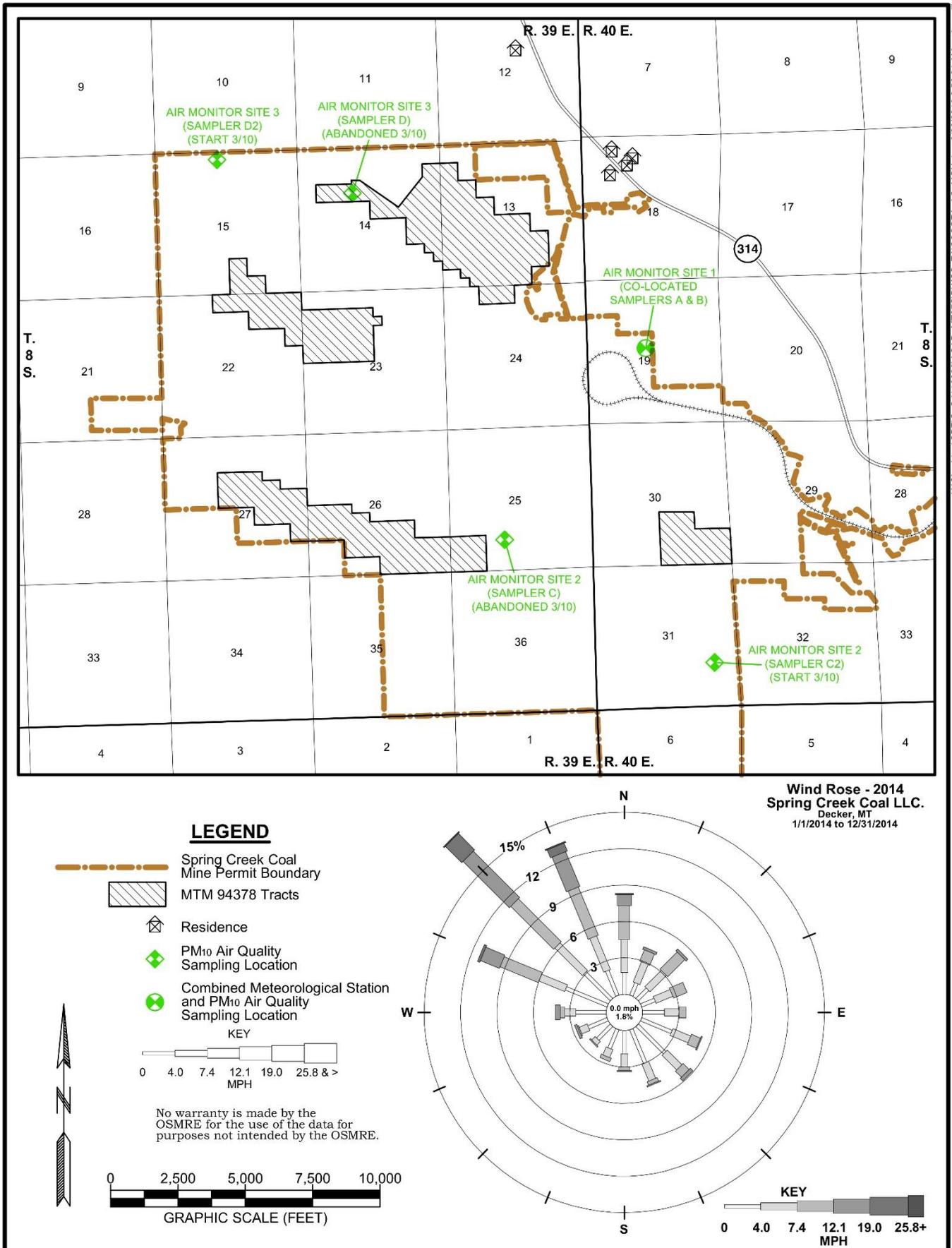
The CAA allows states to promulgate additional ambient air standards that are at least as stringent, or more stringent, than the NAAQS (U.S. Senate 2015). The NAAQS and MAAQS (established by the MDEQ /Air Resources Management Bureau (ARMB) for the six criteria pollutants are listed in **table 3-1**. MAAQS values also include hydrogen sulfide (H₂S) and visibility.

3.1.2 Attainment/Non-Attainment Area Designations

Pursuant to the CAA, EPA developed a method for classifying existing air quality in distinct geographic regions, known as air basins, air quality control regions, and/or metropolitan statistical areas. For each federal criteria pollutant, each air basin (or portion of a basin or statistical area) is classified as in “attainment” if the area has complied with the adopted NAAQS for that pollutant, as “non-attainment” if the levels of ambient air pollution exceed the NAAQS for that pollutant, or as “unclassifiable” if the area that cannot be classified on the basis of available information as meeting or not meeting the national primary or secondary ambient air quality standard for the pollutant.

Through the State Implementation Plan (SIP) process, which is approved by EPA, states use the EPA method to designate areas within their borders as being in “attainment”, “non-attainment”, or “unclassifiable” with the NAAQS. Because the tracts are near the border of Montana and Wyoming, the attainment status of nearby areas in both states is considered. The SCM LBM tract is in an area that is designated an attainment area for all pollutants (EPA 2015c). However, the town of Sheridan, Wyoming, located about 32 miles south of the project area, is a non-attainment area for PM₁₀. The town of Lame Deer, Montana, located about 35 miles north, is also a non-attainment area for PM₁₀. The city of Billings, Montana and the town of Laurel, Montana, non-attainment areas for SO₂, are located about 90 miles northwest of the project area. As indicated on **map 3-1**, the prevailing wind in the vicinity of the SCM is from the north/northwest, so these non-attainment areas are not downwind of the SCM.

Chapter 3 - Affected Environment



Map 3-1. Wind Rose and Air Quality and Meteorological Stations at the Spring Creek Coal Mine.

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Table 3-1. Federal and Montana Ambient Air Quality Standards

Emissions	Averaging Period	Montana Standard (MAAQS)	Federal Standard (NAAQS)
Carbon Monoxide (CO)	1-hour 8-hour	23 ppm ^a 9 ppm ^a	35 ppm ^a 9 ppm ^a
Sulfur Dioxide (SO ₂)	1-Hour 3-hour 24-hour annual	0.50 ppm ^c -- 0.10 ppm ^a 0.02 ppm ^b	0.075 ppm ^e 0.50 ppm ^a -- --
Oxides of Nitrogen (NO _x)	1-Hour annual	0.30 ppm ^a 0.05 ppm ^b	0.100 ppm ^h 0.053 ppm ^g
Ozone (O ₃)	1-hour 8-hour	0.10 ppm ^a --	-- 0.070 ppm ^f
PM ₁₀	24-hour annual	150 µg/m ^{3 d} 50 µg/m ^{3 d}	150 µg/m ^{3 d} --
PM _{2.5}	24-hour annual	-- --	35 µg/m ^{3 i} 12 µg/m ^{3 i}
Lead (Pb)	90-Day	1.5 µg/m ^{3 b}	0.15 µg/m ^{3 b}
Hydrogen Sulfide (H ₂ S)	1-Hour	0.05 ppm ^a	--
Visibility	annual	3 x 10 ⁻⁵ per meter ^b	--

^a Not to exceeded more than once per calendar year

^b Not to be exceeded

^c Violation when exceeded more than 18 times in any 12 consecutive months

^d Not to exceed more than once per calendar year on averaged over 3 years

^e 99th percentile of 1-hour daily maximum concentrations, averaged over 3 years

^f Annual 4th-highest daily max. 8-hour concentration, averaged over 3 years

^g Annual mean

^h 98th percentile of 1-hour daily maximum concentration, averaged over 3 years

ⁱ Annual mean, averaged over 3 years

^j 98th percentile, averaged over 3 years

-- Values not included in NAAQS or MAAQS and were not calculated.

Source: EPA (2015b) and MDEQ (2015)

3.1.3 Background

Information regarding background air quality for the SCM was included in section 3.4.1 of the 2006 LBA EA and in SCC's MAQP #1120-12 (MDEQ/PCD 2014). An inventory of all point sources, controls, and emissions for the MAQP #1120-12 air quality permit showed a maximum potential to emit (PTE) of 21.0 tons per year (tpy). This PTE value is below the PSD 250 tpy major source threshold limit specified in ARM 17.8.801 and below the 100 tpy major source threshold for Title V permitting specified in ARM 17.8.1201. SCM is also not subject to Title V regarding HAPs because its PTE is less than 25 tpy for HAPs and less than 10 tpy for any single HAP. According to MAQP #1120-12, a PSD increment consumption analysis is not necessary and SCC is not required to obtain a Title V Operating Permit (MDEQ/PCD 2014).

Regulated air pollutants associated with coal extraction and processing activities and coal combustion include

- I. particulates generated from mining activities such as blasting, excavating, loading and hauling of overburden and coal, and wind erosion of disturbed and unreclaimed mining areas,

2. NO₂ produced from overburden and coal blasting,
3. CO, NO_x, particulates (PM₁₀ and PM_{2.5}), SO₂, and volatile organic compounds (VOCs) from gasoline and diesel vehicle tailpipe emissions,
4. NO₂ and PM₁₀ emissions from railroad locomotives used to haul coal, and
5. SO₂, NO_x, VOCs, CO, PM₁₀, ammonia (NH₃), HAPS (Hg, etc.) produced from power plants and regulated under the CPP (the closest coal-fired power plants are the Colstrip plant, located about 55 miles north northeast of the tract and the Hardin plant, located about 56 miles northwest of the tract, although coal mined at the SCM was not shipped to either of these power plants).

3.1.4 Existing Spring Creek Mine Air Quality Summary

Baseline air quality data for the surface facilities area for the SCM are found in the sections 3.4.2, 3.4.3, and 3.4.4 of the 2006 LBA EA. The following discussions include updated (2008-2015) air quality monitoring results.

3.1.4.1 Air Quality-Particulate Matter

SCC has monitored particulate matter levels around the mine throughout the life of the operation. The mine expressed particulate matter utilizing TSP concentrations until 1987. This measurement included all particulates generally less than 100 microns in diameter. In 1987, the form of the standard was changed from TSP to PM₁₀ to better reflect human health effects. MDEQ removed the requirement for SCC to sample for PM₁₀ in September 2009, based on SCC's history of relatively low ambient monitoring readings and MDEQ's confidence in current permit conditions. SCC has voluntarily chosen to continue the PM₁₀ sampling program. These data are used internally and not submitted to MDEQ, per their request. PM_{2.5} monitoring at the SCM is not required by MDEQ and is not conducted at this time.

Current, voluntary air monitoring consists of four samplers at three sites that monitor concentrations of PM₁₀ and a meteorological site (**map 3-1**). Air quality monitoring sites C and D were relocated in 2010 to sites C2 and D2, respectively, to account for the progression of mining operations (**map 3-1**).

Tables 3-2 and 3-3 list the current estimated annual mean and annual high PM₁₀ micrograms per cubic meter (µg/m³) values under standard temperature and pressure (STP) conditions for the SCM. The average annual STP PM₁₀ values for the 2008-2015-time period ranged between 14.5 and 39.4 µg/m³. These concentrations ranged from about 29 to 79 percent of the annual standard of 50 µg/m³. During the same time period, the annual high STP PM₁₀ values ranged between 33 and 120 µg/m³. Thus, these maximum concentrations have ranged from approximately 22 to 80 percent of MDEQ/ARM's 24-hour standard of 150 µg/m³. Since PM_{2.5} monitoring is not required by MDEQ, data were not gathered onsite. Therefore, data from PM_{2.5} monitors located in Sheridan, Wyoming (approximately 20 miles southwest of SCM, **map 1-1**) were used to estimate PM_{2.5} emissions at the mine. PM_{2.5} data from Highland Park Monitor #560330003 gathered between 2008 and 2012 and from Meadowlark Elementary School Monitor #560331003 gathered between 2012 and 2015 were utilized to assess PM_{2.5} levels (table 3-4). Exceptional events (if observed) are noted in the data acquired from the EPA database. Exceptional events are defined as occasional instances where a natural and exceptional occurring event impacts monitoring, causing a reading that is in exceedance with the NAAQS (WDEQ/AQD 2016). In the case that this occurs, the Final "Treatment of Data Influenced by Exceptional Events" Rule (40 CFR 50.14)

allows the state to request a data flag and justify the flag by submitting documentation showing that NAAQS exceedance would not have occurred in the absence of a natural/exceptional event. Monitoring during the period of 2008-2015 demonstrated that ambient concentrations of PM_{2.5}, as determined by the 98th Percentile 24-hour standard and annual average values, were within established short-term (24-hour) and long term (annual) NAAQS values indicated in table 3 1 (no PM_{2.5} MAAQS exists).

Table 3-2. PM₁₀ Concentration Values (Annual Mean STP $\mu\text{g}/\text{m}^3$) for the SCM, 2008 – 2015¹

Site Name ²	2008	2009	2010	2011	2012	2013	2014	2015
A PM10	17.9	21.7	27.1	22.6	26.2	20.7	26.9	26.6
B PM10	18.3	22.0	26.1	23.3	26.4	19.7	26.9	27.3
C PM10	25.7	28.7	39.4	**	**	**	**	**
C2 PM10	**	**	31.5	22.1	35.3	28.0	21.7	33.2
D PM10	16.0	20.1	30.3	**	**	**	**	**
D2 PM10	**	**	15.6	15.9	15.5	14.5	18.0	16.6

¹ Data collected after 2009 was not submitted to MDEQ, per their request.

² See map 3-1 for site locations

** Indicates that the site is inactive

Source: SCM Ambient Air Quality Monitoring Network 4th Quarterly Report 2015 (IML 2015)

Table 3-3. PM₁₀ Concentration Values (Annual High [24-Hour] STP $\mu\text{g}/\text{m}^3$) for the SCM, 2008-2015

Site Name ¹	2008	2009	2010	2011	2012	2013	2014	2015
A PM10	48	79	84	97	95	33	65.1	75.2
B PM10	54	82	82	96	88	38	68.9	79.5
C PM10	120	83	114	**	**	**	**	**
C2 PM10	**	**	106	44	119	96	39	94.2
D PM10	56	116	120	**	**	**	**	**
D2 PM10	**	**	33	47	42	38	100.8	51.5

¹ See map 3-1 for site locations

** Indicates that the site is inactive

Source: SCM Ambient Air Quality Monitoring Network 4th Quarterly Report 2015 (IML 2015)

Table 3-4 presents the available EPA data for these site and shows there were no exceedences of the PM_{2.5} standard between 2008 and 2015 for either site.

Table 3-4. Measured PM_{2.5} Concentrations¹ in Sheridan, Wyoming-Highland Park (2008-2012) and Meadowlark Elementary (2012-2015)

Site ID	Year	24-hour ($\mu\text{g}/\text{m}^3$)	Annual ($\mu\text{g}/\text{m}^3$)
Highland Park (560330003)	2008	14	5.3
	2009	10	4.9
	2010	14	5.5
	2011	15	5.5 *
	2012	10	4.3 *
Meadowlark Elementary #1 (560331003)	2012	19	7.1 *
	2013	14	5.0
	2014	14	4.4
	2015	33 ²	5.9 ²
		23 ³	5.2 ³

¹ The 24-hour standard is met when the 98th percentile 24-hour concentration, as determined by Appendix N of 40 CFR 50 is less than or equal to 35 micrograms per cubic meter. The annual standard is met when the arithmetic mean concentration, as determined by Appendix N of 40 CFR 50 is less than or equal to 12 micrograms per cubic meter.

² Exceptional event included

³ Exceptional events excluded

* The mean does not satisfy minimum data completeness criteria

Source: U.S. EPA AirData (EPA 2015)

EPA referenced emission factors are available for use in estimating PM_{2.5} values based on PM₁₀ values (Pace 2005). Since no specific data were available for western coal mines, these emission factors were developed from sources with similar characteristics, including large open cut aggregate mines and large-scale construction projects with considerations toward unpaved fugitive emissions from heavy haul trucks. Generally accepted estimates consistently presented emission fractions of PM_{2.5} values at a range of 0.1 to 0.15 of PM₁₀ values for unpaved roadways and 0.15 to 0.2 for wind erosion from industrial and construction sites (Pace 2005). SCM-specific PM₁₀ monitoring data were used to estimate PM_{2.5} ambient concentrations for annual mean and annual high 24-hour STP by application a 0.2 factor (PM_{2.5} to PM₁₀) (tables 3-5 and 3-6, respectively). These data indicate that projected PM_{2.5} ambient design concentrations should be below the prescribed NAAQS, which supports the findings of Sheridan PM_{2.5} data evaluation presented in table 3-5.

Table 3-5. Estimated Annual Mean STP PM_{2.5} Concentrations (µg/m³)

Site Name ¹	2008	2009	2010	2011	2012	2013	2014	2015
A	3.6	4.3	5.4	4.5	5.2	4.1	5.4	5.3
B	3.7	4.4	5.2	4.7	5.3	3.9	5.4	5.5
C	5.1	5.7	7.9	**	**	**	**	**
C2	**	**	6.3	4.4	7.1	5.6	4.3	6.6
D	3.2	4	6.1	**	**	**	**	**
D2	**	**	3.1	3.2	3.1	2.9	3.6	3.3

¹ See map 3-1 for site locations

** Indicates that the site is inactive

Table 3-6. Estimated Annual High 24-Hour STP PM_{2.5} Concentrations (µg/m³)

Site Name ¹	2008	2009	2010	2011	2012	2013	2014	2015
A	9.6	15.8	16.8	19.4	19	6.6	13	15
B	10.8	16.4	16.4	19.2	17.6	7.6	13.8	15.9
C	24	16.6	22.8	**	**	**	**	**
C2	**	**	21.2	8.8	23.8	19.2	7.8	18.8
D	11.2	23.2	24	**	**	**	**	**
D2	**	**	6.6	9.4	8.4	7.6	20.2	10.3

¹ See map 3-1 for site locations

** Indicates that the monitoring site was inactive

3.1.4.2 Emissions of Oxides of Nitrogen (NO_x) and Ozone (O₃)

Gases that contain nitrogen and oxygen in varying amounts are referred to as nitrogen oxides, or NO_x. One type of NO_x is NO₂, which is a highly reactive, reddish-brown gas that is heavier than air and has a pungent odor that is a product of incomplete combustion of gasoline and diesel fuel. NO₂ is by far the most toxic of several species of NO_x. NO₂ can combine with atmospheric moisture to form nitric acid and nitric oxide. Because several NO_x species can be chemically converted to NO₂ in the atmosphere, NO₂ emissions control is focused on all NO_x species, while the ambient standard is expressed in terms of NO₂. Ozone (O₃) has been included in discussions on emissions of NO_x since NO_x is one of the main ingredients involved in the formation of ground-level O₃. Ground-level O₃ is not emitted directly into the air, but is created by chemical reactions between NO_x and VOCs (precursors) in the presence of sunlight.

NO₂ concentrations (98th percentile, 1-hour) are currently being monitored in Rosebud County at one AQS monitoring site near Birney (table 3-7). NO₂ concentrations were also monitored through 2013 at three other AQS monitoring sites near the town of Lame Deer (table 3-7).

These monitoring sites are the closest to the SCM and the distances from the tract range between approximately 28 and approximately 44 miles (**map 3-2**).

Table 3-7. Measured NO₂ Concentrations in Rosebud County, Montana, 2008-2015, 98th Percentile 1-Hour NO₂ Concentrations (µg/m³)

AQS ¹ Site ID	Sampler ID	2008	2009	2010	2011	2012	2013	2014	2015
300870001	3 Miles North of Birney	**	**	9	7	8	6	8	4
300870760	Morningstar	40	12	15	9	14	12	**	**
300870761	Garfield Peak	6	59	31	39	48	50	**	**
300870762	Badger Peak	22	10	12	48	14	9	**	**

¹ AQS-Air Quality System

** Indicates the monitoring site was inactive

Source: EPA 2015b

Under the CAA, EPA has set protective health-based standards for O₃ in the air we breathe. Prior to May 27, 2008, the NAAQS 8-hour standard for O₃ was 0.080 ppm (157 µg/m³ at STP). On March 27, 2008 (effective May 27, 2008), EPA revised the 8-hour standard to 0.075 ppm (148 µg/m³ at STP) and EPA revised the 8-hour standard for O₃ again on October 26, 2015 (effective on December 28, 2015) to 0.070 ppm (138 µg/m³ at STP). O₃ monitoring is not required at the SCM but levels have been monitored since 2010 at AQS Site 300870001, which is located approximately 28 miles northeast of the tract (**map 3-2**). An exceedance of the O₃ 8-hour standard occurs if the 4th-highest daily maximum value is above the level of the standard (0.08 ppm prior to 2008 0.075 ppm from 2008 to October 2015). **Table 3-8** shows that no exceedances of the 8-hour or O₃ standard have occurred at Site 300870001 since monitoring began in 2010.

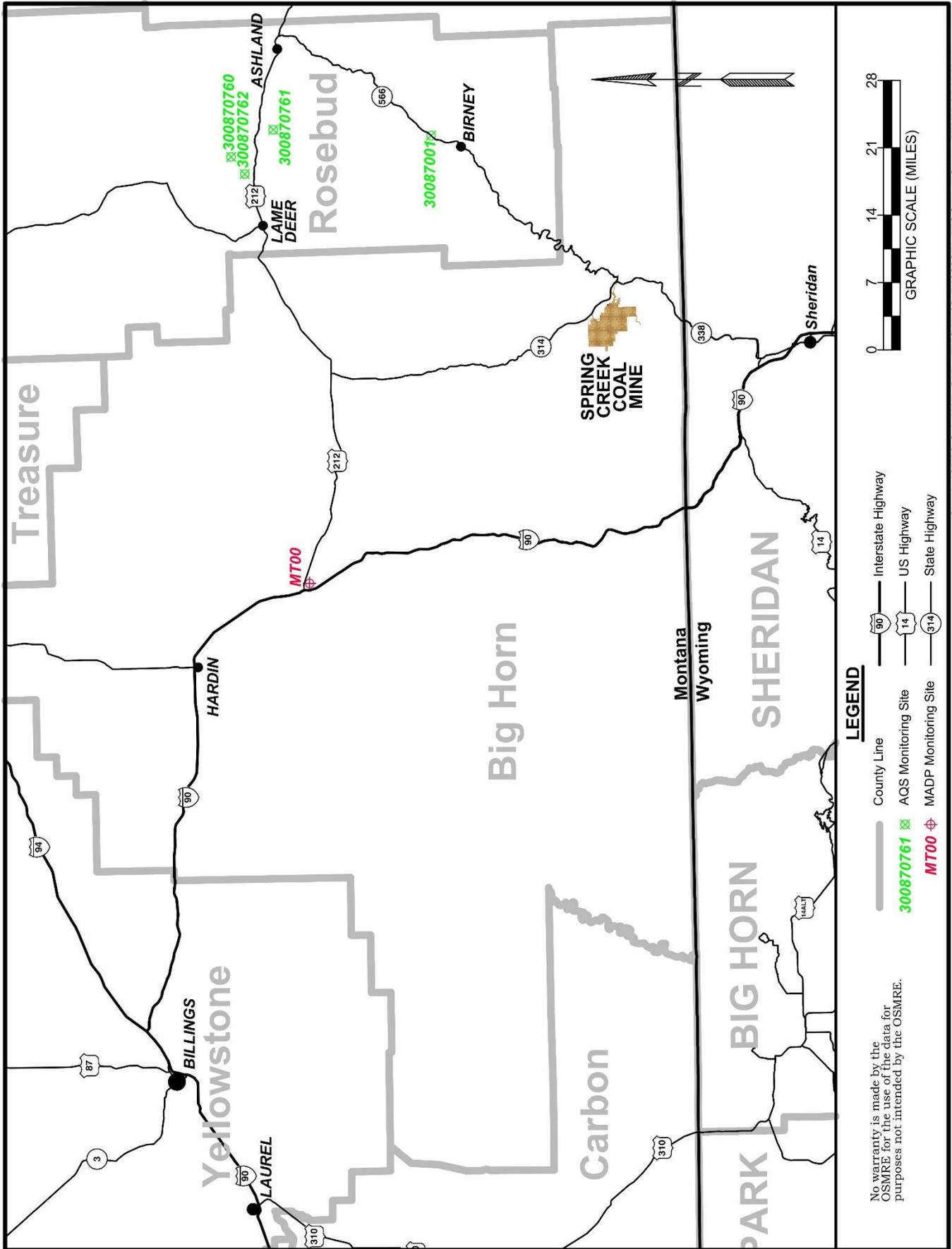
Table 3-8. Measured O₃ Concentrations (4th-Highest Daily Maximum Value) at AQS Monitoring Site 300870001, 2010 – 2015

Parameter Measure	2010	2011	2012	2013	2014	2015
8-hour (ppm)*	0.059	0.052	0.059	0.056	0.055	0.056
8-hour (µg/m ³) at STP	116	102	116	110	116	110
# of Days Maximum Exceeded 0.12 ppm*	0	0	0	0	0	0

* The standard is attained when the expected number of days per calendar year with maximum hourly average concentrations above 0.12 parts per million (235 µg/m³) is equal to or less than 1, as determined by Appendix H of 40 CFR 50.

3.1.4.3 Air Quality Related Values (AQRVs)

AQRVs as related to the MTM 94378 were discussed in sections 3.4.5 and 3.4.6 of the 2006 LBA EA. Updated information regarding AQRVs is included below. AQRVs are evaluated by the land management agency responsible for a Class I area, according to the agency's level of acceptable change (LAC). These AQRVs include potential air pollutant effects on visibility and the acidification of lakes and streams. The AQRVs, and the associated LAC, are applied to PSD Class I and sensitive Class II areas and are the land management agency's policy and are not legally enforceable as a standard. MDEQ MAAQS do include a standard for visibility. Class I areas are afforded specific AQRV protection under the Clean Air Act. The Class I designation allows very little deterioration of air quality. The AQRVs associated with this action include visibility and acidification of lakes. The nearest Class I area is located approximately 19 miles north of the proposed tracts at the Northern Cheyenne Indian Reservation.



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Map 3-2. Regional Air Quality Monitoring Sites.

3.1.4.3.1 Visibility

Visibility can be defined as the distance one can see and the ability to perceive color, contrast, and detail. Particulates finer than 2.5 microns in effective diameter (PM_{2.5}) are the main cause of visibility impairment. Visibility impairment is expressed in terms of deciview (dv). The dv index was developed as a linear perceived visual change (Pitchford and Malm 1994), and is the unit of measure used in the EPA’s Regional Haze Rule to achieve the National Visibility Goal. A change in visibility of 1.0 dv represents a “just noticeable change” by an average person under most circumstances. Increasing dv values represent proportionately larger perceived visibility impairment. **Figure 3-1** shows annual averages for the 20 percent best, worst, and middle visibility days at Northern Cheyenne Indian Reservation monitoring site (the nearest PSD Class I area, see map 3-2) for 2003 through 2014 (Interagency Monitoring of Protected Environments [IMPROVE] 2016). Increasing dv values represent proportionately larger perceived visibility impairment (BLM 2003). As indicated on **figure 3-1**, the long-term trend in visibility at the Northern Cheyenne Indian Reservation appears to be relatively stable, if not improving slightly.

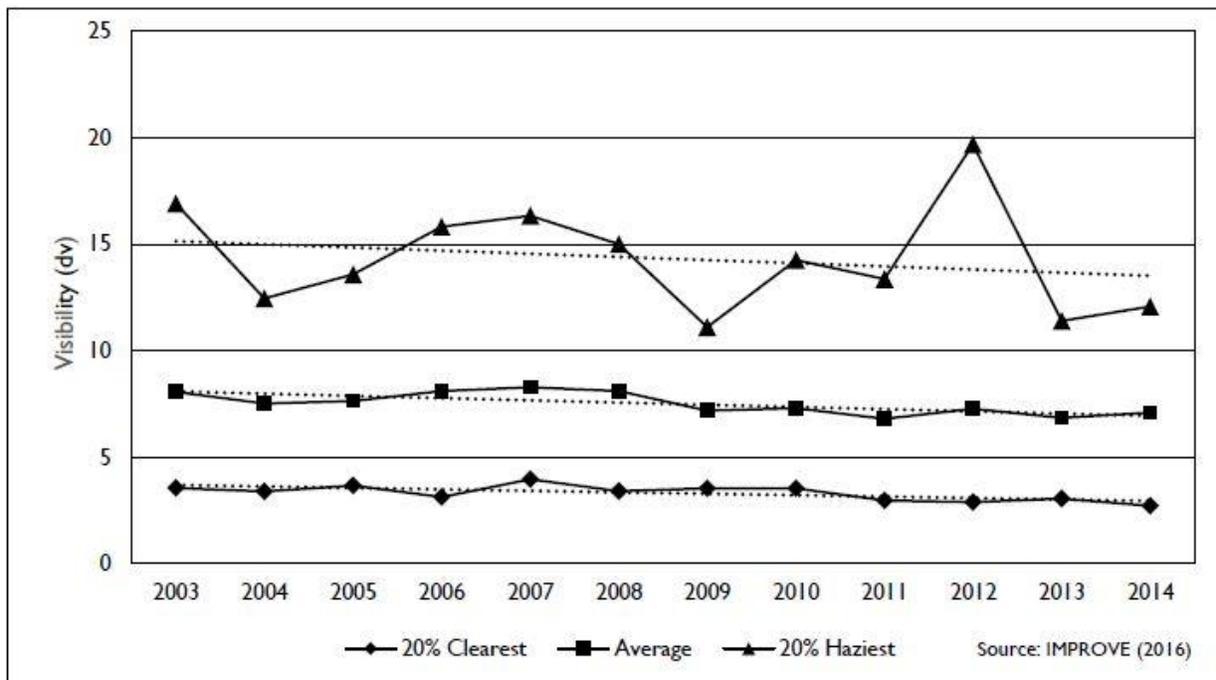


Figure 3-1. Visibility in the Northern Cheyenne Indian Reservation Area – Site MT00.

3.1.4.3.2 Air Quality Related Values Related to Coal Combustion

Emissions that affect air quality also result from combustion of fossil fuels. **Table 3-9** presents the estimated PM₁₀, PM_{2.5}, SO₂, NO_x, and Hg emissions estimates for coal mined at the SCM that was utilized for power generation.

Table 3-9. Estimated Annual PM₁₀, PM_{2.5}, SO₂, NO_x, and Hg Contributions from Coal Combustion, 2012-2015

Source	2012	2013	2014	2015
Tons of Coal Recovered	17.2	17.7	17.3	17.0
PM ₁₀ (Tons)	3,845.0	3,956.8	3,867.4	3,800.3
PM _{2.5} (Tons)	1,172.7	1,026.8	1,179.6	1,159.1
SO ₂ Emissions	70,906.4	70,081.9	71,318.6	70,081.9
NO _x Emissions	27,398.3	27,079.7	27,557.6	27,079.7
Hg Emissions	276.1	272.8	277.7	272.8

Source: WWC (2016), calculations are provided in **appendix G**

3.1.4.3.3 Acidification of Lakes

Acid deposition causes acidification of lakes and streams, which has direct impacts on aquatic habitats, and contributes to the damage of trees at high elevation and many sensitive forest soils (EPA 2016). According to the EPA (2002), hydrogen ion (H⁺) concentrations are the primary indicator of precipitation acidity. **Table 3-10** provides the measured hydrogen ion concentrations as determined at the Site MT00, the closest to the SCM for the years 2008 through 2014. The location of MT00 in relationship to the SCM is indicated on **map 3-2**.

Table 3-10. Measured Hydrogen Ion (H⁺) Concentrations ¹ at Monitoring Site MT00, 2008 – 2014

	2008	2009	2010	2011	2012	2013	2014
pH	5.4	5.3	5.4	5.4	5.7	5.6	5.4
Wet (kg/hectare)	0.01	0.01	0.01	0.02	0.01	0.01	0.02

¹ Measures as pH and wet deposition

As indicated on **in table 3-10**, the 2008-2014 trend in H⁺ at monitoring site MT00 appears to be relatively stable.

3.1.4.4 Greenhouse Gases (GHG)

According to the EPA and the Montana Climate Change Action Plan, GHG include CO₂, methane (CH₄), nitrous oxide (N₂O) and several fluorinated species of gas (EPA 2016a and CCAC 2007, respectively). CO₂ is emitted from the combustion of fossil fuels, including coal. CH₄ can be emitted during the production and transport of coal and N₂O is emitted during agricultural and industrial activities, as well as during combustion of fossil fuels and solid waste. CO₂ and other GHGs are naturally occurring gases in the atmosphere; their status as a pollutant is not related to their toxicity, but instead is due to the added long-term impacts they have on climate because of their increased incremental levels in the earth's atmosphere.

Each GHG has a different lifetime in the atmosphere and a different ability to trap heat in the atmosphere. To allow different gases to be compared and added together, emissions can be converted into carbon dioxide equivalent (CO₂e) emissions. The CO₂e emissions that occurred at the SCM from 2012 through 2015 have been estimated, based on an estimated annual coal production (**table 3-11**). The inventories included emissions from all sources, including all types of carbon fuels used in the mining operations; electricity used on site (i.e., lighting for facilities, roads, and operations and electrically powered equipment and conveyors); and mining processes (i.e., blasting, coal fires caused by spontaneous combustion, and methane released [vented] from exposed coal seams). CO₂e emissions generated by hauling the coal to coal-fired power plants

are also estimated, which were calculated using an average of 1,100 rail miles from the SCM to destination power plants.

Table 3-11. Estimated Equivalent CO₂ (CO₂e) Emissions¹ at the SCM, 2012-2015

Source	2012	2013	2014	2015
Tons of Coal Recovered	17.2	17.7	17.3	17.0
Fuel	43,799	44,651	45,080	47,241
Electricity Consumed in Mining Process	19,077	19,702	19,077	19,606
Mining Process ²	145,535	150,110	146,614	144,678
Coal Haulage	646,692	676,667	652,632	634,896
Total of Four Mining Sources	855,103	891,131	863,402	846,420
From Coal Combustion	28,807,592	29,645,022	28,975,078	28,472,620
Total Estimated CO₂e Production	29,662,695	30,536,153	29,838,480	29,319,040

¹ CO₂e in metric tons

² Blasting and methane emission

Source: WWC (2016), calculations are provided in **appendix F**

The amount of CO₂e emitted during the combustion of fossil fuels varies according to the carbon content and heating value of the fuel used (EPA 2008). As indicated in **table 3-11**, approximately 28.5 million metric tons of CO₂e were produced in 2015 from the combustion of 17.0 million tons (WWC 2016).

Approximately 95 percent of the coal mined in 2014 in the Montana Powder River Basin (PRB) was used to generate electricity by coal-fired power plants in the United States (U.S. Energy Information Administration [USEIA] 2016).

3.2 Water Resources

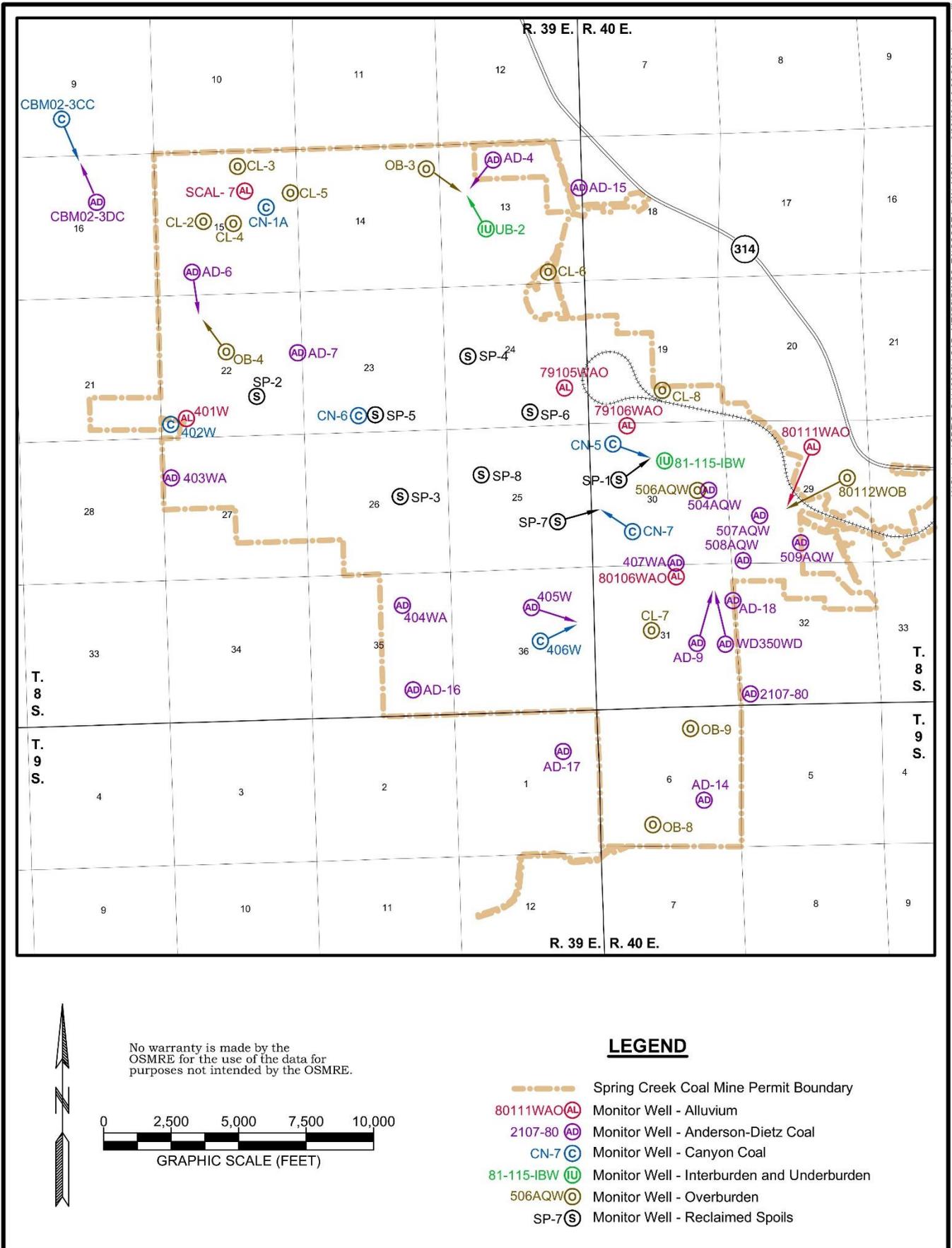
Section 3.5 of the 2006 LBA EA included detailed discussions of water resources related to MTM 94378. The analysis included herein serves to update discussions with recent groundwater and surface-water quality monitoring findings and update groundwater and surface-water rights discussions.

There are four major shallow geologic units related to the MTM 94378 containing groundwater that could be impacted by coal mining. These shallow units are the Quaternary alluvium, clinker (scoria or burn), overburden, and the Anderson/Dietz coal seam.

3.2.1 Groundwater

Current groundwater monitoring well locations are indicated on **map 3-3**. Monitoring wells are identified by well number and completion aquifer, such as alluvium (six wells), overburden/clinker (10 wells), interburden/underburden (two wells), coal (27 wells), and backfill/spoil (eight wells).

According to groundwater quality monitoring results included in the SCM 2015 Annual Hydrology Report submitted to MDEQ, groundwater quality analyzed during the October 1, 2014 through September 30, 2015 reporting period was similar to previous reporting period (SCC 2015a).



Map 3-3. Active Groundwater Monitoring Locations at the Spring Creek Mine.

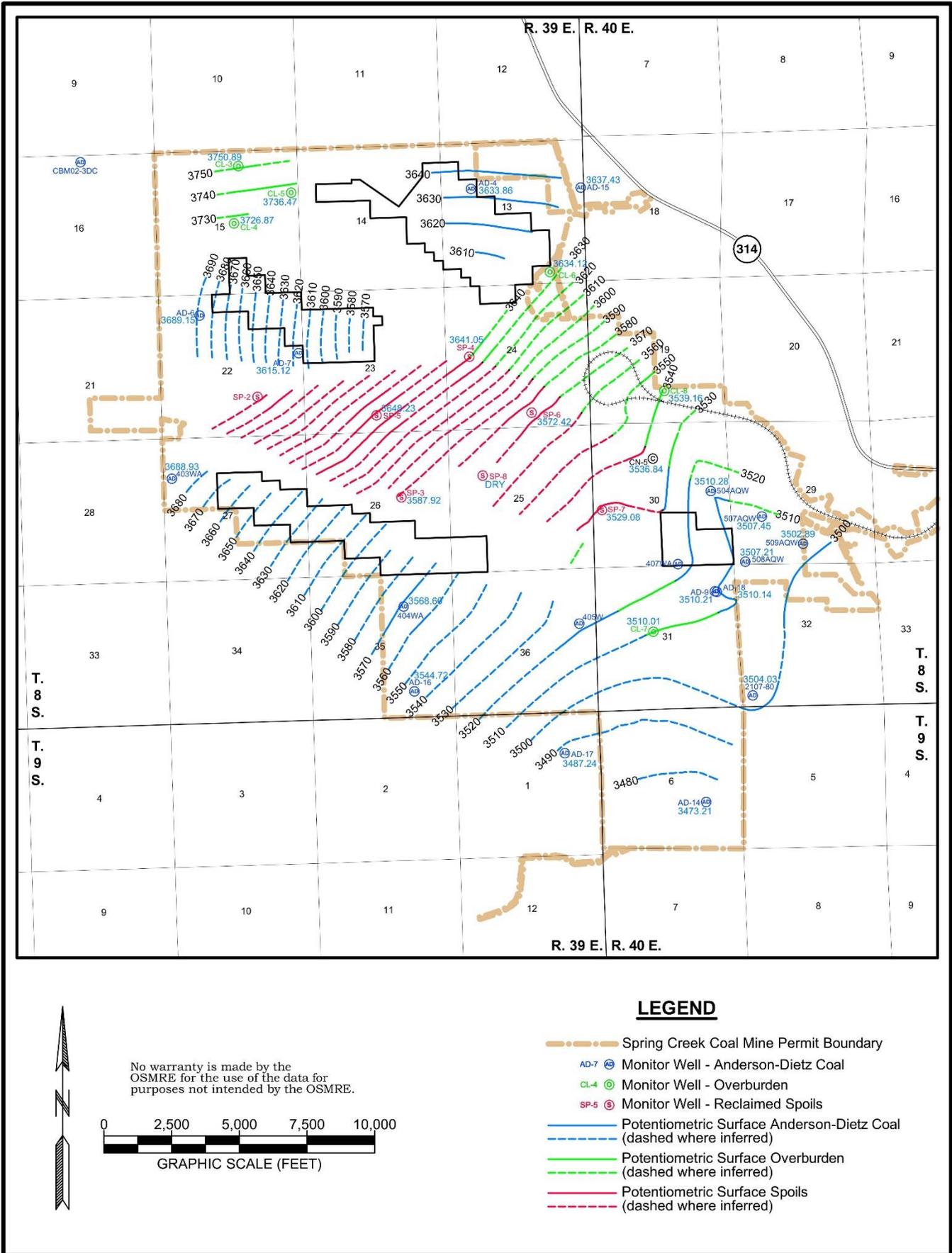
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Water quality is highly variable depending on the source aquifer. The dominant ionic constituents within the coal waters are sodium and bicarbonate. The average total dissolved solids (TDS) concentration in the Anderson/Dietz coal aquifer (from 17 wells monitored in 2015) was recorded at approximately 2,093 milligrams per liter (mg/L), indicating a moderate to severe restriction for irrigation purposes (Ayers and Westcot 1976). As the groundwater moves downward through the overburden and into the coalbed aquifers, the water becomes less mineralized, which is due mainly to cation exchange (softening and sulfate reduction) mechanisms. The quality of groundwater from the Anderson/Dietz coal seam is generally suitable for domestic and livestock purposes; however due to the high sodium adsorption ratio (SAR) (average 21.8), only crops with high salt tolerance can be irrigated with water directly from the Anderson/Dietz coal seam (Ayers and Westcot 1976). Based on pre-mining potentiometric maps (Van Voast and Hedges 1975), the flow direction of the pre-mine groundwater system was from recharge zones in highlands east and west of the mine toward the hydrologic discharge boundary formed by the Tongue River. Current groundwater conditions have changed in the SCM area as a result of CBNG development and ongoing mining operations at the Spring Creek and Decker mines. Because CBNG production requires the reduction of pressure head, pumping produced substantial, widespread water level decline in numerous coal aquifers in the Decker area (MDEQ 2014b). Interpretative drawdown for the hydraulic properties of coal and overburden aquifers, such as conductivity and the capacity to store water, are changed in the process of removing overburden strata and returning it as spoil to mined-out pits. The relatively homogenous spoil backfill has a more uniform hydraulic conductivity in contrast to undisturbed, bedded lithology where vertical conductivity is usually lower than horizontal conductivity. Dewatering and removal of aquifers during mining has caused temporary modifications of flow direction in the vicinity of the mine pits as groundwater moves toward depressed water levels in the pit area (MDEQ 2014b). The interpretative potentiometric groundwater surface in the uppermost aquifers (overburden, clinker, spoils and Anderson/Dietz coal seam), as of 2015, is indicated on **map 3-4**.

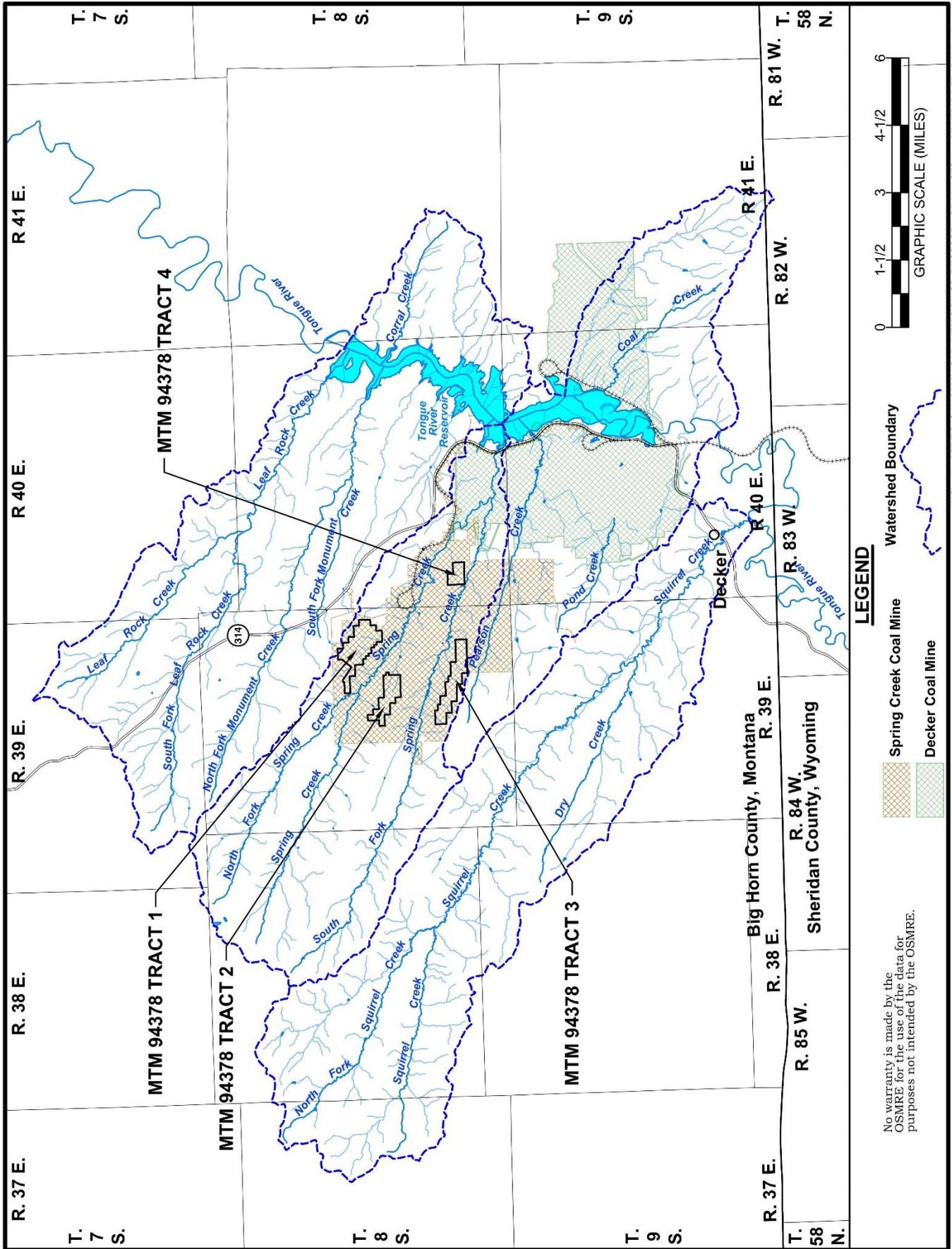
3.2.2 Surface Water

Surface water conditions related to MTM 94378 were thoroughly discussed in section 3.5.2 of the 2006 LBA EA. The tracts are located primarily within the Pearson Creek and Spring Creek watersheds. A very small portion of Tract I is within the Monument Creek watershed. Monument Creek, Pearson Creek, and Spring Creek are ephemeral tributaries of the Tongue River watershed (**map 3-5**). The main surface water features within and adjacent to the area proposed for mining activities include the Tongue River Reservoir, North Fork Spring Creek, South Fork Spring Creek, Spring Creek, Pearson Creek, and Monument Creek. The ephemeral stream flows in the Pearson Creek and Spring Creek watershed basins are ephemeral, occurring only in direct response to rainfall or snowmelt runoff events. Snowmelt runoff events can last for several days or more but rarely have large peak flows. Most of the peak annual flow events occur during the late spring and summer as a result of precipitation events. The flows of Spring Creek and its north and south forks are currently detained in flood control reservoirs located upstream from the mining operation to keep the runoff out of the SCM pits. Pearson Creek flow is not currently detained by the mine but downstream flows have been substantially altered by a constructed diversion and impoundment associated with the West Pit of the Decker Mine. These flood controls have been in place for several years, effectively cutting off Spring Creek and Pearson Creek flows upstream of the Tongue River during mining.

Chapter 3 - Affected Environment



Map 3-4. Interpretive Potentiometric Groundwater Surface in the Uppermost Aquifers (Overburden, Clinker, Spoils and Anderson/Dietz Coal Seam), as of 2015.



Map 3-5. Watersheds and Surface Drainage Associated with the Spring Creek Mine.

Streamflow and surface-water quality associated with the SCM are currently being monitored at 10 monitoring sites (**map 3-6**). Two surface-water monitoring sites (RS-1 and SF-1) have been removed and two sites (RS-8 and SF-1R) have been added to the MDEQ-approved surface-water monitoring network for the SCM since the publication of the 2006 LBA EA.

The surface-water quality varies with stream flow rate; the higher the flow rate, the lower the TDS concentration but the higher the suspended solids concentration. Due to the flow fluctuations in Spring Creek, South Fork of Spring Creek, and Pearson Creek, the surface water quality is usually unsuitable for domestic use but suitable for irrigation and livestock use (Ayers and Westcot 1976). In 2015, levels of dissolved aluminum, total iron, and SAR levels at several surface-water monitoring site were reported at levels above the MDEQ comparison criteria (SCC 2015a). Although elevated above the MDEQ comparison criteria, these monitoring results represent ambient surface water conditions because elevated levels were recorded at sites either upstream of the mine, or at sites located downstream of the mine. These sites do not receive mine-affected runoff.

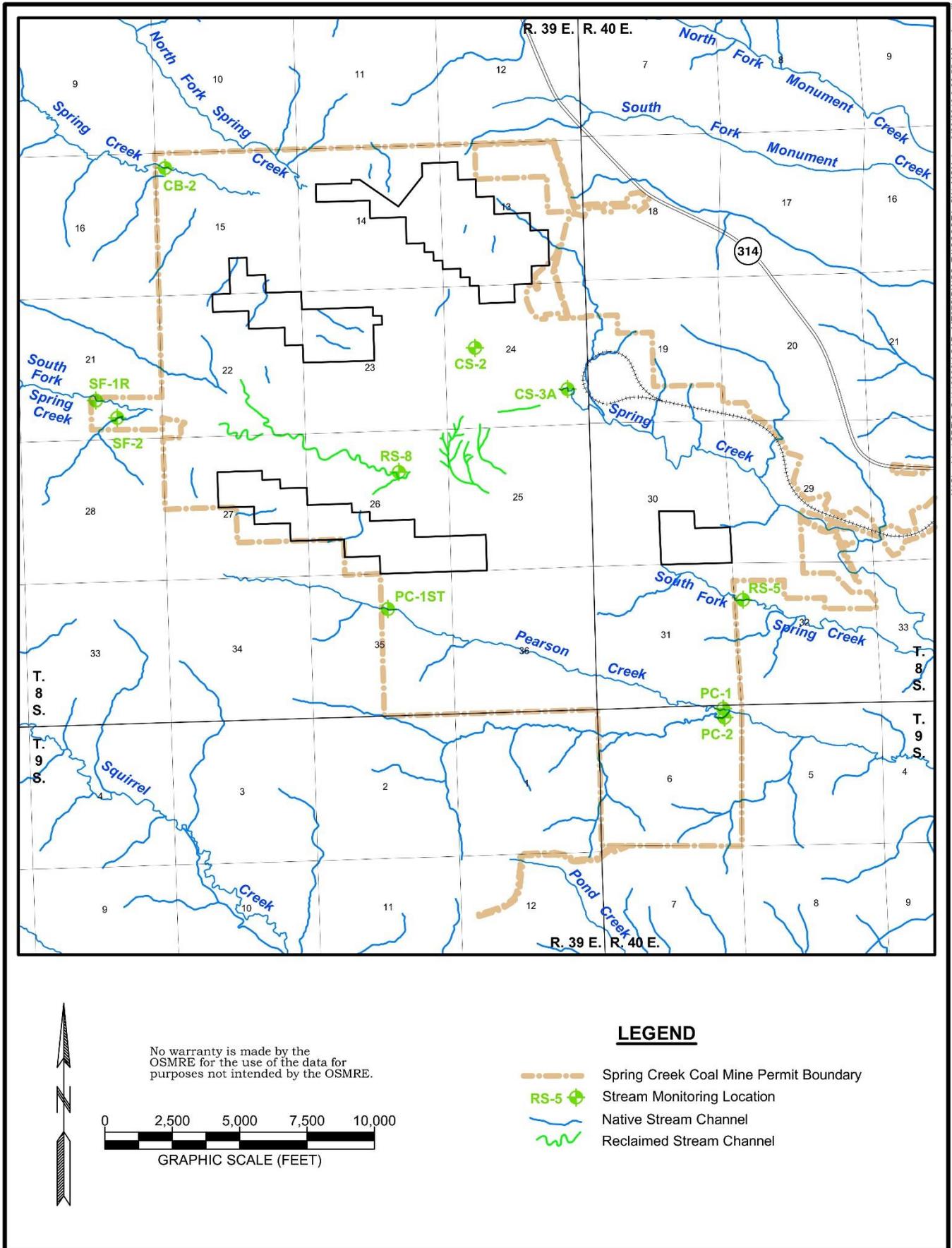
3.2.3 Water Rights

The Montana Department of Natural Resources and Conservation (DNRC) oversees surface water and groundwater rights in Montana. Prior to energy development in the area, water appropriations (either groundwater or surface water) were typically for livestock use. Currently, mining companies hold the majority of the water rights in the vicinity of the EA project area. Records of the DNRC were searched for surface-water and groundwater rights within a 2-mile radius of each tract to update water-rights information.

DNRC records indicate that as of February 2016, there were 52 surface-water rights within the 2-mile search area, of which 16 were owned by coal mining companies and were related to industrial uses. Of the other 36 non-coal mine-related, permitted surface water rights, 34 were permitted for livestock and two were permitted for wildlife.

DNRC records indicate that, as of February 2016, there were 120 permitted water wells within 2 miles of the tracts, of which, 69 are owned by coal mining companies. The other 51 non-coal mine related, permitted water wells, which include only one well permitted for uses related to CBNG development, are permitted for the following uses:

1. 21 miscellaneous
2. 12 monitoring
3. 8 livestock
4. 6 domestic
5. 2 Research
6. 1 CBNG
7. Unused



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Map 3-6. Surface Drainages and Surface Water Monitoring Sites at the Spring Creek Coal Mine.

3.3 Wildlife

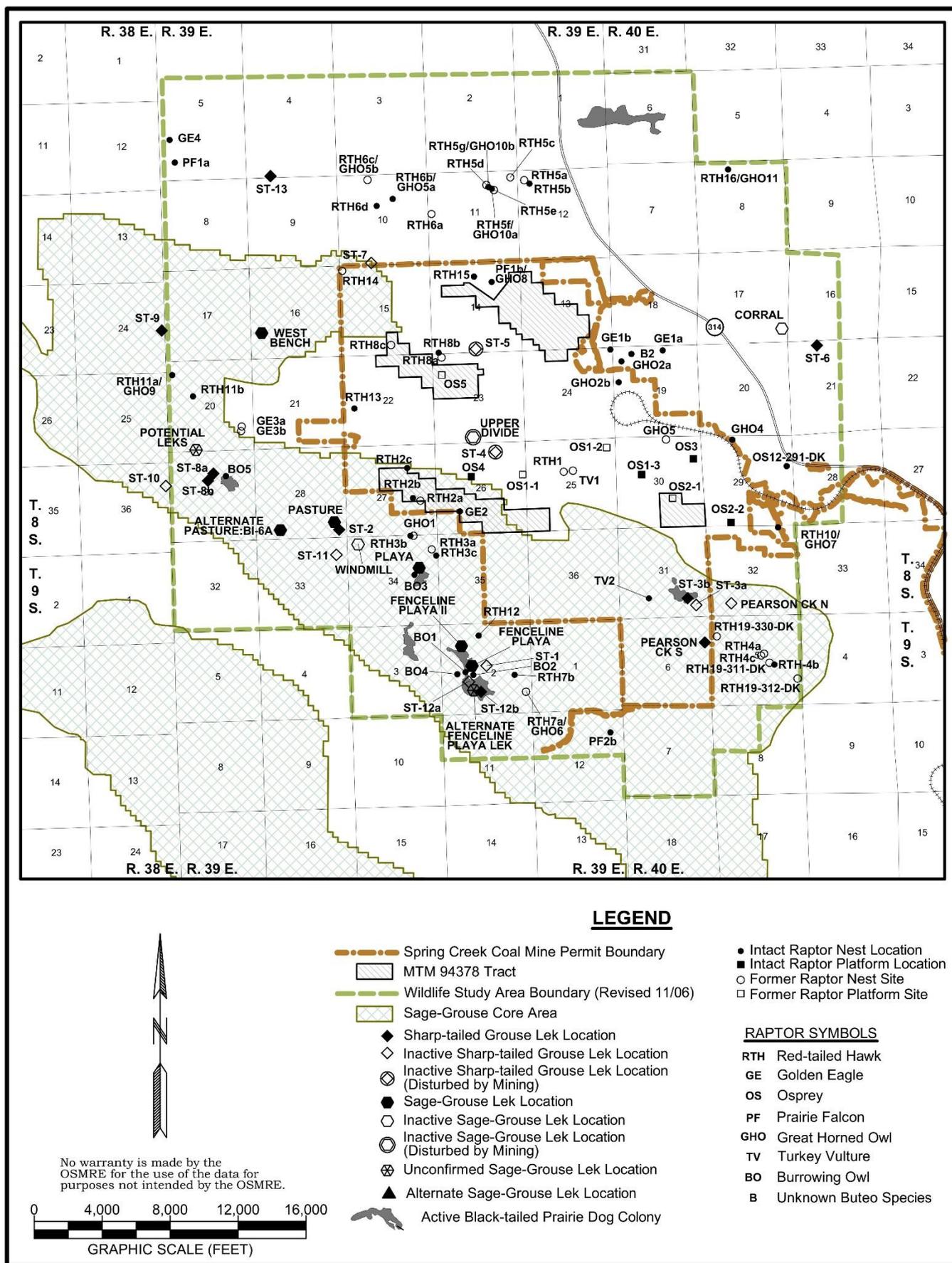
The initial wildlife baseline inventory for the SCM was conducted in 1974, with additional baseline inventories conducted periodically since that time to accommodate permit expansion. Annual monitoring was initiated in 1978 and continues at present. The information included in the 2006 LBA EA was derived from the baseline data and the subsequent studies and MDEQ Annual Reports. The occurrence of wildlife related to the mining of the federal coal within the Spring Creek LBA tracts was thoroughly discussed in section 3.10 of the 2006 LBA EA. No significant changes to wildlife use areas for other mammals, upland game birds (excluding the Greater sage-grouse [GRSG] [*Centrocercus urophasianus*]), other birds, reptiles and amphibians, and aquatic species populations have been noted from the discussion presented in the 2006 LBA EA. There have been changes in discussions related to big game; raptors; threatened, endangered, and candidate (T&E) species; and other species of special interest (SOSI-federal Birds of Conservation Concern and Montana Species of Greatest Conservation Need). The status of GRSG has also changed since publication of the 2006 LBA EA. Therefore, these species discussions have been updated in this EA.

3.3.1 Big Game

Extensive discussions of big game species (primarily pronghorn [*Antilocapra americana*], mule deer [*Odocoileus hemionus*], and white-tailed deer [*Odocoileus virginianus*]) were included in the 2006 LBA EA and in subsequent annual wildlife monitoring reports. The discussion included in this EA is related to an evaluation of Montana Department of Fish, Wildlife and Parks' (MFWP) classification of the tracts relative to their Crucial Areas Planning System (CAPS) for winter range habitat. The classification assigns a relative value of habitats providing big game winter range according to three levels of scoring. A score of 0 indicates the area was not identified as having winter range present. A score of 1 indicates important, or moderate, winter range habitats. A score of 2 indicates high value winter range habitats (MFWP 2016). Approximately 766 acres (69.1 percent) within the tracts are considered high value big game winter range habitat, though much of that area is comprised of upland grasslands, which may not be as important to local big game species as sagebrush-steppe habitats. The remaining area is classified by MFWP as moderate big game winter range; no big game migration corridors have been identified within or near the wildlife study area boundary.

3.3.2 Raptors

The 2015 annual report identified the location of and annual status of raptor nests for 2015 (SCC 2016). The location and status of raptor nests monitored at the SCM are included on **map 3-7**. Three intact raptor nests (GE2, RTH2b, and RTH2c) are located within the boundaries of MTM 94378 Tract 3; a third nest (PF1b/GHO8) is located just north of Tract 1. Golden eagle nest GE2 has not been used since at least 1994. Red-tailed hawk nest RTH2b was last used in 2004, when two young fledged from the nest. Nest RTH2c, which is located in an active highwall just north of Tract 3, produced three young in 2015. Nest PF1b/GHO8 was last used in 2012, when great-horned owls fledged one young from the site. Prairie falcons last used the site in 2006 but the nest attempt was not successful.



Map 3-7. Wildlife Use Associated with the Court-Ordered EA Tracts within the Spring Creek Coal Mine Area.

BLM's approval of federal coal lease MTM 94378 included the implementation of a mitigation plan specific to the potential disturbance of an existing prairie falcon eyrie (PF1b/GHO8), north of Tract 1. The mitigation plan included a commitment to construct three artificial nest sites; with one site constructed on a suitable native cliff/bluff and two sites constructed on reclaimed bluff features developed from competent highwall segments. An artificial nest site was constructed on a native bluff/cliff in Section 14, T8S:R38E in fall 2011, beyond the western edge of the annual monitoring area. Although PF1b/GHO8 was not removed through mining, the eyrie was blocked with netting in 2014 to preclude nesting to prevent "take" of nesting raptors due to proximate mine operations. The mitigation plan also included a commitment to expand monitoring of prairie falcons to add an additional 10 off-site prairie falcon territories to assess the impacts of mining on site PF1b. Only two of the additional 10 off-site prairie falcon territories monitored for mitigation purposes were active during the required monitoring period (2011-2013): the PF4 and PF5 territories. Although the mitigation requirement of enhanced monitoring was completed in 2013, SCC has voluntarily continued to monitor these 10 territories to provide additional data related to mining operations occurring near PF1b/GHO8.

SCC has developed a general management plan regarding SOSI that are known to or could occur in the vicinity of the mine. The intent of this SOSI monitoring and management plan is to provide broad, long-term direction for

1. monitoring populations of SOCI within the SCC wildlife study area boundary,
2. eliminating, minimizing, or mitigating potential impacts to these species due to mine operations, and
3. maintaining, enhancing, and/or reclaiming habitats upon which such species depend.

Raptor SOCI that could potentially occur in the area include the burrowing owl (*Athene cunicularia*), Short-eared owl (*Asio flammeus*), ferruginous hawk (*Buteo regalis*), bald eagle (*Haliaeetus leucocephalus*), golden eagle (*Aquila chrysaetos*), northern goshawk (*Accipiter gentilis*), peregrine falcon (*Falco peregrinus*) and prairie falcon (*Falco mexicanus*) (**appendix C**). Of these species, golden eagles and prairie falcons have nested within or immediately adjacent to the tracts (**map 3-7**).

3.3.3 Greater Sage-Grouse (GRSG)

On September 22, 2015, U.S. Fish and Wildlife Service (USFWS) determined that listing the GRSG as an endangered or threatened species under the ESA was not warranted (USFWS 2015). Recent documents regarding GRSG include the Montana Greater Sage-Grouse Amendment (BLM 2015a), the Approved Resource Management Plan (RMP) and Final Environmental Impact Statement (FEIS) for the Miles City Field Office Planning Area (Miles City RMP/FEIS) (BLM 2015b), and the State of Montana, Office of the Governor, Executive Order No. 10-2014 (Office of the Governor 2014). The documents include management procedures to consolidate GRSG protection within the state of Montana in light of the federal government's recent decision not to list the GRSG under the ESA.

The MFWP, in collaboration with Montana's Sage-grouse Advisory Council (MGRSR Advisory Council 2014) and various other partners, defined GRSG core population and connectivity areas across the state. These areas are considered to play a critical role in GRSG conservation in the region. One area (PRB-2-north area) within Core Area 12 overlaps portions of the tracts 2 and 3 (**map 3-7**). The remaining areas are considered GRSG general habitat, which can provide additional important habitat but do not have the same conservation value as core areas. No

GRSG connectivity areas have been defined in the wildlife study area boundary. Based on the current classification system for GRSG, the SCM annual monitoring area includes six confirmed active lek sites, two confirmed inactive leks, two unconfirmed sites, and one confirmed extirpated (mined through) lek (**table 3-12, map 3-7**). Long-term results from annual lek monitoring suggest that GRSG populations in the SCM annual monitoring area are cyclic, with periodic peaks and declines (SCC 2016). This pattern is common throughout their range (Crawford et al. 2004). The population at SCM was highest during the late 1970s and early 1980s. Especially low counts occurred during the mid-1990s and from 2009 through 2015. Despite occasionally elevated GRSG numbers, peak counts were below the long-term average of 4.1 grouse per lek during 30 of the last 32 years (1984-2015) (SCC 2016). Peak male counts only exceeded 10 birds per lek in four (1977-1980) of the last 40 years of monitoring. These data suggest that the SCM area may only support larger groups of GRSG when regional populations are especially high. However, even the highest peak count recorded in the SCM area was only approximately 27 males per lek (SCC 2016).

Table 3-12. Peak GRSG Counts at Leks Within the Spring Creek Mine Annual Monitoring Area During Spring 2015

LEK	MALES	FEMALES	TOTAL	CURRENT MANAGEMENT STATUS ¹
Windmill	0	0	0	Inactive
Pasture/ Alternate Pasture	3/0	0	3/0	Active/Active
Playa	0	0	0	Active
Corral	0	0	0	Inactive
Fenceline Playa/ Alternate Fenceline Playa	0	0	0	Active/Unconfirmed lek
Fenceline Playa II	0	0	0	Active
West Bench	0	0	0	Active
Unconfirmed Lek (Sec. 20)	0	0	0	Unconfirmed lek
Upper Divide	--	--	--	Confirmed Extirpated by fall 1984

¹ As defined by Montana's Greater Sage-grouse Habitat Conservation Advisory Council (2014): Active = at least two males present in at least 1 year followed by fresh sign within 10 years of that observation; Inactive = no males present for last 10 consecutive years; Confirmed extirpated = lek site physically disturbed; Unconfirmed-Possible lek = grouse activity documented but insufficient data to classify as active.

3.3.4 Threatened, Endangered, and Candidate Species and Other Species of Special Interest

3.3.4.1 Threatened, Endangered, and Candidate Species

The USFWS maintains a list of T&E species, and designated critical habitats on their official website for each county in Montana (USFWS 2016). The USFWS also provides the Information for Planning and Conservation (IPaC) system to evaluate the potential of encountering USFWS trust resources, including T&E species, related to a specific project area. The agency updates those species lists annually, or more frequently if any listing changes occur.

Vertebrate T&E species were discussed in section 3.10.7 of the 2006 LBA EA, which included evaluations of bald eagles, least terns (*Sternula antillarum*), and black-footed ferrets (*Mustela nigripes*). The current USFWS list of T&E species that may occur in Big Horn, County, Montana includes the black-footed ferret and the Sprague's Pipit (*Anthus spragueii*) (USFWS 2016). The bald eagle was removed from the federal list of T&E species on August 9, 2007 (USFWS 2011) and a search of the USFWS IPaC system did not indicate that least terns are found in the project specific area (USFWS 2016). As determined from **appendix C**, least terns have not been observed within

the SCC wildlife study area boundary. USFWS determined on September 15, 2010 that the Sprague's pipit was warranted for listing but precluded by higher priority listing actions, which indicates that the Sprague's pipit is currently considered a candidate species under the ESA (Jones 2010). The USFWS has not designated any "critical" habitat for any of these two species in the vicinity of the SCM at this time (USFWS 2016). While the official list of T&E species that may occur in the area specific to MTM 94378 (USFWS 2016) indicated that there are no listed species identified within project area, the two species included in the county list will be reevaluated.

The black-footed ferret is listed as endangered for the SCM area. Targeted surveys for this species have not yet been required or conducted for mine-related activities due to the lack of disturbance in potential habitat (prairie dog colonies). However, neither ferrets nor their sign (e.g., trenching, scat, tracks) have ever been documented in the vicinity of the SCM, or at other regional mines, despite long-term annual monitoring (diurnal and nocturnal) of other wildlife species, including prairie dogs, and periodic targeted ferret surveys conducted in similar habitats elsewhere in the vicinity. Based on the USFWS's (2013) recent update to the black-footed Ferret Recovery Plan, the SCM is not located near an active or potential reintroduction area for this species. The nearest active reintroduction site is within the Northern Cheyenne Indian Reservation, approximately 30 miles north of the SCM (SCC 2015b).

The Sprague's pipit is a considered candidate for listing, meaning that the USFWS has determined that listing under the ESA is warranted, but precluded by the need to address listing actions of a higher priority. Candidate species receive no statutory protection under the ESA but the USFWS encourages cooperative conservation efforts for these species because they are, by definition, species that may warrant future protection under the ESA. Formal surveys for the Sprague's pipit were not conducted because that species has not been verified in the portion of Big Horn County that includes the SCM survey area (Montana Natural Heritage Program [MNHP] 2016a). Nevertheless, biologists watched for all federal and state species of concern during all site visits. The Sprague's pipit has not been documented in the SCM survey area or elsewhere in Big Horn County (MNHP 2016a).

3.3.4.2 Other Species of Special Interest

For the purposes of this discussion, other SOCI include federal birds of conservation concern and Montana species of greatest conservation need. The USFWS has identified birds of conservation concern as species, subspecies, and populations of migratory and non-migratory birds that "...without additional conservation actions, are likely to become candidates for listing under the Endangered Species Act" (USFWS 2008). As defined by the USFWS, bird species considered for inclusion on lists of birds of conservation concern include nongame birds, gamebirds without hunting seasons, candidate and proposed endangered or threatened species, and recently delisted species (USFWS 2008). These species represent the USFWS's highest conservation priorities beyond those species already designated as T&E species. The conservation concerns may be related to population declines, small range or population sizes due to natural or human-caused influences, threats to habitat, or other factors.

The MFWP manages resident wildlife populations and migratory game birds in Montana. While the USFWS provides regulatory oversight for all T&E species, the management of the proposed or candidates species remains with individual states until actual listing occurs. The USFWS also administers the MBTA, Bald and Golden Eagle Protection Act, and other relevant federal laws that protect migratory bird species.

Appendix C lists the vertebrate SOCI, summarizes their habitat requirements, and indicates if they have been observed in or immediately adjacent to the SCC wildlife study area boundary during long-term annual monitoring conducted for SCC.

The SCC wildlife study area boundary is within Bird Conservation Region (BCR) 17 (Badlands and Prairies) of the United States (USFWS 2008). The 2008 (most current list available) list of birds of Conservation Concern for BCR 17 contains 28 species (**appendix C**). Several of the species in BCR17 have been documented at least once within the SCM wildlife study area boundary over time, though nearly half of those observations occurred with varying degrees of infrequency. The most abundant species recorded over time consisted of common raptors and passerine species known to nest in the survey area.

Twenty-three of the 40 Montana SOCI that could potentially occur in the area have been documented within or immediately adjacent to the SCC wildlife study area boundary, from 1994 through 2015. The entire SOCI list is included in **appendix C**.

3.4 Cultural Resources

Information regarding background cultural resources within the current SMP C1979012 permit boundary was included in section 3.12 of the 2006 LBA EA. A summary of the cultural resources management process for cultural resource sites inside SMP C1979012 as of 2015 is included in **appendix D**. According to information provided in SCC's 2015 Annual Mining Report, 116 cultural resources sites have been identified within the SMP C1979012 permit boundary, of which, 11 have been designated as eligible for listing on the National Register of Historic Places (NRHP). Only two of the 11 NRHP eligible sites within the permit boundary are within the Proposed Action tracts.

Native American tribes were consulted during the preparation of the 2006 LBA EA and this EA. In response to the 2006 LBA EA consultation, the Northern Cheyenne Tribe Preservation Office requested additional information and participated in a discussion of the cultural resource issues related to the EA tracts and accompanied mine personnel on tour of several of the sites on February 14, 2006. As a result of the discussions, it was agreed that the Northern Cheyenne Tribe would conduct a tribal cultural survey for SCC and surveys have been conducted on all tracts. No Native American tribes responded to the consultation request for this EA.

3.5 Socioeconomics

Information regarding socioeconomics was included in section 3.4.1 of the 2006 LBA EA. Discussions related to housing, local government services, and environmental justice have not significantly changed enough to require reevaluation in the EA. Updated discussions on the local economy, population, and employment are included below.

3.5.1 Local Economy

Montana has relied on its natural resources as a primary source of tax revenue. Generally, natural resource taxes are categorized as either severance/license taxes or some form of ad valorem (property) taxes. Total natural resource tax collection for the State of Montana in 2014 was \$342,431,381. Montana coal severance taxes accounted for approximately 16 percent) of the total 2014 revenues (Montana Department of Revenue 2015).

Coal production, as reported by the Montana Coal Council (2016), showed Montana's coal production was 42.1 Mt in 2015. This was an increase of approximately 14.7 percent over the 36.7 Mt produced in 2012 and an increase of approximately 0.7 percent over the 41.8 Mt

produced in 2006. The 2015 production was less than the record 44.9 Mt produced in 2008. Coal production figures for Montana, and Big Horn, and Rosebud counties are shown on **table 3-13**. Montana's output of coal has remained relatively constant since 1988, with relatively significant annual fluctuations. Montana was the sixth-largest coal producer among the 50 states in 2014 (Montana Coal Council 2016).

Table 3-13. Historic Coal Production for Montana and Big Horn and Rosebud Counties

Year	2012	2013	2014	2015
Montana ¹	36.7	41.9	44.5	42.1
Percent Change	--	14.4	6.2	-5.4
Big Horn County ¹	22.6	24.9	27.3	25.8
Percent Change	--	10.2	9.4	-5.5
Rosebud County ¹	8.0	8.0	8.8	9.6
Percent Change	--	-0.5	9.9	9.1
Big Horn & Rosebud Co. ¹	30.7	32.9	36.0	35.4
Percent Change	--	7.4	9.5	-1.7

¹ Production is in million tons.

Source: Montana Coal Council (2016)

In 2015, SCC coal production was 17.0 Mt, which is 13.5 percent lower than the peak that occurred in 2010 (19.3 Mt).

The average unit value and cost of coal sold in Montana is shown on **table 3-14**. The value of coal sold for the state of Montana was determined by multiplying the total amount of coal produced in Montana by the average unit value of coal sold from 2012 through 2015.

Table 3-14. Historic Values of Coal Sold for Montana

Year	2012	2013	2014	2015
Average Unit Value (\$/ton)	12.14	12.23	16.02	16.41
Total Value (\$ million)	445.5	512.4	712.9	690.9

Source: Montana Coal Council (2012, 2013, 2014, 2015, and 2016)

As shown on **table 3-15**, total cumulative royalties from the Spring Creek Mine amounted to approximately \$448.1 million in 2015. SCC is the third largest surface coal mining monetary payer in the State of Montana (Montana Coal Council 2016). **Table 3-15** shows that the state and federal governments are the major beneficiaries of these payments, whereas private owners of pre-mining land leases are minor beneficiaries of these payments. Mineral royalties are collected on the amount of production and the value of that production. The current royalty rate for federal coal leases at surface mines is 12.5 percent, with half of this revenue returned to the state. Coal severance taxes are collected by the state of Montana. Currently, Montana collects 15 percent of the price of the coal as severance tax.

Table 3-15. Royalty Payments from Coal Production at the SCM, 2012-2015

Year	2012	2013	2014	2015
Federal Collections ¹	24.5	23.6	21.4	20.3
State Collections ¹	6.4	5.9	6.8	7.8
Private Collections ¹	2.3	1.8	1.6	0.7
Total Royalty Collections¹	33.2	31.2	29.7	28.8

¹ Collections are in million dollars

Source: SCC (2016)

3.5.2 Population

According to U.S. census data, in 2015 Sheridan County had a population of 30,009 (U.S. Census Bureau 2016a). The 2012 population of Sheridan County was 29,596. Therefore, there was an

increase of 893 persons or 3.0 percent since SCM's 2012 federal mining plan modification was approved.

Population in Big Horn County, Montana continues to be sparse. According to the U.S. Census Bureau, Big Horn County had a population of 13,242 in 2015. The 2012 population of Big Horn County was 12,994. Between 2012 and 2005, the population of Big Horn County grew by approximately 1.9 percent (U.S. Census Bureau 2016b).

3.5.3 Employment

A majority of the employees at the SCM reside in Sheridan County. The average total labor force in Sheridan County in March 2016 stood at 15,590 with an unemployment rate of 5.6 percent, compared to 5.7 percent in 2012 (Wyoming Department of Employment 2016). At the end of the second quarter of 2015, approximately 199 people in Sheridan County were employed in mining (including oil & gas extraction), representing about 1.4 percent of the employed labor force (Wyoming Department of Employment 2016). Total employment in Sheridan County generally decreased as of March 2016, when compared to March 2015. In March 2016, there were 15,069 employed persons in the county (Wyoming Department of Employment 2016). In 2014, the largest employment sector in Sheridan County was the management, business, science, and arts sector, with 37.2 percent of the employees. This was followed by sales (20.1 percent), service (16.7 percent), natural resources, construction, and maintenance (14.0 percent), and production, transportation, and materials moving (12.0 percent) (U.S. Census Bureau 2016).

Decker and Spring Creek Mines are two of the three primary mining employers in Big Horn County. Montana receives the payroll taxes, royalties, and production taxes, but most of the employees reside in Sheridan County. In 2015, the Decker and Spring Creek mines employed 130 and 273 people, respectively, with estimated payrolls of \$9,883,000 and \$25,704,000, respectively (Montana Coal Council 2016).

Wyoming's economy was exposed to a substantial decline in 2015 in the prices of oil, an extended period of low natural gas prices, and the decline in the price of coal (Wyoming Department of Workforce Services 2016). As well as direct effects to oil and gas and mining employment, the effects of the reduced demand for these natural resources also effects the required support industries for the mining and quarrying of minerals and for the extraction of oil and gas.

4.0 Environmental Consequences/Cumulative impacts

4.1 Introduction

This chapter discusses the potential direct, indirect, and cumulative effects of the Proposed Action and the No Action Alternative, as described in Chapter 2. The discussion is organized by the affected resource in the same order as they are described in chapter 3 and then by alternative.

An impact, or effect, is defined as a modification to the environment brought about by an outside action. Impacts vary in significance from no change, or only slightly discernible change, to a full modification or elimination of the resource. Impacts can be beneficial (positive) or adverse (negative). Impacts are described by their level of significance (i.e., significant, moderate, minor, negligible, or no impact). For purposes of discussion and to enable use of a common scale for all resources, resource specialists considered the following impact levels in qualitative terms.

Significant Impact: Impacts that potentially could cause irretrievable loss of a resource; significant depletion, change, or stress to resources; or stress within the social, cultural, and economic realm.

Moderate Impact: Impacts that potentially could cause some change or stress to an environmental resource but the impact levels are not considered significant.

Minor Impact: Impacts that potentially could be detectable but slight.

Negligible Impact: Impacts in the lower limit of detection that potentially could cause an insignificant change or stress to an environmental resource or use.

No Impact: No discernible or measurable impacts.

Direct impacts are defined as those impacts which are caused by the action and occur at the same time and place (40 CFR 1508.8[a]). Indirect impacts are those that are caused by the action and occur later in time or are farther removed in distance, but are still reasonably foreseeable (40 CFR 1508.8[b]). Cumulative impacts are those impacts that result from incremental effects of an action when added to other past and present actions, and reasonably foreseeable future actions regardless of what agency or other entity undertakes such other actions. Cumulative impacts occur over a given time period. The time period for cumulative effects includes the time period when the impacts of past and present actions and reasonably foreseeable future actions overlap with the time period when project impacts would occur (including construction, operation, and reclamation phases).

Impacts can be short term meaning these impacts generally occur over a short period during a specific point in the mining process and these changes generally revert to pre-disturbance conditions at or within a few years after the ground disturbance has taken place. Long-term impacts are defined as those that substantially would remain beyond short-term ground-disturbing activities. Long-term impacts would generally last the life of the federal mining plan modification approval and beyond.

The direct, indirect, and cumulative effects of the Proposed Action and No Action Alternative are comparable to those described in the 2006 LBA EA, except as noted herein. In addition to addressing the specific issues identified in **chapter 1**, this updated environmental consequences analyses reflect changes to the mining operations presented in **chapter 2** and any updated

descriptions of the affected environment presented in **chapter 3** that have taken place since the 2006 LBA EA and the 2012 federal mining plan modification were approved.

Regarding other relevant regional activity, SCC resubmitted TRI Major Permit Revision application to MDEQ on September 30, 2013, to permit the mining of approximately 68 Mt of recoverable coal to SMP C1979012. If approved, this revision would not increase coal production but would extend the SCM LOM by approximately 3.8 years. The Decker Mine is a surface coal mine owned and operated by Lighthouse Resources Inc., located approximately 1.5 miles southeast of the EA project area. The permitted mine operations area is approximately 11,718 surface acres. The 2015 coal production was 3.0 million tons. The Absaloka Mine is a surface coal mine located on and adjacent to the Crow Reservation, owned and operated by Westmoreland Resources, Inc. The mine is located approximately 45 miles northwest of the SCM. The permitted mine operations area is approximately 10,427 surface acres. The average annual coal production is 5.5 million tons. Big Metal Coal Co. LLC (BMC), a subsidiary of CPE, has entered into an Option to Lease Agreement with the Apsáalooke Nation (Crow Tribe) for three Project Areas, located in the southeast corner of the Crow Indian Reservation. These reserves are located adjacent (west) of the SCM and cumulatively contains an estimated 1.4 billion tons of coal owned by the Crow Tribe, which is held in trust by the U.S. for the Crow Tribe (BMC 2016). As of June 1, 2016, BMC has not submitted a Notice of Exercise of Option for any of the three lease options, and in accordance with the Option to Lease Agreement, BMC is required to exercise an option by the end of June 2018. Therefore, planning and evaluation is in the initial stages. The Youngs Creek Mine is owned by CPE. The Youngs Creek Mine is located in Wyoming approximately 7 miles southwest of the SCM and encompasses approximately 7,822 acres of predominately privately-held coal resources and surface rights. Estimated recoverable coal resources are 287 Mt (CPE 2015 Annual Corporate Report). The mine is permitted, but not there are no current mining operations. The Brook Mine, a subsidiary of Ramaco LLC, has submitted a mining permit application to the Wyoming Department of Environmental Quality to mine a maximum of 8 Mtpy of coal utilizing a highwall mining technique. The Brook Mine is located in Wyoming, approximately 15 miles southwest of the SCM and encompasses approximately 4,549 acres of privately-held coal resources. Recoverable coal resources held by Ramaco are approximately 100 Mt (Billings Gazette 2014). The mine is not yet operational.

The environmental and cumulative effects discussions below assume that under Proposed Action, the federal mining plan modification to mine coal in the remaining federal coal lease MTM 94378 would be approved. Coal recovery would continue within the SCM permit boundary continue at an estimated annual rate of 18 Mt, in accordance with the MDEQ-approved mine permit. The recovery of the remaining federal coal would continue for approximately 4.7 additional years over the No Action Alternative. New mine facilities, associated surface disturbances, and subsidence repairs would not be required in connection with the Proposed Action.

Under the No Action Alternative, the mining plan modification for the federal coal would not be approved. Currently approved mining operations associated with federal coal would continue for approximately 1.4 years within federal leases MTM 069782 and MTM 088405 (6.8 Mt), but at a lower recovery rate of approximately 5 Mt.

4.1.1 Summary Comparison of Direct and Indirect Environmental Impacts

A summary comparison of the direct and indirect environmental impacts is included in **table 4-1** and in Table 2-2 of the 2006 LBA EA.

Table 4-1. Summary Comparison of Direct and Indirect Environmental Impacts

Resource Name	Proposed Action	No Action Alternative
Added In-Place Coal (Mt)	84.8	0.0
Added disturbance	1,224.0 Acres (554.2 Acres Already Disturbed)	0 Acres
Topography and Physiography	Moderate, permanent on all tracts. Local impacts only.	Moderate, permanent on all tracts due to mine related activity authorized under a revised state mine permit and federal mining plan. Local impacts only.
Geology, Minerals and Paleontology	Moderate, permanent on all tracts. Recovery of 84.8 mm tons of Anderson/Dietz coal and CBNG within Anderson/Dietz coal. Although there would be a loss of CBNG through venting and/or depletion of hydrostatic pressure in Anderson/Dietz coal resulting from mining adjacent areas, CBNG recovery has been greatly reduced in the area. Local impacts only.	Moderate, permanent on all tracts due to mine related activity authorized under a revised state mine permit and federal mining plan. Approximately 84.8 mm tons of coal would not be removed on the tracts but loss of CBNG would occur though venting and/or depletion of hydrostatic pressure in Anderson/Dietz coal resulting from mining adjacent areas. Local impacts only.
Air Quality	Moderate, short term from full mining on all tracts. Primarily local impacts, with the potential for regional and global impacts from transportation and combustion of coal.	Moderate, short term on all tracts due to mine related activity authorized under a revised state mine permit and federal mining plan. Primarily local impacts, with the potential for regional and global impacts from transportation and combustion of coal.
Water Resources – Surface Water	Moderate, short term on all tracts from full mining. Primarily local impacts, with the potential for regional impacts.	Moderate, short term on all tracts due to mine related activity authorized under a revised state mine permit and federal mining plan. Primarily local impacts, with the potential for regional impacts.
Water Resources-Groundwater	Moderate, short and long term on all tracts due to aquifer (alluvial, overburden, and coal) removal. Local impacts only.	Moderate, short and long term on all tracts due to mine related activity authorized under a revised state mine permit and federal mining plan. Local impacts only.
Alluvial Valley Floors	No impact – Not present	Same as Proposed Action
Wetlands	No impact -Not present	Same as Proposed Action
Soils	Moderate, short term on all tracts from full mining. Local impacts only.	Moderate, short term on all tracts due to mine related activity authorized under a revised state mine permit and federal mining plan. Local impacts only.

Table 4-I. Continued		
Resource Name	Proposed Action	No Action Alternative
Vegetation	Moderate, short term on all tracts from full mining. Local impacts only.	Moderate, short term on all tracts due to mine related activity authorized under a revised state mine permit and federal mining plan. Local impacts only.
Wildlife	Moderate, short term on all tracts from full mining. An existing falcon nest site would be mined. Loss of critical grouse areas would occur. Mitigation would be required for the loss of these critical areas. Local impacts only.	Moderate, short term on all tracts due to mine related activity authorized under a revised state mine permit and federal mining plan. The falcon nest site and critical grouse areas would not be removed. Local impacts only.
Ownership and Use of Land	Moderate, short term on all tracts from full mining. Local impacts only.	Moderate, short term on all tracts due to mine related activity authorized under a revised state mine permit and federal mining plan.
Cultural Resources	Negligible, long term on all tracts from full mining. Two NRHP eligible cultural resources sites would be disturbed and mitigation would be required for the loss of these two NRHP site. Local impacts only.	Negligible, long term on all tracts due to mine related activity authorized under a revised state mine permit and federal mining plan. NRHP sites would not be disturbed. Local impacts only.
Visual Resources	Moderate, short term on all tracts from full mining. Local impacts only.	Moderate, short term on all tracts due to mine related activity authorized under a revised state mine permit and federal mining plan. Local impacts only.
Noise	Moderate to substantial, short term on all tracts from full mining. Local impacts only.	Moderate to substantial, short term on all tracts due to mine related activity authorized under a revised state mine permit and federal mining plan. Local impacts only.
Transportation facilities	No impact	Same as Proposed Action
Hazardous and Solid Waste	No impact	Same as Proposed Action
Socioeconomics	Moderate, beneficial, short term on all tracts from full mining. LOM State and Federal revenues from tract coal would be \$182.5 million. Local and regional impacts.	Moderate, beneficial short term on all tracts due to mine related activity authorized under a revised state mine permit and federal mining plan. LOM State and Federal revenues reduced by \$182.5 million, compared to Proposed Action. Local impacts only.

4.2 Topography and Physiography

4.2.1 Direct and Indirect Effects

4.2.1.1 Proposed Action

The direct and indirect effects to topography and physiography would not be significantly different than those described in the 2006 LBA EA. The Proposed Action would impact the topography and physiography of the remaining portions of lands included in MTM 94378 but these impacts would be similar to those currently occurring on the existing SCM coal leases as coal is mined and the mined-out areas are reclaimed. The direct effects on topography and physiography resulting from the Proposed Action are expected to be moderate and permanent on all tracts. There would be no indirect effects under the Proposed Action. As discussed in **section 1.2**, the MDEQ, through the PAP process, considered and approved the impacts of mining coal related to MTM 94378, including effects to topography and physiography.

4.2.1.2 No Action Alternative

Under the No Action Alternative, SCC would terminate federal coal recovery operations within the boundaries of the MTM 94378 tracts in September 2016. SCC would proceed with reclamation of lands within the boundaries of the MTM 94378 tracts, following an orderly shutdown process. The shutdown would require revisions to the MDEQ-approved SMP C1979012 and the BLM-approved R2P2 to modify the reclamation plan, maximum economic recovery conditions, and coal recovery plans for areas within the MTM 94378 tracts. The impacts to topography under the No Action Alternative would be similar to those under the Proposed Action but would occur earlier. After reclamation has been completed, the impacts to topography would be negligible.

4.2.2 Cumulative Effects

The cumulative impacts to topography and physiography would not be significantly different than those described in the 2006 LBA EA. The cumulative effects would primarily be related to the existing SCM and the adjacent Decker Mine. Following surface coal mining and reclamation, topography would be modified within the permit boundary of the SCM. The cumulative effects on topography and physiography resulting from the Proposed Action are expected to be moderate and permanent on all tracts.

4.2.3 Mitigation Measures

No mitigation measures would be necessary for topography.

4.3 Geology, Mineral Resources, and Paleontology

4.3.1 Direct and Indirect Effects

4.3.1.1 Proposed Action

The direct and indirect effects to geology, mineral resources, and paleontology would not be significantly different than those described in the 2006 LBA EA. The geology from the base of the Anderson/Dietz coal seam to the land surface would be subject to permanent change on the areas of coal removal and mining would substantially alter the resulting subsurface physical characteristics of these lands. These impacts are occurring on the existing SCM coal leases as coal is mined and the mined-out areas are reclaimed. The Proposed Action would result in the recovery of approximately 84.8 Mt of federal coal within the Anderson/Dietz coal seam. The Proposed

Action would also result in the loss of CBNG through venting and/or depletion of hydrostatic pressure in Anderson/Dietz coal resulting from mining adjacent areas. The direct and indirect effects on, mineral resources, and paleontology are expected to be moderate and permanent on all tracts.

As of April 14, 2016, 911 CBNG wells had been completed within the CX Field, which includes the EA tracts (Montana Board of Oil and Gas Conservation [MBOGC 2016]) but no CBNG wells have been completed within the tracts. The Final Montana Statewide Oil and Gas Environmental Impact Statement and Proposed Amendment of the Powder River and Billings Resource Management Plans (BLM 2003) assumed an average well life of 20 years for CBNG wells in the PRB of Montana, based on a review of average production well life for existing wells east and west of the Tongue River. It is unlikely that any CBNG would be recovered from the Anderson/Dietz coal seam within the EA tracts due to the absence of existing CBNG wells on the tract and the relatively fast onset of mining activity scheduled for the tracts, if the federal mining plan modification request is approved. CBNG reserves not recovered from the Anderson/Dietz coal seam prior to mining would be vented to the atmosphere. There are no existing facilities or equipment associated with CBNG production and development on the tracts.

No unique or significant paleontological resources have been identified or are suspected to exist on the tracts. The likelihood of encountering significant paleontological resources is very small. Lease and permit conditions require that should previously unknown, potentially significant paleontological sites be discovered, work in that area shall stop and measures shall be taken to assess and protect the site.

4.3.1.2 No Action Alternative

Under the No Action Alternative, SCC would terminate federal coal recovery operations within the boundaries of the MTM 94378 tracts in September 2016. Impacts to the geological resources have resulted from current mining activity and therefore under this alternative, geological resources in the area would remain as described in **section 4.3.1.1**.

4.3.2 Cumulative Effects

The cumulative impacts to geology, mineral resources, and paleontology would not be significantly different than those described in the 2006 LBA EA. The PRB coalfield encompasses an area of about 12,000 square miles. The USGS estimate that there are approximately 162 billion tons of recoverable coal in the PRB, of which, an estimated 25 billion tons are considered economically recoverable coal, with a maximum stripping ratio of 10:1 (U.S. Geological Survey [USGS] 2013). The cumulative effects would primarily be related to the existing SCM and the adjacent Decker Mine. If developed, the Upper Youngs Creek, Youngs Creek, and Brooks mines would add cumulative effects related to approximately 17,250 permitted coal acres and approximately 1,563 Mt of coal.

According to April 14, 2016 information from the Montana Board of Oil and Gas Conservation (MBOGC) website, 1,120 CBNG wells have been drilled in Big Horn County. The MBOGC records indicate that a majority of the wells are privately held or state minerals, with only approximately 16 percent of the wells (176 of 1,120) being federal minerals. Status of these wells includes shut-in, producing, plugged and abandoned, and injection. Currently, 44 of the CBNG wells in Big Horn County are considered to be in production. The pace of CBNG development in Montana has recently slowed considerably (MBOGC 2013).

Impacts to paleontological resources as a result of the already-approved cumulative energy development occurring in the PRB consist of losses of plant, invertebrate, and vertebrate fossil material for scientific research, public education (interpretive programs), and other values. Losses have and would result from the destruction, disturbance, or removal of fossil materials as a result of surface-disturbing activities, as well as unauthorized collection and vandalism. A beneficial impact of surface mining can be the exposure of fossil materials for scientific examination and collection, which might never occur except as a result of overburden removal, exposure of rock strata, and mineral excavation.

4.3.3 Mitigation Measures

No mitigation measures would be necessary for geology or mineral resources. Should significant paleontological resources be encountered as a result of the Proposed Action, the appropriate agencies would be consulted.

4.4 Air Quality

4.4.1 Particulate Matter

4.4.1.1 Direct and Indirect Effects

4.4.1.1.1 Proposed Action

SCC projects that the annual coal production is expected to average 18 Mt with mining the remaining federal coal within the EA tracts (SCC 2016). SCM's currently approved air quality permit (MAQP #1120-12) from the MDEQ limits annual coal production to 30 Mt of coal. According to SCC, production would continue at an average rate of 18 Mtpy for approximately 4.7 additional years under the Proposed Action. Public exposure to particulate emissions from surface mining operations is most likely to occur along publicly accessible roads and highways that pass through the area of the mining operations. Occupants of residences in the area could also be affected. As indicated on **map 3-1**, the closest residence is located approximately 3,000 feet from Tract I disturbance and the closest public transportation route is Federal-Aid Secondary Route [FAS] 314, approximately 3,271 feet from disturbance associated with Tract I. The nearest recreational opportunities are at the Tongue River Reservoir, approximately 15,000 feet from the EA tracts.

MDEQ issued air quality permit MAQP #1120-12 for the SCM on October 16, 2014. This air quality permit was issued based on an analysis using emission factors, estimation methods, and model selection consistent with MDEQ policy. The emission inventory was prepared based on site-specific operations projections associated with the 30 Mtpy mine plan.

PM₁₀ and PM_{2.5} inventories for the mining activities at SCM were prepared for all years in the currently anticipated LOM. Two years were then selected for worst-case dispersion modeling of PM₁₀ and PM_{2.5} based on mine plan parameters and emission inventories. Fugitive emission sources and point sources were modeled using the AERMOD. The modeling follows the methods presented in a dispersion modeling protocol for the project submitted to MDEQ in April 2013 (Redhorse 2014) and on MDEQ comments on the original modeling analysis submitted September 2013. Per MDEQ guidance, modeling for NO₂ was not required because increased NO_x PTE would be well below 40 tpy (Redhorse 2014).

Modeling indicates the currently projected mine activities would be in compliance with the 24-hour and annual PM₁₀ ambient air standard for the life of the SCM. Based on mine plan parameters

and highest emissions inventories, the years 2016 and 2018 were selected as the worst-case years for evaluation, since those years had the highest modeled PM₁₀ concentrations. Coal production in both years was modeled at the maximum permitted production level of 30 Mt (Redhorse 2014). The results of 24-hour and annual dispersion modeling are included in **table 4-2**. The locations of the maximum-modeled PM₁₀ and PM_{2.5} concentrations for 2018 are shown on **map 4-1**. Under the modified mining plan proposed, the SCM would not cause or contribute to a violation of the federal 24-hour PM₁₀ NAAQS of 150 µg/m³ (Redhorse 2014).

Table 4-2. SCM Particulate Matter Dispersion Modeling Results

Pollutant	Averaging Period	Modeled Concentration (µg/m ³) ^a	Background Concentration (µg/m ³) ^a	Total Concentration (µg/m ³) ^a	NAAQS/MAAQS (µg/m ³) ^a
		2016		Mine	
				Year	
PM ₁₀ ^b	24-hour	76.55 ^c	33.0	109.55	150 ^d
	Annual	20.22 ^e	17.5	37.72	50 ^f
PM _{2.5} ^g	24-hour	11.15 ^e	15.0	26.15	35 ^h
	Annual	4.13 ^e	5.5	9.63	12 ⁱ
		2018		Mine	
				Year	
PM ₁₀ ^b	24-hour	90.82 ^c	33.0	123.82	150 ^d
	Annual	23.98 ^e	17.5	41.48	50 ^f
PM _{2.5} ^g	24-hour	14.53 ^e	15.0	29.53	35 ^h
	Annual	4.14 ^e	5.5	9.64	12 ⁱ

a Micrograms per cubic meter

b Particulate matter with aerodynamic diameter less than or equal to 10 microns, Highest, second-high modeled value

d Violation occurs with more than one expected exceedance per calendar year, averaged over 3-years

e Highest modeled value

f Violation occurs when the 3-year average of the arithmetic means over a calendar year exceeds the value. EPA revoked the annual PM10 standard effective December 17, 2006.

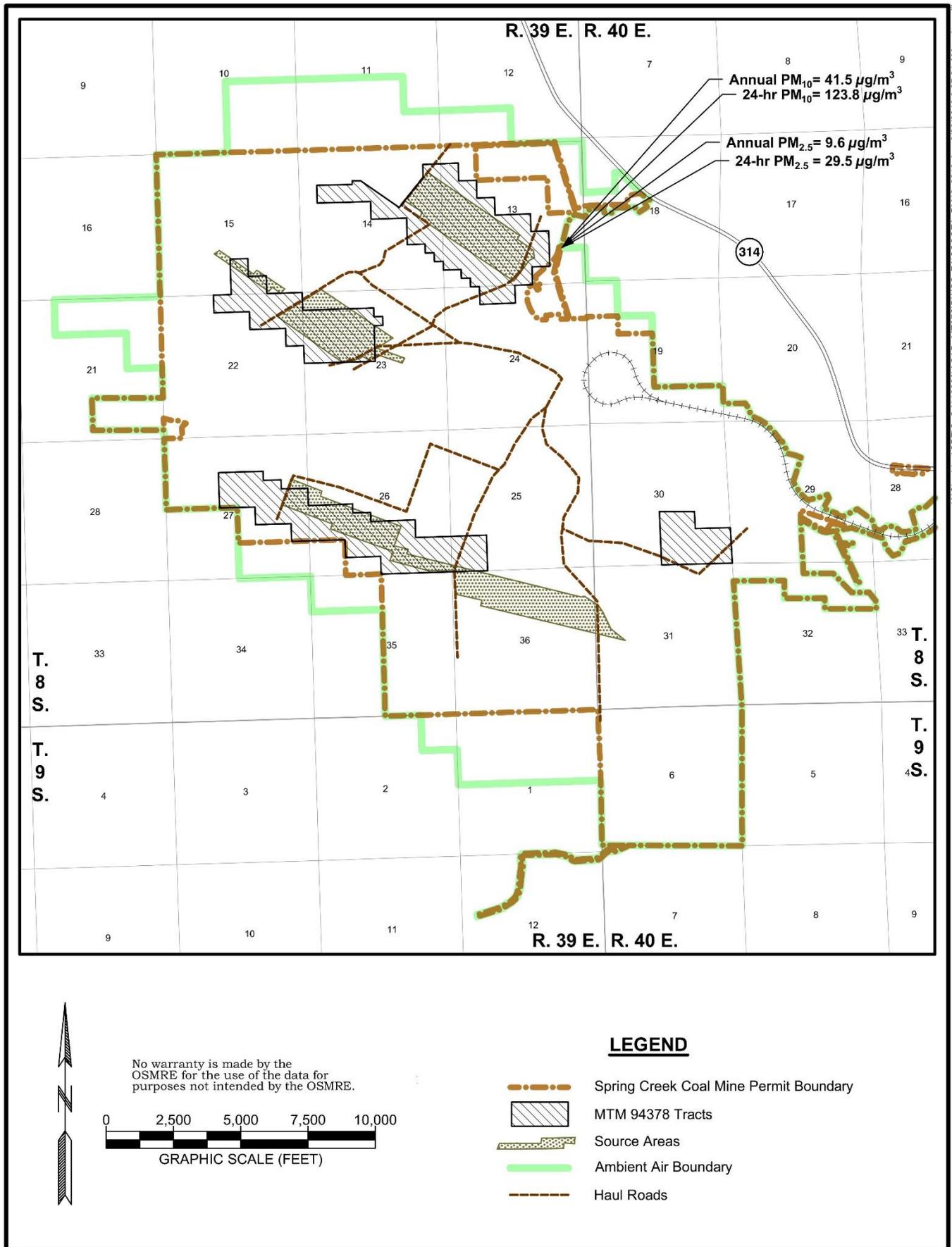
g Particulate matter with aerodynamic diameter less than or equal to 2.5 microns

h Violation occurs when the 3-year average of the 98th percentile values exceed the standard. Per EPA policy, use the maximum modeled concentration for comparison to the standard.

i Violation occurs when the 3-year average of the spatially averaged calendar year means exceed

An inventory of all point sources, controls, and emissions for the MAQP #1120-12 air quality permit showed a maximum potential to emit of 21.0 tpy; therefore, a PSD increment consumption analysis was not necessary. Because this value is below the 100 tpy major source threshold limit specified in ARM 17.8, Subchapter 8 – PSD and Subchapter 12 – Operating Permit Program, SCM would not be subject to the Title V operating permit program (Redhorse 2014).

There have been no recorded exceedances of the 24-hour and annual PM₁₀ NAAQS or MAAQS at the SCM, and 2014 AERMOD modeling conducted for the current SCM permit predicted no future exceedances of the 24-hour and annual PM₁₀ and PM_{2.5} AAQS at a 30-Mtpy production rate (Redhorse 2014). At the estimated average annual production rate of 18 Mt there would be an extension of approximately 4.7 years in the time the mine would produce and there would be an increase in overburden thickness but fugitive dust emissions are projected to remain within daily and annual NAAQS and MAAQS limits. The direct and indirect effects from particulate matter emissions resulting from the Proposed Action are expected to be moderate and short term on all tracts. The effects of particulate matter emissions from coal combustion are included in **section 4.4.3**.



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Map 4-1. Maximum Modeled PM_{10} and $PM_{2.5}$ Concentrations at the Spring Creek Mine Ambient Air Boundary for the Year 2018.

4.4.1.1.2 No Action Alternative

Under the No Action Alternative, SCC would terminate federal coal recovery operations within the boundaries of the MTM 94378 tracts in September 2016. SCC would proceed with reclamation of lands within the boundaries of the MTM 94378 tracts, following an orderly shutdown process. The shutdown would require revisions to the MDEQ-approved SMP C1979012 and the BLM-approved R2P2 to modify the reclamation plan, maximum economic recovery conditions, and coal recovery plans for areas within the MTM 94378 tracts. The impacts related to particulate matter emissions under the No Action Alternative would be similar to those under the Proposed Action but would not be extended for 4.7 additional years.

4.4.1.2 Cumulative Effects

The cumulative effects from particulate matter emissions are expected to be moderate and short term. Cumulative impacts from particulate matter emissions could be higher in the short term in this area due to coal mining activities if surface inversion occurs in the northern portion of the PRB. This would be temporary, lasting only during the inversion. Air quality impacts would cease to occur after mining and reclamation are complete. The effects of particulate matter emissions from coal combustion are included in **section 4.4.3**.

4.4.1.3 Mitigation Measures

No mitigation measures beyond those required by the SCM air quality permit would be required for emissions of particulate matter.

4.4.2 Emissions of Nitrogen Oxides (NO_x) and Ozone (O₃)

4.4.2.1 Direct and Indirect Effects

4.4.2.1.1 Proposed Action

SCC projects that the annual coal production is expected to average 18 Mt with mining of the remaining federal coal associated with the EA tracts (SCC 2016). SCM's currently approved air quality permit from the MDEQ limits annual coal production to 30 Mt of coal. According to SCC, the recovery of federal coal would continue at an average rate of 18 Mtpy for approximately 4.7 additional years under the Proposed Action.

As presented in **table 3-7**, NO₂ data collected at the currently active AQS monitoring sites in Rosebud County nearest to the SCM were well below the NAAQS 98th percentile concentration of 188 µg/m³ (0.100 parts per million (ppm)), as indicated in **table 3-1**) and below the MAAQS 98th percentile concentration of 608 µg/m³ (0.30 ppm, as indicated in **table 3-1**). Therefore, ambient air quality within the vicinity of the proposed action is in compliance with the NO₂ NAAQS and MAAQS.

While, per MDEQ guidance, modeling for NO₂ is not required because estimated NO_x PTE would be well below 40 tpy, the SCM did include modeled results for NO_x emissions for 2013 through 2025. As with particulate matter modeling, the years 2016 and 2018 were selected as the worst-case years, since those years had the highest modeled NO_x concentrations.

NO_x modeling closely followed many of the same procedures used in the PM₁₀ analysis. Emissions were apportioned in a similar manner and the same meteorological data set was used. Area source, haul road, and point source information for the SCM and Decker Mine and information for

railroads, roads, power plants, and regional sources provided by MDEQ ARMB were included in the model. The amount of NO_x emissions from blasting is related to the amount of ammonium nitrate fuel oil (ANFO) blasting agent utilized. NO_x emission rates for 2016 and 2018 are expected to be 558.9 tpy and 555.8 tpy, respectively. The locations of the maximum-modeled NO_x concentrations along the SCM ambient air boundary for 2018 are shown on **map 4-1**. Public exposure to NO_x emissions caused by surface mining operations is most likely to occur along publicly accessible roads and highways that pass through the area of the mining operations. Occupants of residences in the area could also be affected. The closest public transportation route is Route FAS 314, which is within 3,870 feet of Tract I and there are occupied dwellings located approximately 3,280 feet north of the EA tracts. The closest residence is located approximately 3,250 feet from Tract I. The nearest recreational opportunities are at the Tongue River Reservoir, approximately 15,000 feet from the proposed tracts. The direct and indirect effects from NO_x emissions resulting from the Proposed Action are expected to be moderate and short term on all tracts.

As indicated in **section 3.1.4.2**, O₃ monitoring is not required at the SCM but O₃ levels have been monitored at AQS Site 300870001, which is located approximately 28 miles northeast of the tract, since 2010. No exceedances of the 8-hour or O₃ standard have occurred at monitoring site 300870001 since monitoring began in 2010. Based on information provided by SCC that mining methods would not be significantly different than those currently employed at the mine (SCC 2016), the direct and indirect effects from O₃ emissions resulting from the Proposed Action are expected to be minimal and short term.

4.4.2.1.2 No Action Alternative

Under the No Action Alternative, SCC would terminate federal coal recovery operations within the boundaries of the MTM 94378 tracts in September 2016. SCC would proceed with reclamation of lands within the boundaries of the MTM 94378 tracts, following an orderly shutdown process. The shutdown would require revisions to the MDEQ-approved SMP C1979012 and the BLM-approved R2P2 to modify the reclamation plan, maximum economic recovery conditions, and coal recovery plans for areas within the MTM 94378 tracts. The impacts related to NO_x and O₃ emissions under the No Action Alternative would be similar to those under the Proposed Action but would not be extended for 4.7 additional years.

4.4.2.2 Cumulative Effects

The cumulative effects from NO_x and O₃ emissions are expected to be moderate and short term. Cumulative impacts from NO_x and O₃ could be higher in the short term in this area due to coal mining activities if surface inversion occurs in the northern portion of the PRB. This would be temporary, lasting only during the inversion. Air quality impacts would cease to occur after mining and reclamation are complete.

4.4.2.3 Mitigation Measures

No mitigation measures beyond those required by the SCM air quality permit would be required for emissions of NO_x or O₃.

4.4.3 Air Quality Related Values (AQRVs)

4.4.3.1 Direct and Indirect Effects

4.4.3.1.1 Proposed Action

Visibility

MDEQ has determined that the SCM is not a major stationary source, in accordance with ARM 17.8.818. Therefore, the state of Montana does not require mines to evaluate impacts on Class I areas; however, OSMRE considers such issues during the federal mining plan modification review process.

The impacts to visibility from mining the EA tracts have been inferred from the currently permitted impacts of mining the existing coal leases at the SCM. If the coal within the tracts is mined, the tract would be mined as an integral part of the SCM. The average annual coal production for the mine is anticipated to be approximately 18 Mt if the federal mining plan modification is approved to include the remaining federal coal in the EA tracts. Impacts to visibility under the Proposed Action would be similar to the conditions currently experienced as described in **section 3.1.4.3.1** except they would be extended by approximately 4.7 years.

Overburden is generally thicker in the tracts than the current lease areas; therefore, state-of-the-art methods to minimize any increases in blast sizes and/or blasting agents would be employed. Thus, emissions from blasting are not expected to increase significantly, notwithstanding the increased thicknesses of overburden that would be excavated in the tract. The expected levels of pollutants and particulates that effect visibility would be within the approved MAQP #1120-12. The proposed project area is not directly influenced by other air quality regulations (i.e. Class I air shed). The direct and indirect effects to visibility resulting from the Proposed Action are expected to be moderate and short term.

Air Quality Related Values Related to Coal Combustion

Emissions that affect air quality also result from combustion of fossil fuels. **Table 4-3** presents the estimated PM₁₀, PM_{2.5}, SO₂, NO_x, and Hg emissions estimates for coal mined at the SCM that would be utilized for power generation in comparison with 2012 through 2015 values.

Table 4-3. Estimated Annual PM₁₀, PM_{2.5}, SO₂, NO_x, and Hg Contributions from Coal Combustion, 2012-2015 and 2018-2021

Source	2012	2013	2014	2015	2018-2021 Average
Mt Tons of Coal Recovered	17.2	17.7	17.3	17.0	18.0
PM ₁₀ (Tons)	3,845.0	3,956.8	3,867.4	3,800.3	4,023.9
PM _{2.5} (Tons)	1,172.7	1,026.8	1,179.6	1,159.1	1,227.3
SO ₂ Emissions (Tons)	70,906.4	70,081.9	71,318.6	70,081.9	74,204.3
NO _x Emissions (Tons)	27,398.3	27,079.7	27,557.6	27,079.7	28,672.7
Hg Emissions (Tons)	276.1	272.8	277.7	272.8	288.9

Source: WWC (2016), calculations are provided in appendix G

Impacts to air quality related to coal combustion under the Proposed Action would be similar to the conditions currently experienced as described in **section 3.1.4.3.2** except they would be extended by approximately 4.7 years.

Acidification of Lakes

Impacts to air quality related to acidification of lakes under the Proposed Action would be similar to the conditions currently experienced as described in **section 3.1.4.3.2** except they would be extended by approximately 4.7 years.

4.4.3.1.2 No Action Alternative

Under the No Action Alternative, SCC would terminate federal coal recovery operations within the boundaries of the MTM 94378 tracts in September 2016. SCC would proceed with reclamation of lands within the boundaries of the MTM 94378 tracts, following an orderly shutdown process. The shutdown would require revisions to the MDEQ-approved SMP C1979012 and the BLM-approved R2P2 to modify the reclamation plan, maximum economic recovery conditions, and coal recovery plans for areas within the MTM 94378 tracts. The impacts related to visibility and acidification of lakes under the No Action Alternative would be similar to those under the Proposed Action but would not be extended by approximately 4.7 years.

4.4.3.2 Cumulative Effects

Blasting, coal crushing, loading and hauling of coal, moving equipment, and other activities associated with surface coal mining produce and from the combustion of coal at power plants particulates that can be released into the air, which could impact AQRVs. CBNG recovery has been greatly reduced in the area and is not included in cumulative impacts assessments. As discussed in **section 3.1.4.3**, the nearest Class I area is located approximately 19 miles north of the proposed tracts at the Northern Cheyenne Indian Reservation. The cumulative effects on AQRVs are expected to be moderate and short term. Cumulative impacts to AQRVs could be high in the short term in this area due to coal mining activities if surface inversion occurs in the northern portion of the PRB. This would be temporary, lasting only during the inversion. Inversion modeling was not conducted for the SCM area but all air quality standards are currently being met at the mine and the Northern Cheyenne Indian Reservation Class I area is located north of the SCM and would not be impacted by the Proposed Action since it is not in line with the prevailing wind (see **section 3.1.2**). Air quality impacts would cease to occur after mining and reclamation are complete. The cumulative effects that would increase the potential for acidification of lakes resulting from the Proposed Action are expected to be minimal and short term. Cumulative air quality impacts would cease to occur after mining and reclamation are complete.

4.4.3.3 Mitigation Measures

No mitigation measures beyond those required by the SCM air quality permit would be required for visibility.

4.4.4 Greenhouse Gas Emissions

4.4.4.1 Direct and Indirect Effects

4.4.4.1.1 Proposed Action

Each GHG has a different lifetime in the atmosphere and a different ability to trap heat in the atmosphere. To allow different gases to be compared and added together, emissions can be converted into CO₂e emissions. SCM estimated emissions from combined sources based on annual coal recovered from 2012 through 2015 and known production and variables used to calculate CO₂e emissions, and for the 2016-2021-time period using estimated production and

estimated variables (**table 4-4**). CO₂e emissions are projected to remain constant at the SCM for the LOM. The Proposed Action would not increase annual production, but would extend the life of the mine by approximately 4.7 years.

As presented in **table 4-4**, the combustion of the coal is the primary contributing factor related to CO₂e emissions from the Proposed Action, accounting for approximately 98 percent of the emissions. Based on estimated average annual CO₂e emissions of 31,065,872 metric tons (31.1 million metric tons) from coal mined from 2016 through 2021, the total estimated CO₂e emissions at the SCM (including coal combustion) resulting from the Proposed Action would be 146,009,598 metric tons (146.01 million metric tons). The direct and indirect effects from GHG emissions resulting from the Proposed Action are expected to be moderate and short term.

Table 4-4. Estimated Annual Equivalent CO₂ (CO₂e) Emissions¹ for the Proposed Action at the SCM (2012 through 2015, and 2016-2021 Average)

Source	2012	2013	2014	2015	2016-2021 Average
Total Tons Recovered	17.2	17.7	17.3	17.0	18.0
Fuel	43,799	44,651	45,080	47,241	50,020
Electricity	19,077	19,702	19,077	19,606	20,199
Mining Process	145,535	150,110	146,614	144,678	153,188
Coal Haulage	646,692	676,667	652,632	634,896	694,985
Total of Four Sources	855,103	891,131	863,402	846,420	918,392
From Coal Combustion	28,807,592	29,645,022	28,975,078	28,472,620	30,147,480
Total Estimated CO₂e Production	29,662,695	30,536,153	29,838,480	29,319,040	31,065,872

¹ CO₂e in metric tons

Source: WWC (2016), calculations are provided in **appendix f**

4.4.4.1.2 No Action Alternative

SCM estimated GHG emissions for combined operations based on annual coal recovered from 2012 through 2015 and known production and variables used to calculate CO₂e emissions, and for the 2016-2021-time period using estimated production and variables (**table 4-5**). CO₂e emissions would decrease by approximately 71 percent at the SCM as a result of the No Action Alternative. The decrease is expected to result from the 72 percent decreased in coal recovery. SCC is estimating that coal recovery would be approximately 0 Mtpy for approximately 2 years while it reconfigured its mining operations and applied for, and obtained, MDEQ approval for a revised SMP. Annual production to resume at a rate of approximately 5 Mt starting in 2018. The impacts related GHG emissions under the No Action Alternative would be similar to those under the Proposed Action but would not be extended by approximately 4.7 years.

Table 4-5. Estimated Annual Equivalent CO₂ Emissions¹ for the No Action Alternative at the SCM (2012 through 2015, and 2016-2021 Average)

Source	2012	2013	2014	2015	2018-2021 Average ³
Total Tons Recovered	17.2	17.7	17.3	17.0	5.0
Fuel	43,799	44,651	45,080	47,241	13,894
Electricity	19,077	19,702	19,077	19,606	5,611
Mining Process	145,535	150,110	146,614	144,678	42,495
Coal Haulage ²	646,692	676,667	652,632	634,896	130,122
Total of Four Sources	855,103	891,131	863,402	846,420	192,122
From Coal Combustion	28,807,592	29,645,022	28,975,078	28,472,620	8,374,300
Total Estimated CO₂e Production	29,662,695	30,536,153	29,838,480	29,319,040	8,566,422

¹ CO₂e in metric tons.

² Approximately 2 years at 0 Mtpy to revise the state and federal permits. Annual production to resume at a rate of approximately 5 Mt starting in 2018

Source: WWC (2016), calculations are included in **appendix f**

4.4.4.2 Cumulative Effects

At this time, there is no national policy or law in place that regulates GHG emissions at coal mines. As discussed in **chapter 2**, under the currently approved mining plan, SCC anticipates that the SCM would mine its remaining estimated 84.8 Mt of recoverable federal coal reserves associated MTM 94378 in approximately 4.7 years, at an average annual production rate of approximately 18 Mt. Under the Proposed Action, SCC estimates that the life of the mine would be extended by about 4.7 additional years at an average annual coal production rate of approximately 18 Mt for a total of 84.8 Mt of recoverable coal.

In 2014, energy-related activities in the U.S. accounted for approximately 5,556 million metric tons of CO₂e emissions and year 2020 energy-related activities would produce 5,774 million metric tons CO₂ (EPA 2016b and 2011, respectively). Using those estimates, the total 2015 CO₂e emissions from the SCM (29.3 million metric tons – from **table 4-4**) represented 0.56 percent of the 2014 U.S. energy-related emissions. The estimated average 2016-2021 non-combustion CO₂e emissions at the SCM (31.1 million metric tons – from **table 4-4**) would represent 0.54 percent of the projected 2020 U.S. CO₂ emissions. The cumulative effects that would increase the potential for GHG emissions resulting from the Proposed Action are expected to be minimal and short term.

4.4.4.3 Mitigation Measures

A majority (97 percent) of the GHG emitted related to the EA are from activities not controlled by SCC (rail transportation and combustion at power plants). No mitigation measures beyond those required by the SCM air quality permit would be required for emissions of GHG at the mine.

4.4.5 Climate Change Cause and Effect

Although the effects of GHG emissions and other contributions to climate change in the global aggregate are estimable, it is currently not feasible to determine what effect GHG emissions in a specific area resulting from a specific activity might have on climate change and resulting

environmental impacts. It is therefore not currently possible to associate any particular action with the creation or mitigation of any specific climate-related environmental effects.

Historically, the coal mined in the PRB has been used as one of the sources of fuel to generate electricity in power plants located throughout the U.S. Coal-fired power plant emissions include CO₂, which has been identified as a principal anthropogenic greenhouse gas. According to the EPA (2016) in 2014 (the most recent year of available CO₂ data at this time):

1. CO₂ emissions represent approximately 81 percent of the total 2014 U.S. greenhouse gas emissions.
2. Estimated CO₂ emissions in the U.S. totaled 6,870.5 million metric tons in 2014, which was a 3.1 percent decrease from 2012.
3. Estimated CO₂e emissions from energy-related consumption in the U.S. totaled 5,556 million metric tons in 2014.
4. Estimated CO₂ emissions from the electric power sector totaled 2,080.7 million metric tons, or approximately 37 percent of total U.S. energy-related CO₂ emissions in 2014.
5. Estimated CO₂ emissions from fossil fuel electric power generation totaled 2,039.3 million metric tons, or about 36.7 percent of total U.S. energy-related CO₂ emissions in 2014.

Approximately 95 percent of the coal mined in 2014 in the Montana PRB was used to generate electricity by coal-fired power plants in the U.S. (USEIA 2016). Coal production from the Montana PRB represented approximately 3.7 percent of the coal used for power generation in 2014, which means that Montana PRB surface coal mines were responsible for approximately 75.0 million metric tons of the estimated U.S. CO₂ emissions from coal power generation in 2014. The SCM produced 17.3 Mt of coal in 2014, which represents approximately 38.9 percent of the coal produced in the Montana PRB in 2014, or about 28.5 million metric tons (1.4 percent) of the estimated 2014 U.S. CO₂ emissions from coal power generation. In 2014, approximately 86,000 tons (0.53 percent) of coal mined at the SCM was burned in Montana power plants (SCC 2016). Information included in Montana's CCAC estimated that approximately 15.2 Mt of GHG were emitted in 2010 (the most current Montana GHG emission estimates available) to generate electricity or from the fossil fuel industry (CCAC 2007). Using these numbers, it is estimated that the coal from the SCM that was burned in Montana power plants accounted for approximately 80,560 tons of GHG in 2010.

Under the Proposed Action, the SCM anticipates producing the coal included in the EA tracts at 18 Mtpy levels using existing production and transportation facilities. This would extend the mine's GHG emissions by approximately 4.7 years. Combustion of federal coal from the tracts in power plants would also continue for approximately 4.7 additional years.

Cumulative effects from future coal mining and coal production are difficult to quantify due to market and regulatory forces. Due to increasing supplies of natural gas, the cost of natural gas has declined relative to coal, making coal less competitive based on price. U.S. electricity generation from coal-fired power plants is declining and is expected to continue to decline. From 2005 to 2011, GHG emissions from U.S. power plants decreased approximately 15 percent (EPA 2016). The decrease is likely due to greater use of natural gas and increased use of renewable energy sources (USDOE 2014).

Electricity generation has accounted for approximately one-third of U.S. GHG emissions (EPA 2014d). However, state and federal regulations will decrease GHG emissions from power plants. And as of January 2013, 29 states had a renewable portfolio standard, which requires utilities to supply a certain amount of electricity to customers from renewable energy sources or install a certain amount of electricity-generating capacity from renewable energy sources in a set time frame (USDOE 2014). In addition, the EPA recently proposed three new regulations to reduce CO₂ emissions from new, existing, and modified or reconstructed power plants (EPA 2015). Montana has formulated a climate action plan that evaluated GHG reduction opportunities in various sectors of Montana's economy (CCAC 2007). Montana's climate action plan provided recommendations, including the fossil fuel production sector, to reduce GHG emissions in the state over the period from 2007 through 2020 and their respective net costs or benefits on a cost-effectiveness (i.e., cost-per-ton-reduced) basis (CCAC 2007).

Another approach to address possible climate change impacts is to calculate the so-called "social cost of carbon". The social cost of carbon protocol was developed for use in cost-benefit analyses for proposed regulations that could impact cumulative global GHG emissions (EPA 2015). The social cost of carbon estimates economic damages associated with increases in carbon emissions and includes, but is not limited to changes in net agricultural productivity, human health, and property damages associated with increased flood risks.

The social cost of carbon is typically expressed as the cost in dollars per Mt of emissions and there is a wide range of costs, with the greatest influence on costs caused by the discount rate. The discount rate is a measure to estimate the present value for costs/damages that may occur far out into the future. For 2020 emissions, the range in social cost of carbon presented by the EPA is \$12/Mt to \$123/Mt, represented as 2007 dollars (EPA 2015).

OSMRE has elected not to specifically quantify the social cost of carbon. First, the GHG emissions associated with the project are mostly from the indirect effects of coal combustion, and there is no consensus on the appropriate fraction of social cost of carbon tied to electricity generation that should be assigned to the coal producer. In addition, there is no certainty that GHG emissions at power plants would actually be reduced if the federal coal associated with the Proposed Action was not mined, given that the power plants supplied by SCC have alternative sources for coal, and the SCM also has non-federal coal reserves that could be mined (see **section 2.0**). Also, in order to provide any meaningful insight, the projected social cost of carbon would need to be viewed in context with other costs and benefits associated with the Proposed Action. Given the uncertainties associated with assigning a specific and accurate social cost of carbon to the Proposed Action and the uncertainties that indirect GHG emissions would actually be reduced under any reasonable Project alternatives, OSMRE has elected to quantify direct and indirect GHG emissions and evaluated these emissions in the context of Montana and national GHG emission inventories (**table 4-4**).

4.5 Water Resources

4.5.1 Groundwater

4.5.1.1 Direct and Indirect Effects

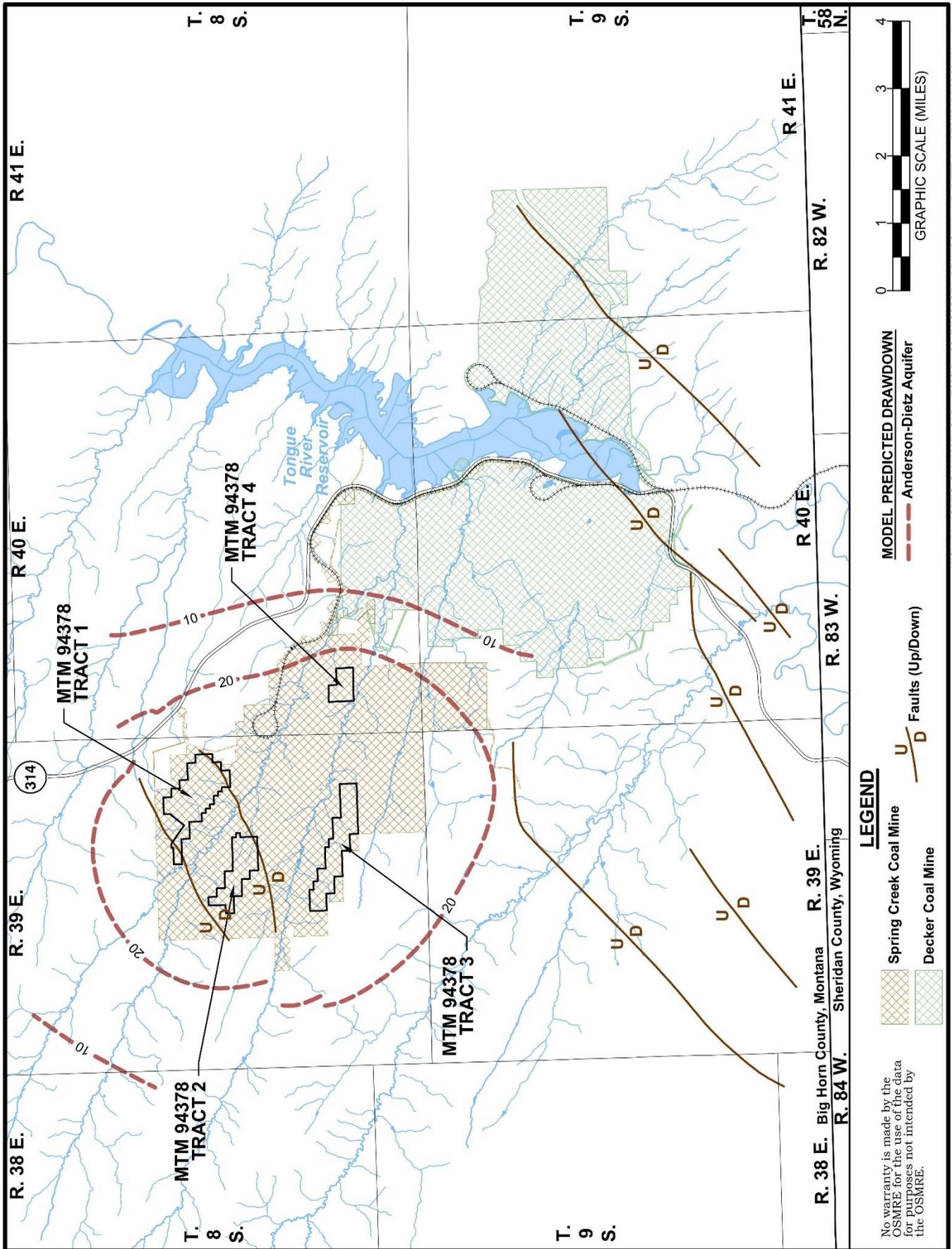
4.5.1.1.1 Proposed Action

Additional discussions regarding surface water can be found in sections 3.5.1 and 4.1.4 of the 2006 LBA EA. Additional discussions can also be found in the groundwater portion of the Cumulative Hydrologic Impacts Assessment (CHIA) for the SCM, Application 00183 (MDEQ 2014b). The existing federal leases at the SCM include approximately 7,795.0 acres, including the MTM 94378 federal lease tracts. Under the Proposed Action, continued mining the EA tracts would extend the area of overburden and coal removal on about approximately 1,224 acres. Approximately 554.2 acres within the four tracts have been disturbed as approved by SCC's Pearson Creek Amendment for SMP C1979012 and OSMRE's 2012 federal MPDD.

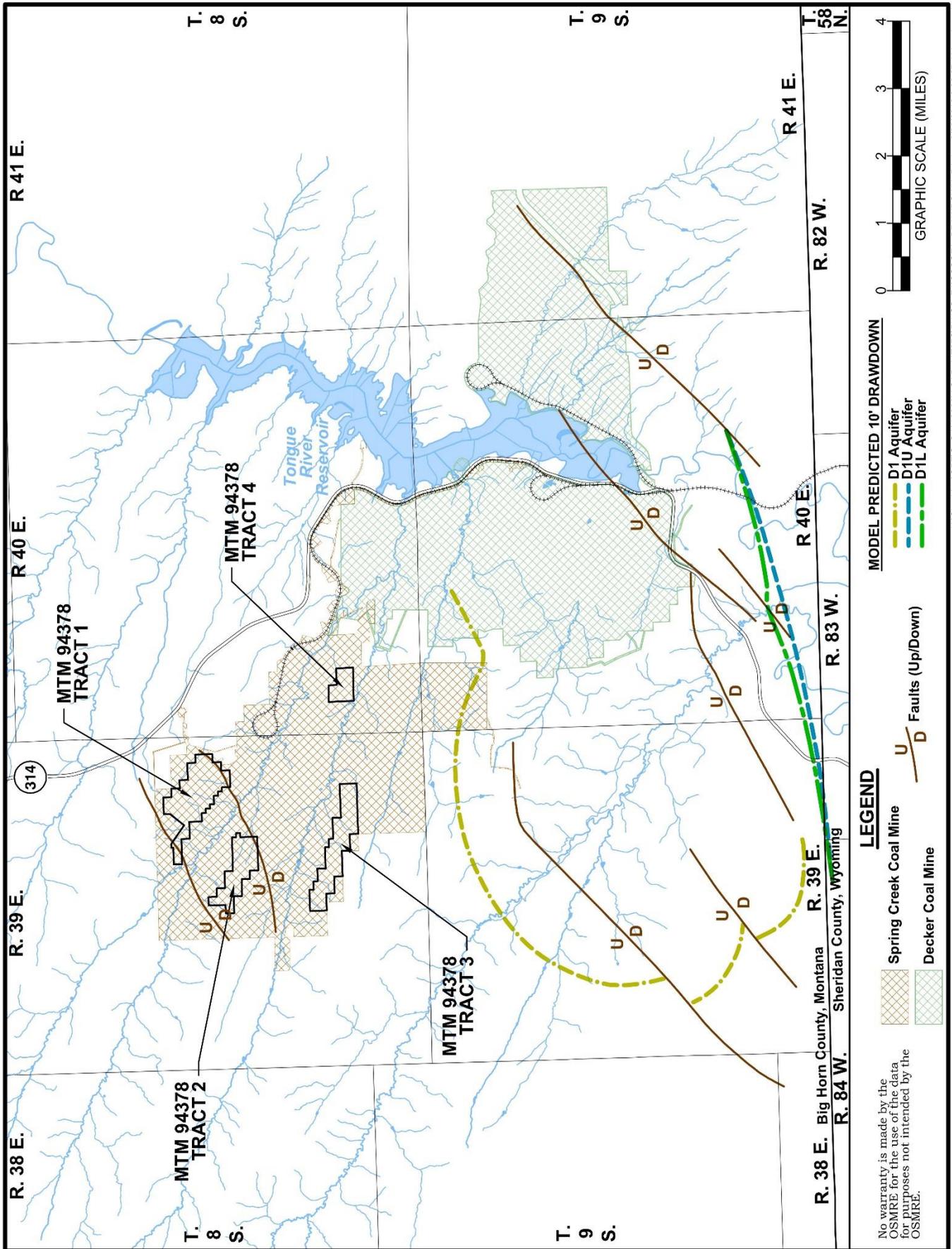
The general impacts to groundwater as a result of surface coal mining include the following:

1. The removal of the coal aquifer and any overburden and alluvial aquifers within the areas that are mined would continue, as would the replacement of these aquifers with backfilled overburden material. Should any overburden or alluvial aquifer be critical to the area's hydrologic balance, and restoration of the essential hydrologic functions can only be achieved by reestablishment of the aquifer, these materials may be selectively salvaged and replaced.
2. A lowering of static water levels in the coal and overburden aquifers around the mine would continue due to dewatering associated with removal of these aquifers within the mine boundaries. This reduction in static water levels would not be permanent, and recharge to the backfill and adjacent undisturbed aquifers would occur as mined areas are reclaimed.
3. Other groundwater impacts may or may not occur, or may occur only at specific locations, include changes in water quality (usually deterioration) outside the area that is mined and reclaimed. This would result from communication between the reclaimed aquifer and the unmined aquifer, and changes in recharge-discharge conditions and/or groundwater flow patterns.

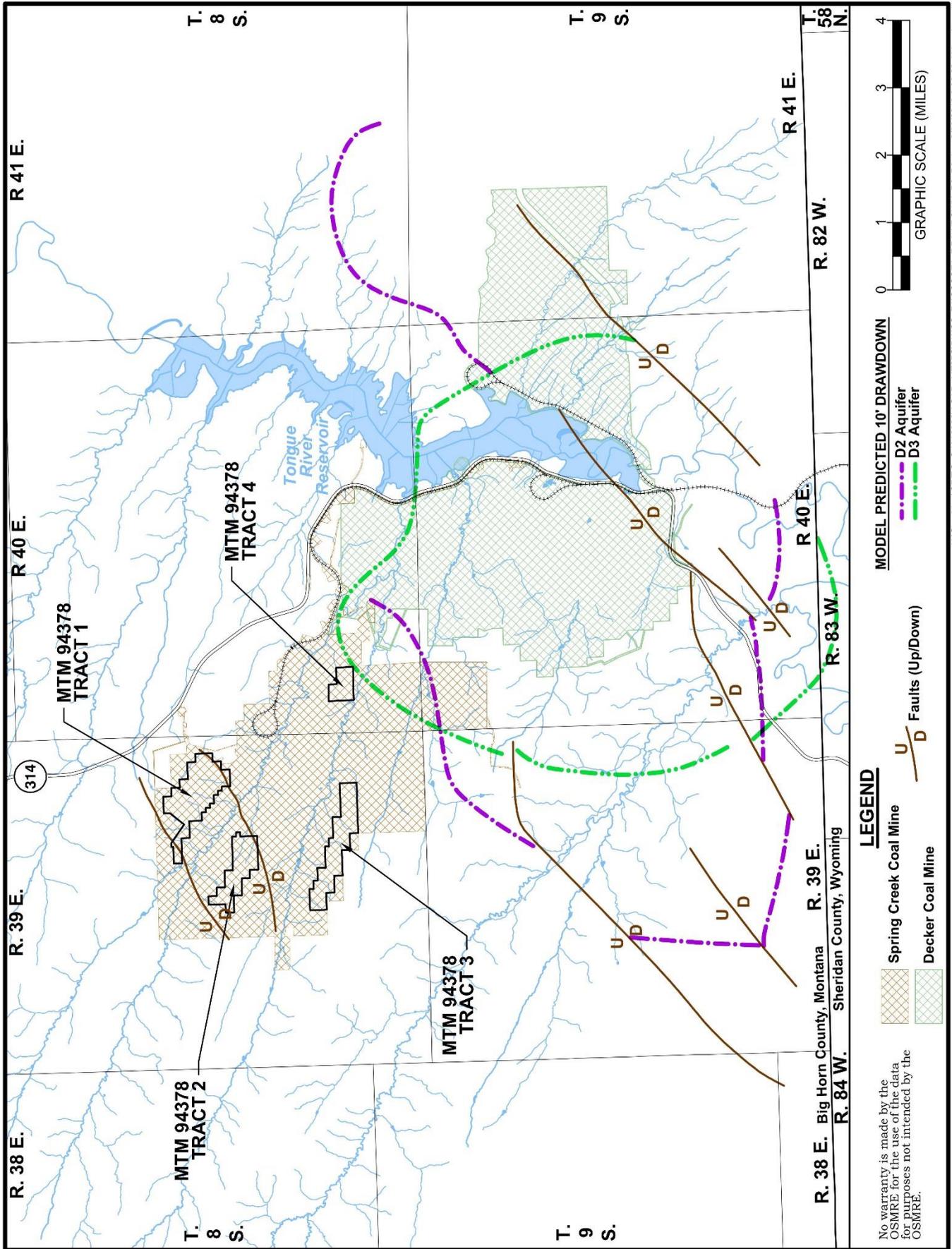
Additional alluvial, overburden, and Anderson/Dietz coal aquifers would be removed in the EA tracts during the mining process. These aquifers would be replaced with backfilled overburden and interburden materials. The physical characteristics of the reclaimed backfill material are dependent upon mining methods and premining overburden lithology. Overall, the permeability and porosity of the spoils within the tracts are expected to be greater than the original material. The reclaimed spoil aquifer could provide adequate water quantity for stock wells. Predicted drawdowns for the Anderson-Dietz; the DI, DIL, and DIU; and D2 and D3 aquifers are presented on **maps 4-2, 4-3, and 4-4**, respectively. The direct and indirect effects to groundwater resources resulting from the Proposed Action are expected to be moderate and short term on all tracts due to aquifer removal.



Map 4-2. Predicted Drawdown in the Anderson-Dietz Aquifer.



Map 4-3. Predicted 10-Foot Drawdown in the DI, DIL, and DIU Aquifers.



Map 4-4. Predicted 10-Foot Drawdown in the D2 and D3 Aquifers.

4.5.1.1.2 No Action Alternative

Under the No Action Alternative, SCC would terminate federal coal recovery operations within the boundaries of the MTM 94378 tracts in September 2016. SCC would proceed with reclamation of lands within the boundaries of the MTM 94378 tracts following an orderly shutdown process. The shutdown would require revisions to the MDEQ-approved SMP C1979012 and the BLM-approved R2P2 to modify the reclamation plan, maximum economic recovery conditions, and coal recovery plans for areas within the MTM 94378 tracts. The impacts to groundwater under the No Action Alternative would be similar to those under the Proposed Action but the extent of the groundwater aquifer removal would be reduced. Water-quality and quantity impacts to coal and shallower aquifers have already occurred in areas surrounding the mine as approved by SCC's Pearson Creek Amendment for SMP C1979012 and OSMRE's 2012 federal MPDD and implementation of the No Action Alternative would have negligible effect on reducing the extent of these impacts.

4.5.1.2 Cumulative Effects

The effects of removal of the coal and overburden aquifers and replacing them with backfilled overburden are the foremost groundwater concern regarding cumulative effects. Continued mining of the EA tracts would increase the cumulative size of the backfill area in the Tongue River drainage basin. The extent of water level drawdown in the coal and shallower aquifers in the area surrounding the mines also would be expected to increase slightly as a result of continued mining in the tracts and from dewatering the active mine pits. Where the effects of pumping from mines (e.g., Spring Creek, North, West and East Decker mines) overlap, additional water level declines result from concurrent operations.

4.5.1.3 Mitigation Measures

Montana State regulations require surface coal mine permittees to replace any domestic, agricultural, industrial, or any other legitimate use groundwater supplies if, as a result of mining, a supply is diminished, interrupted, or contaminated, to the extent of precluding use of the water.

4.5.2 Surface Water

4.5.2.1 Direct and Indirect Effects

4.5.2.1.1 Proposed Action

Additional discussions regarding surface water can be found in sections 3.5.2 and 4.1.4 of the 2006 LBA EA. Additional discussions can be found in the Surface Water portion of the CHIA for the SCM, Application 00183 (MDEQ 2014b). Changes in surface runoff characteristics and sediment discharges would occur during mining on EA tracts because of the mining and reconstruction of drainage channels as mining progresses and because of the use of sediment control structures to manage discharges of surface water from the mine permit areas. Since the EA tracts would be mined as extension of the existing SCM and since approximately 554.2 acres of the tracts have already been disturbed as approved by SCC's Pearson Creek Amendment for SMP C1979012 and OSMRE's 2012 federal MPDD, there would not be a significant increase in the size of the area that is disturbed at any given time. Reclamation would be ongoing and concurrent with mining. The direct and indirect effects to surface water would not be significantly different than those described in the 2006 LBA EA and are expected to be moderate and short term.

4.5.2.1.2 No Action Alternative

Under the No Action Alternative, SCC would terminate federal coal recovery operations within the boundaries of the MTM 94378 tracts in September 2016. SCC would proceed with reclamation of lands within the boundaries of the MTM 94378 tracts following an orderly shutdown process. The shutdown would require revisions to the MDEQ-approved SMP C1979012 and the BLM-approved R2P2 to modify the reclamation plan, maximum economic recovery conditions, and coal recovery plans for areas within the MTM 94378 tracts. The impacts to surface water under the No Action Alternative would be similar to those under the Proposed Action but the extent of surface water feature removal would be reduced. Impacts to surface water features have already occurred within the tracts, as approved by SCC's Pearson Creek Amendment for SMP C1979012 and OSMRE's 2012 federal MPDD. Therefore, implementation of the No Action Alternative would have negligible effect on reducing the extent of these impacts.

4.5.2.2 Cumulative Effects

The cumulative impact area for potential surface water impacts includes proposed LOM disturbance areas for the SCM and Decker Mine within local drainage basins, and the adjacent Tongue River Reservoir area. Mining related impacts to surface water are expected to be measureable in the short term within and below mined area drainages, and would diminish with reclamation and distance downstream. Cumulative mining related impacts to surface water resources within and adjacent to the Spring Creek/Decker mine area are not expected to change significantly or to be measureable within the main reservoir body or the Tongue River below, largely due to the much larger drainage area and streamflows of the Tongue River (MDEQ 2014b).

4.5.2.3 Mitigation Measures

Montana State regulations require surface coal mine permittees to restore the essential hydrologic function of disturbed land surfaces.

4.5.3 Water Rights

4.5.3.1 Direct and Indirect Effects

4.5.3.1.1 Proposed Action

Prior to energy development in the area, water appropriations (both groundwater and surface water) were typically for livestock use. Currently, mining companies hold the majority of the water rights in the vicinity of the EA project area. According to Montana Code Annotated (MCA) 82-4-203(30), proposed mining operations must be designed and conducted in a way to prevent material damage to the hydrologic balance outside the permit area (MCA 2015).

Monitoring wells are placed between mine operations and nearby private wells to monitor for water level and water quality changes to anticipate any downgradient impacts. Currently, CBNG production has exceeded the amount of drawdown predicted to result from mining. Therefore, potential impacts from mining to stock and domestic wells in the area have become largely irrelevant (MDEQ 2014b).

Numerous livestock water wells have been removed over the years to facilitate mining operations but no effects to domestic supplies have been reported. No material damage has been identified outside the permit boundaries of the SCM or Decker Mine and, based on hydrologic analysis, no material damage to water rights is anticipated (MDEQ 2014b).

In general, the proposed federal mining plan amendment would contribute additional, more extensive mining disturbance to surface water impacts of the SCM area. SCM's in-place reclamation plan would help minimize mining related impacts to surface water resources within and adjacent to the mine, and it does not appear that premine surface water uses outside the SCM LOM plan area would be prevented.

4.5.3.1.2 No Action Alternative

Under the No Action Alternative, SCC would terminate federal coal recovery operations within the boundaries of the MTM 94378 tracts in September 2016. SCC would proceed with reclamation of lands within the boundaries of the MTM 94378 tracts, following an orderly shutdown process. The shutdown would require revisions to the MDEQ-approved SMP C1979012 and the BLM-approved R2P2 to modify the reclamation plan, maximum economic recovery conditions, and coal recovery plans for areas within the MTM 94378 tracts. The impacts to water rights under the No Action Alternative would be similar to those under the Proposed Action but the removal of groundwater and surface water supplies would be reduced. Impacts to water rights have already occurred in the tracts as approved by SCC's Pearson Creek Amendment for SMP C1979012 and OSMRE's 2012 federal MPDD and implementation of the No Action Alternative would have negligible effect on reducing the extent of these impacts.

4.5.3.2 Cumulative Effects

The approval of the federal mining plan modification request would contribute additional, more extensive mining disturbance to cumulative water-rights impacts of the SCM and Decker Mine areas. However, approval of the modification request would likely not result in material damage to surface water or groundwater systems.

4.5.3.3 Mitigation Measures

Montana State regulations require surface coal mine permittees to replace any domestic, agricultural, industrial, or any other legitimate use groundwater supplies if such supplies are diminished, interrupted, or contaminated, to the extent of precluding use of the water as a result of mining. The regulations also require restoration of the essential hydrologic function of disturbed land surfaces.

4.6 Alluvial Valley Floors

4.6.1 Direct and Indirect Effects

4.6.1.1 Proposed Action

The direct and indirect effects to alluvial valley floors (AVF) would not be significantly different than those described in the 2006 LBA EA. No AVFs have been delineated within the tracts so there would be no direct or indirect effects to AVFs from the Proposed Action.

4.6.1.2 No Action Alternative

Impacts to the AVFs have resulted from current mining activity and therefore under this alternative, impacts to alluvial valley floors in the area would remain as described in **section 4.6.1.1**.

4.6.2 Cumulative Effects

The cumulative effects to AVFs would not be significantly different than those described in the 2006 LBA EA. One AVF has been delineated within the SCM permit boundary but it has been designated as insignificant to agriculture and is therefore not prohibited from mining. Much of this AVF has already been disturbed, as approved by SCC's Pearson Creek Amendment for SMP C1979012 and OSMRE's 2012 federal MPDD. No other AVFs have been delineated along the Spring Creek drainage system, above or below the SCM. A Hydrologic Restoration Plan has been developed that provides erosionally stable channels and floodplains following reclamation and plan calls for the restoration of the essential hydrologic functions, prevention of material damage, and re-establishment of the premining land usage of the hydrologic system of the South Fork Spring Creek.

4.6.3 Mitigation Measures

No mitigation measures would be necessary for AVFs.

4.7 Wetlands (Aquatic Resources)

4.7.1 Direct and Indirect Effects

4.7.1.1 Proposed Action

No wetlands (aquatic resources) have been delineated within the tracts so there would be no direct or indirect effects to wetlands from the Proposed Action.

4.7.1.2 No Action Alternative

No wetlands have been delineated within the tracts so there would be no direct or indirect effects to wetlands from the No Action Alternative.

4.7.2 Cumulative Effects:

Wetlands should not be significantly affected as a result of mining the proposed tracts. Two delineated jurisdictional wetlands occur within the SCM permit boundary. No jurisdictional wetlands would be disturbed if the federal mining plan modification is approved. Wetlands disturbance within the SCM permit boundary are under the jurisdiction of the U.S. Army Corps of Engineers.

4.7.3 Mitigation Measures

No mitigation measures would be necessary for wetlands (aquatic resources).

4.8 Soil

4.8.1 Direct and Indirect Effects

4.8.1.1 Proposed Action

The direct and indirect effects to soils would not be significantly different than those described in the 2006 LBA EA. Soils of the tracts would be altered under the Proposed Action. Approximately 554.2 acres within the four tracts have been disturbed as approved by SCC's Pearson Creek Amendment for SMP C1979012 and OSMRE's 2012 federal MPDD. The direct and indirect effects related to the Proposed Action to soils would be moderate and short term on all tracts.

4.8.1.2 No Action Alternative

Under the No Action Alternative, SCC would terminate federal coal recovery operations within the boundaries of the MTM 94378 tracts in September 2016. However, approximately 554.2 acres within the four tracts have been disturbed, as approved by SCC's Pearson Creek Amendment for SMP C1979012 and OSMRE's 2012 federal MPDD. Impacts to the soils have resulted from current mining activity. Therefore, under this alternative, impacts to soils in the area would remain as described in **section 4.8.1.1**, but to a lesser extent.

4.8.2 Cumulative Effects

Following reclamation, the replaced topsoil should support a stable and productive native vegetation community adequate in quantity and quality to support planned post-mining land uses (i.e., rangeland and wildlife habitat). Areas within active mines are progressively disturbed. Likewise, these areas would be progressively reclaimed by planting appropriate vegetation species to restore soil productivity and prevent soil erosion. The cumulative effects related to soils would be moderate and short term.

4.8.3 Mitigation Measures

No mitigation measures would be necessary for soils resources.

4.9 Vegetation

4.9.1 Direct and Indirect Effects

4.9.1.1 Proposed Action

The direct and indirect effects to vegetation would not be significantly different than those described in the 2006 LBA EA. Short-term impacts associated with the removal of vegetation from the EA tracts would include increased soil erosion and habitat loss for wildlife and livestock. Potential long-term impacts on reclaimed lands include loss of habitat or loss of habitat carrying capacity for some wildlife species as a result of reduced plant species diversity or plant density, particularly big sagebrush. However, livestock and grassland-dependent wildlife species would benefit from the increased grass cover and production.

Reclamation, including revegetation of these lands, would occur contemporaneously with mining on adjacent lands, i.e., reclamation would begin once an area is mined. In an effort to approximate premining conditions, SCC would plan to reestablish vegetation types during the reclamation operation that are similar to the premine types. Reestablished vegetation would be dominated by species mandated in the reclamation seed mixtures (to be approved by MDEQ). The reclamation plan for the SCM includes steps to control invasion by weedy (invasive nonnative) plant species. Approximately 554.2 acres within the four tracts have been disturbed as approved by SCC's Pearson Creek Amendment for SMP C1979012 and OSMRE's 2012 federal MPDD. The direct and indirect effects related to the Proposed Action on vegetation would be moderate and short term.

4.9.1.2 No Action Alternative

Under the No Action Alternative, SCC would terminate federal coal recovery operations within the boundaries of the MTM 94378 tracts in September 2016. However, approximately 554.2 acres within the four tracts have been disturbed, as approved by SCC's Pearson Creek Amendment for SMP C1979012 and OSMRE's 2012 federal MPDD. Impacts to the vegetation have resulted from

current mining activity. Therefore, under this alternative, impacts to soils in the area would remain as described in **section 4.9.1.1**, but to a lesser extent.

4.9.2 Cumulative Effects

The overall contribution to cumulative impacts to vegetation under Proposed Action would be minor due to the localized effects and the improved productivity on mined lands that have been reclaimed.

4.9.3 Mitigation Measures

No mitigation measures would be necessary for vegetation resources.

4.10 Wildlife

If the MLA mining plan modification for the SCM is approved to include recovering coal within the EA tracts, disturbance would continue on the EA tracts. Mining would be extended by approximately 4.7 years at the SCM. Impacts to wildlife that would be caused by mining the tract have been addressed by the MFWP and the MDEQ when the mining and reclamation permits were amended to include the tracts.

Mining directly and indirectly impacts local wildlife populations. These impacts are both short term (until successful reclamation is achieved) and long term (persisting beyond successful completion of reclamation). The direct impacts of surface coal mining on wildlife occur during mining and are therefore short-term. They include road kills by mine-related traffic, restrictions on wildlife movement created by fences, spoil piles, and pits, and displacement of wildlife from active mining areas. Displaced animals may find equally suitable habitat that is not occupied by other animals, occupy suitable habitat that is already being used by other individuals, or occupy poorer quality habitat than that from which they were displaced. In the second and third situations, the animals may suffer from increased competition with other animals and are less likely to survive and reproduce. If the 2012 federal mining plan modification is approved, the direct impacts related to mine operations would be extended by approximately 4.7 years.

The indirect impacts are longer term. After the tracts are mined and reclaimed, alterations in the topography and vegetative cover and diversity, particularly the reduction in sagebrush density, would cause a decrease in carrying capacity for some species. Sagebrush would gradually become reestablished on the reclaimed land, but the topographic changes would be permanent. Microhabitats may be reduced on reclaimed land due to flatter topography, less diverse vegetative cover, and reduction in sagebrush density.

The environmental consequences related to mining the EA tracts for other mammals; upland game birds (excluding the GRSG); other birds; and amphibians, reptiles, and aquatic species are not significantly different than those presented in 2006 LBA EA and are not presented herein. Updated discussions for big game, raptors, GRSG, T&E species, and other species of special interest are included below.

4.10.1 Big Game

4.10.1.1 Direct and Indirect Effects

4.10.1.1.1 Proposed Action

Under the Proposed Action, big game would be displaced from portions of the tracts to adjacent ranges during mining. Mule deer would be most affected as the tracts contains good quality habitat. Pronghorn would not be substantially impacted, given that they are scattered throughout the site and there is suitable habitat available in adjacent areas. White-tailed deer would not be affected, as they have not been observed on the tracts. Big game displacement would be incremental, occurring over several years and allowing for gradual changes in distribution patterns. Big game residing in the adjacent areas could be impacted by increased competition with displaced animals. Noise, dust, and associated human presence would cause some localized avoidance of foraging areas adjacent to mining activities. However, big game species have continued to occupy areas adjacent to and within active mine operations at the SCM, suggesting that some animals may become habituated to such disturbances.

Approximately 767 acres within the EA tracts have been designated as high value winter range for big game and the remaining portions have been designated as moderate winter range (MFWP 2016). Approximately 378 acres of the high value winter range and 176 acres of the moderate value winter range have already been disturbed as approved by SCC's approved mining and reclamation activities. SCM would be required to reclaim disturbed habitats within the area back to wildlife habitat, as outlined in the reclamation requirements of revised state and federal mine permits. After mining and reclamation, alterations in the topography and vegetative cover, particularly the reduction in sagebrush density and loss of trees, would cause a decrease in carrying capacity and diversity on the tracts. Sagebrush and trees would gradually become re-established on the reclaimed land, but the topographic changes would be permanent.

General reclamation practices for establishing or enhancing post-mine wildlife habitat at the SCM are described in the Reclamation Plan (Section 17.24.313) of SMP C1979012. SCC also has developed a separate Habitat Recovery and Replacement Plan (HRRP) for the GRSG, which is a species of particular interest in the region. Since there is overlap between the big game winter range and the GRSG habitat areas, the reclamation of any GRSG habitat outlined the specific HRRP would fulfill the reclamation requirements for mule deer and pronghorn and would provide quality habitat for both big game and grouse that might be impacted by the Proposed Action. The direct and indirect effects related to the Proposed Action on big game would be moderate and short term.

4.10.1.1.2 No Action Alternative

Under the No Action Alternative, SCC would terminate federal coal recovery operations within the boundaries of the MTM 94378 tracts in September 2016. However, approximately 554.2 acres within the four tracts have been disturbed, as approved by SCC's Pearson Creek Amendment for SMP C1979012 and OSMRE's 2012 federal MPDD. Impacts to the big game species have resulted from current mining activity. Therefore, under this alternative, impacts to big game in the area would remain as described in **section 4.10.1.1.1**, but to a lesser extent.

4.10.1.2 Cumulative Impacts

The regional Environmental Impact Statement (EIS) that covered the northern PRB (BLM 1984) predicted that large-scale surface coal mining could potentially result in significant cumulative impacts to big game due to habitat loss; restrictions in seasonal and daily movement caused by railroads, access roads, and mining operations; poaching; urban development; range overuse; possible lack of water sources; increased road kills; and crop depredation. No severe mine-caused mortalities have occurred and no long-lasting impacts on big game species have been noted on the SCM. MFWP-designated high and moderate value winter range occurs in the area. The cumulative effects on regional big game population would be moderate and short term.

4.10.1.2 Mitigation Measures

No mitigation measures specific to big game are necessary. General reclamation practices for establishing or enhancing post-mine wildlife habitat at the SCM described in the Reclamation Plan (Section 17.24.313) of SMP C1979012 are in place. SCC also has developed a separate Habitat Recovery and Replacement Plan (HRRP) for the GRSG, which would provide quality habitat for big game.

4.10.2 Raptors

4.10.2.1 Direct and Indirect Effects

4.10.2.1.1 Proposed Action

Three intact raptor nests are located within the EA tract boundaries. One of the nests (RTH2c) is located in an active highwall within Tract 3 in 2015, producing three young.

SCC has approved plans and procedures in place to minimize impacts to nesting raptors and ensure proper reclamation techniques are implemented to enhance habitat in the post-mine landscape for both raptors and their primary prey species. Inactive, non-eagle raptor nests may be removed from areas likely to be impacted in potential disturbance areas to discourage nesting of raptors and other migratory birds, in accordance with USFWS guidance provided in the *Migratory Bird Permit Memorandum* (USFWS 2003). Decisions as to whether nest removal or relocation is the most appropriate approach would be based on the long-term history of the nest site including historic and recent raptor use; presence/absence, location, and potential vulnerability of alternate nests within the territory; number, proximity, and/or orientation of conspecific territories; historical use of artificial nest structures, if any; timing, duration (e.g., continuous and ongoing or short-term); proximity, and visibility of potentially disturbing mine activities; and other pertinent factors. In addition, SCC conducts annual surveys at multiple prairie falcon nest sites throughout the monitoring area and on neighboring lands as part of required and/or voluntary monitoring for this species.

Based on the reduced number of nesting raptors within the tracts (one known active red-tailed hawk pair) and the SCC's approved plans and procedures in place to reduce impacts to raptors, the direct and indirect effects related to the Proposed Action on site-specific raptors would be moderate and short term.

4.10.2.1.2 No Action Alternative

Under the No Action Alternative, SCC would terminate federal coal recovery operations within the boundaries of the MTM 94378 tracts in September 2016. However, approximately 554.2 acres

within the four tracts have been disturbed, as approved by SCC’s Pearson Creek Amendment for SMP C1979012 and OSMRE’s 2012 federal MPDD. Impacts to the raptors have resulted from current mining activity. Therefore, under this alternative, impacts to raptors in the area would remain as described in **section 4.10.2.1.1**, but to a lesser extent.

4.10.2.2 Cumulative Impacts

Cumulative impacts to most wildlife would increase as additional habitat is disturbed by mining and other activities. These impacts would moderate as land is reclaimed. Approved mine permits include regulations specifying mitigation measures for wildlife, including minimization of disturbance, reclamation of habitats and raptor-safe power line construction. The measures specified in mining permits and enforced by MDEQ ensure compliance with the Migratory Bird Treaty Act, the Bald and Golden Eagle Protection Act, and the ESA, thereby ensuring regional impacts to those protected wildlife species would not be significant.

4.10.2.3 Mitigation Measures

No mitigation measures specific to raptors are necessary. General reclamation practices for establishing or enhancing post-mine wildlife habitat at the SCM described in the Reclamation Plan (Section 17.24.313) of SMP C1979012 are in place. SCC also has developed plans and procedures to minimize impacts to nesting raptors and ensure proper reclamation techniques are implemented to enhance habitat in the post-mine landscape for raptors and their primary prey species.

4.10.3 Greater Sage-Grouse (GRSG)

4.10.3.1 Direct and Indirect Effects

4.10.3.1.1 Proposed Action

The SCM annual monitoring area includes five confirmed active lek sites, two confirmed inactive leks, one unconfirmed site, and one confirmed extirpated (mined through) lek. Long-term results from annual lek monitoring suggest that GRSG populations in the SCM annual monitoring area are cyclic, with periodic peaks and declines (SCC 2016). These data suggest that the SCM area may only support larger groups of GRSG when regional populations are especially high (SCC 2016).

To date, only the Upper Divide lek has been identified within the SCM permit area. It was eclipsed by mining operations in the early to mid-1980s. No other known GRSG leks would be physically disturbed by mine operations under the current SMP C1979012 LOM plan. Approximately 3,013 non-contiguous acres in GRSG core area PRB-2 are within the current permit area (SCC 2016). Approved LOM disturbance would affect up to 1,395 of those acres.

SMP C1979012 currently contains multiple monitoring and protection plans that include numerous specific measures for GRSG and their habitats, including those mentioned above. The MDEQ has strict bonding, reclamation, and bond-release requirements for all surface coal mines in Montana, including detailed reclamation plans and post-reclamation monitoring requirements that extend 10 years or more to ensure that all reclamation standards have successfully been met prior to full bond release. SCC’s development and implementation of a detailed HRRP for GRSG at the mine and its voluntary participation in a large-scale conservation strategy highlighting sagebrush-steppe species across the region further offset potential impacts to GRSG due to mine-related activities.

Potential impacts to GRSG would likely be limited primarily to indirect influences resulting from habitat disturbance, though loss of individual birds may occur at times. Ongoing SCM operations may adversely impact individual GRSG but are not likely to result in a loss of population viability in the wildlife monitoring area or cause a trend toward federal listing. The use of appropriate timing and spatial buffers, timely implementation of reclamation, and application of targeted conservation measures in suitable habitats both on- and off-property throughout the region are expected to sufficiently reduce overall impacts to maintain a viable population within the area. The direct and indirect effects related to the Proposed Action on GRSG would be moderate and short term.

4.10.3.1.2 No Action Alternative

Under the No Action Alternative, SCC would terminate federal coal recovery operations within the boundaries of the MTM 94378 tracts in September 2016. However, approximately 554.2 acres within the four tracts have been disturbed, as approved by SCC's Pearson Creek Amendment for SMP C1979012 and OSMRE's 2012 federal MPDD. Impacts to the GRSG have resulted from current mining activity. Therefore, under this alternative, impacts to GRSG in the area would remain as described in **section 4.10.3.1**, but to a lesser extent.

4.10.3.2 Cumulative Impacts

A conservation strategy was developed in collaboration with the USFWS, other state and federal agencies, and many other stakeholders in the region that would benefit numerous special interest species, including GRSG. SCC would implement a variety of conservation measures both on and off-property, with special emphases in habitats identified as Conservation Priority Areas (e.g., GRSG core areas, occupied short-grass prairie habitats, etc.) throughout the coverage area. These voluntary measures include a wide variety of land management actions that are designed to avoid or minimize impacts, and to restore, enhance, and/or maintain habitat benefiting one or more of the targeted species, including GRSG. Given these factors, ongoing cumulative energy development may adversely impact individual GRSG but are not likely to result in a loss of population viability in the wildlife monitoring area or cause a trend toward federal listing. The cumulative effects related to the Proposed Action on GRSG regional GRSG populations would be moderate and short term.

4.10.3.3 Mitigation Measures

SCC has developed and implemented a detailed HRRP for sage-grouse at the mine and its voluntary participation in a large-scale conservation strategy highlighting sagebrush-steppe species across the region further offset potential impacts to sage-grouse due to mine-related activities. The plan is included in Section 17.24.312 of SMP C1979012 (SCC 2014).

4.10.4 Threatened, Endangered, and Candidate Species and Other Species of Special Interest

4.10.4.1 Direct and Indirect Effects

4.10.4.1.1 Proposed Action

The current USFWS list of T&E species that may occur in Big Horn County, Montana includes the black-footed ferret and the Sprauge's pipit (USFWS 2016). The black-footed ferret is listed as endangered for the SCM area. Based on information in the USFWS's (2013) recent update to the *Black-footed Ferret Recovery Plan*, the SCM is not located near an active or potential reintroduction

area for this species. The Sprague's pipit is considered a candidate for listing, meaning that the USFWS has determined that listing under the ESA is warranted, but precluded by the need to address listing actions of a higher priority. The Sprague's pipit has not been documented in the SCM survey area or elsewhere in Big Horn County (MNHP 2016a). The direct and indirect effects related to the Proposed Action on T&E species would be minimal and short term.

For the purposes of this discussion, other species of special interest include federal *Birds of Conservation Concern* and Montana *Species of Greatest Conservation Need*. **Appendix C** lists the vertebrate species of special interest, summarizes their habitat requirements, and indicates if they have been observed on or within 1.0 mile of the SCM permit area during long-term annual monitoring conducted for the SCM. The 2008 (most current available) list of *Birds of Conservation Concern* for BCR 17 contains 28 species. Several of the species in BCR17 have been documented at least once within the SCM wildlife monitoring area over time, though nearly half of those observations occurred with varying degrees of infrequency. The most abundant species recorded over time consisted of common raptors and passerine species known to nest in the survey area. Twenty-three Montana *Species of Greatest Conservation Need* have been documented in or within 1.0 mile of the SCM permit area, from 1994 through 2015. Most of these species would be temporarily displaced but current reclamation practices in-place at the SCM would promote the return of these species once reclamation has been completed. The direct and indirect effects related to the Proposed Action on species of special interest would be moderate and short term.

4.10.4.1.2 No Action Alternative

Under the No Action Alternative, SCC would terminate federal coal recovery operations within the boundaries of the MTM 94378 tracts in September 2016. However, approximately 554.2 acres within the four tracts have been disturbed, as approved by SCC's Pearson Creek Amendment for SMP C1979012 and OSMRE's 2012 federal MPDD. Indirect impacts to T&E species or other species of special interest have resulted from current mining activity. Therefore, under this alternative, impacts to T&E species and other species of special interest in the area would remain as described in **section 4.10.4.1**, but to a lesser extent.

4.10.4.2 Cumulative Impacts

The cumulative impacts to T&E species and other species of special interest would be similar to the direct and indirect impacts, discussed above.

4.10.4.3 Mitigation Measures

No mitigation measures specific to T&E species and other species of special interest are necessary. General reclamation practices for establishing or enhancing post-mine wildlife habitat at the SCM described in the Reclamation Plan (Section 17.24.313) of SMP C1979012 are in place. SCC has also implemented of a mitigation plan specific to the potential disturbance of an existing prairie falcon eyrie.

4.11 Ownership and Use of Land

4.11.1 Direct and Indirect Effects

4.11.1.1 Proposed Action

Additional discussions regarding ownership and use of the land can be found in sections 3.11 and 4.1.10 of the 2006 LBA EA. Surface ownership in the area includes BLM and private lands and the

proposed coal removal area is managed by the BLM and SCC. The major adverse environmental consequences of mining the proposed tracts on land use would be reduction of livestock grazing, loss of wildlife habitat, and curtailment of other mineral development on about 1,224 additional acres during active mining. Disturbance has already taken place on approximately 554 acres. Wildlife (particularly big game) use would be displaced while the tracts are being mined and reclaimed. Livestock grazing has already been prohibited due to the tracts being inside the permit boundary and adjacent to active mine areas. Hunting on the tracts is currently not allowed because they are within the mine permit boundary and would continue to be disallowed during mining and reclamation. Following reclamation, the land would be suitable for grazing and wildlife uses, which are the historic land uses. The direct and indirect effects related to the ownership and use of the land would be minimal and short term.

4.11.1.2 No Action Alternative

Under the No Action Alternative, SCC would terminate federal coal recovery operations within the boundaries of the MTM 94378 tracts in September 2016. However, approximately 554.2 acres within the four tracts have been disturbed, as approved by SCC's Pearson Creek Amendment for SMP C1979012 and OSMRE's 2012 federal MPDD. Indirect impacts to ownership and use of the land have resulted from current mining activity. Therefore, under this alternative, ownership and use of the land in the area would remain as described in **section 4.11.1.1**, but to a lesser extent.

4.11.2 Cumulative Impacts

The cumulative impacts on ownership and use of the land would be similar to the direct and indirect impacts, discussed above and to the cumulative impacts discussed in section 4.1.10 of the 2006 LBA EA.

4.11.3 Mitigation Measures

No mitigation measures specific to ownership and use of the land are necessary.

4.12 Cultural Resources

4.12.1 Direct and Indirect Effects

4.12.1.1 Proposed Action

Additional discussions regarding cultural resources can be found in sections 3.12 and 4.1.11 of the 2006 LBA EA. All four tracts have been subjected to Class III cultural resource inventories. Two sites within the Proposed Action tracts (24BH1737 and 24BH1748) are classified as NRHP eligible sites that would require mitigation prior to disturbance. Data recovery plans are designed to mitigate the loss of archaeological resources in the mine operations area by expanding archaeological knowledge about this region. Both sites have been tested as part of mitigation efforts. A mitigation plan has been formulated for 24BH1737 and the formulation of a plan for 24BH1748 is pending, based on the results of the testing conducted in 2015. The direct and indirect effects on cultural resource from the Proposed Action would be negligible but long term.

4.12.1.2 No Action Alternative

Under the No Action Alternative, SCC would terminate federal coal recovery operations within the boundaries of the MTM 94378 tracts in September 2016. While sites 24BH1737 and 24BH1748 would not be disturbed, disturbance to minor cultural resources sites would continue due mine related activity authorized under a revised state mine permit and federal mining plan. The direct

and indirect effects on cultural resource from the No Action Alternative would be negligible but long term.

4.12.2 Cumulative Impacts

The individual evaluation of cultural resource sites in the SCC study area suggests that through avoidance of sensitive site types and mitigation through data recovery for all unavoidable disturbance to NRHP eligible sites, the cumulative effects to cultural resources have been minimal. The cumulative impacts on cultural resource would be negligible but long term.

4.12.3 Mitigation Measures

Mitigation would be required for the loss of the two NRHP eligible sites.

4.13 Visual Resources

4.13.1 Direct and Indirect Effects

4.13.1.1 Proposed Action

Additional discussions regarding visual resources can be found in sections 3.13 and 4.1.12 of the 2006 LBA EA. No visual resources have been identified on or near the tracts that are unique to these tract, as compared to the surrounding area. The mining operations would affect landscapes classified as Visual Resource Management (VRM) Class III by BLM. The objective of this class is to partially retain the existing character of the landscape. Reclaimed terrain would be almost indistinguishable from the surrounding undisturbed terrain. Slopes might appear smoother (less intricately dissected) than the surrounding undisturbed terrain, and sagebrush and trees would not be as abundant for several years; however, within a few years after reclamation, the mined land would not be distinguishable from the surrounding undisturbed terrain except by someone very familiar with landforms and vegetation. The direct and indirect effects related to the visual resources would be moderate and short term.

4.13.1.2 No Action Alternative

Under the No Action Alternative, SCC would terminate federal coal recovery operations within the boundaries of the MTM 94378 tracts in September 2016. However, approximately 554.2 acres within the four tracts have been disturbed, as approved by SCC's Pearson Creek Amendment for SMP C1979012 and OSMRE's 2012 federal MPDD. Indirect impacts to visual resources have resulted from current mining activity. Therefore, under this alternative, visual resources in the area would remain as described in **section 4.13.1.1**, but to a lesser extent.

4.13.2 Cumulative Impacts

A principal visual impact in this area is the visibility of mine pits and facility areas. People most likely to see these facilities would either be local residents, those passing through the area, those visiting it on mine related business, and recreationists on the Tongue River Reservoir. Pits and mine support facilities are generally not visible from more than a few miles away, but coal loading facilities and draglines can be seen from farther away. Due to the distance between mining operations, cumulative overlap of mining-related visual impacts is not likely. One public road (FAS 314), a railroad, and a power line also affect visual classification of the proposed tracts. After mining, the reclaimed slopes might appear somewhat smoother than pre-mining slopes and there would be fewer gullies, bluffs, and rock outcrops than at present. Even so, the landscape of the reclaimed mine would look very much like undisturbed landscape in the area and, in this area, the

reclaimed mine areas would be separated by areas where the topography is not disturbed. The cumulative effects related to the visual resources would be moderate and short term.

4.13.3 Mitigation Measures

No mitigation measures specific to visual resources are necessary.

4.14 Noise

4.14.1 Direct and Indirect Effects

4.14.1.1 Proposed Action

Additional discussions regarding noise can be found in sections 3.14 and 4.1.13 of the 2006 LBA EA. Surface activities associated with the Proposed Action would continue to generate noise for approximately 4.7 years in a manner comparable to the existing condition.

CPE has developed internal criteria on off-site noise acceptable for the protection of the local community and has established a 65 Adjusted decibels (dBA) threshold for noise. Modeling conducted for SCC indicates that this threshold would be exceeded at points less than 4,800 feet from the pit boundary.

The nearest residence is approximately 3,250 feet from Tract I and FAS 314 is within 3,870 feet of Tract I. The nearest recreational opportunity is at the Tongue River Reservoir, approximately 15,000 feet from the proposed tracts. SCC would establish a 4,800-foot monitoring buffer around nearby residences. SCC would internally re-model the noise acceptability when mining activity encroaches on this 4,800-foot buffer. Recreationists on the Tongue River Reservoir should not experience higher ambient noise levels than the occupants of the nearest residence. Motorists traveling on FAS 314 should not experience excessive noise. The direct and indirect effects related to noise would be moderate to substantial but short term on all tracts due to mine related activity authorized under the currently approved mine plan.

4.14.1.2 No Action Alternative

Under the No Action Alternative, SCC would terminate federal coal recovery operations within the boundaries of the MTM 94378 tracts in September 2016. However, approximately 554.2 acres within the four tracts have been disturbed, as approved by SCC's Pearson Creek Amendment for SMP C1979012 and OSMRE's 2012 federal MPDD. Indirect noise impacts have resulted from current mining activity. Therefore, under this alternative, noise impacts in the area would remain as described in **section 4.14.1.1**, but for a shorter duration.

4.14.2 Cumulative Impacts

Existing land uses within the Spring Creek area (e.g., mining, livestock grazing, transportation, and recreation) contribute to noise levels, but wind is generally the primary noise source. Mining in the area increases the number of noise-producing facilities within the area and may augment the level of impacts to other resources (e.g., increased exposure of wildlife to noise impact, increased noise impacts to local residents and recreational users). Mining-related noise is generally masked by the wind at short distances, so cumulative overlap of noise impacts between the SCM and the Decker Mine is not likely.

Recreational users, local residents and grazing lessees utilizing lands surrounding active mining areas do hear mining-related noise; but this has not been reported to cause a substantial impact.

Wildlife in the immediate vicinity of mining may be adversely affected by noise; however, observations at the SCM indicate that wildlife generally adapt to noise conditions associated with active coal mining. The cumulative impacts related to noise would be moderate to substantial but short term.

4.14.3 Mitigation Measures

No mitigation measures specific to noise impacts are necessary.

4.15 Transportation Facilities

4.15.1 Direct and Indirect Effects

4.15.1.1 Proposed Action

Additional discussions regarding transportation facilities can be found in sections 3.15 and 4.1.14 of the 2006 LBA EA. Major roads and railroads are presented on **map I-1**. Existing transportation facilities, including roads, railroads and overhead electrical transmission lines, would continue to be utilized under the Proposed Action. Most of the coal mined at the SCM is transported by rail with a relatively small amount transported by truck as result of retail coal sales. Based on an estimated annual production rate of 18 Mt of coal and an estimated 15,470 tons of coal per train, the Proposed Action would result in 1,164 train trips per year (one way). Employees and vendors utilize Wyoming 338/Montana FAS 314 to access the mine. According to information obtained from the Wyoming Department of Transportation (WYDOT), the 2014 average 24-hour traffic count on Wyoming 338 at a location approximately 4 miles south of the Montana/Wyoming border, was 825 vehicles (WYDOT 2016). The No new facilities would be required to support the Proposed Action. Mining the proposed tracts would not increase the current level of impact on FAS 314 and Big Horn County Road 380, other than the potential for increased dust.

The continuation of mining on tracts analyzed in this EA would extend the time period over which SCC would produce coal, which would extend the period of time coal would be transported from the mine. The Proposed Action would have minimal direct and indirect effects on transportation.

4.15.1.2 No Action Alternative

Under the No Action Alternative, SCC would terminate federal coal recovery operations within the boundaries of the MTM 94378 tracts in September 2016. However, approximately 554.2 acres within the four tracts have been disturbed, as approved by SCC's Pearson Creek Amendment for SMP C1979012 and OSMRE's 2012 federal MPDD. Indirect impacts on transportation have resulted from current mining activity. Therefore, under this alternative, transportation impacts in the area would remain as described in **section 4.15.1.1**, but to a lesser extent.

4.15.2 Cumulative Impacts

Cumulative impacts to transportation are related to coal production levels. If coal production levels increase, cumulative impacts to transportation would increase. Highway traffic accidents and delays at grade crossings could result from train traffic. The transportation facilities at the SCM and Decker Mine are already in place, and coal production and employment levels would not change with the Proposed Action. The Proposed Action would extend the duration of mining by approximately 4.7 years at the SCM, and thus the length of employment and associated transportation utilization would be extended. The cumulative impacts related to transportation would be minimal and short term.

4.15.3 Mitigation Measures

No mitigation measures specific to transportation are necessary.

4.16 Hazardous and Solid Waste

4.16.1 Direct and Indirect Effects

4.16.1.1 Proposed Action

Additional discussions regarding hazardous and solid wastes can be found in sections 3.16 and 4.1.15 of the 2006 LBA EA. Waste is generated during mining operations at the SCM, as at all mines. Non-hazardous waste, which is similar to domestic or municipal solid waste, is currently disposed of on-site. Most of the wastes generated at the SCM that are not recycled are disposed of in a designated sanitary landfill located on a portion of the SCM area. Disposal of these non-hazardous wastes, which include abandoned mining machinery, scrap iron, scrap lumber, packing material, and other items is permitted under the mine's existing MDEQ permit to mine. No solid wastes would be deposited within 8 feet of any coal outcrop or coal storage area, or at refuse embankments or impoundment sites (SCC 2014).

The SCM does utilize some non-hazardous liquids; some materials that may be classified as hazardous, or are handled as hazardous, include some greases, solvents, paints, flammable liquids; and other combustible materials determined to be hazardous by the EPA under the Resource Conservation and Recovery Act. These types of wastes are disposed of at an off-site EPA-permitted hazardous waste facility. No significant direct or indirect effects on transportation are anticipated as a result of any of the Proposed Action.

4.16.1.2 No Action Alternative

Under the No Action Alternative, SCC would terminate federal coal recovery operations within the boundaries of the MTM 94378 tracts in September 2016. However, approximately 554.2 acres within the four tracts have been disturbed, as approved by SCC's Pearson Creek Amendment for SMP C1979012 and OSMRE's 2012 federal MPDD. Hazardous and solid wastes are currently being generated at the SCM. Therefore, under this alternative, hazardous and solid wastes impacts in the area would remain as described in **section 4.16.1.1**, but to a lesser extent.

4.16.2 Cumulative Impacts

As indicated in section 4.1.15 of the 2006 LBA EA, no cumulative hazardous or solid waste impacts are expected.

4.16.3 Mitigation Measures

No mitigation measures specific to hazardous and solid wastes are necessary.

4.17 Socioeconomics

4.17.1 Direct and Indirect Effects

4.17.1.1 Proposed Action

Additional discussions regarding socioeconomic impacts can be found in sections 3.17 and 4.1.16 of the 2006 LBA EA. Statewide, severance taxes imposed on 2014-2015 coal production amounted to \$60,891,000 (Montana Coal Council 2016). This does not include coal severance taxes paid by Westmoreland Resources Inc. on coal owned by the Crow Tribe, which is paid directly to the

Tribe and not to the state of Montana or Big Horn County. In July of 1991, the severance tax on coal in Montana was set at a rate of 15 percent of the market value. Severance taxes are paid directly to the state of Montana. The permanent coal trust fund (50.0 percent) and Montana's general fund (23.4 percent) receive the largest shares of the severance taxes, followed by long-range building program (12.0 percent), Coal and Natural Resource Account (5.8 percent), State special revenue fund (5.5 percent), and miscellaneous (3.3 percent) (Montana Coal Council 2016).

Net and gross proceed taxes paid on 2015 coal production in Montana amounted to \$19,746,300. Net and gross proceed taxes are paid on the value of the coal to support county governments in counties where mines are located (Montana Coal Council 2016).

Resource indemnity trust taxes paid totaled \$2,224,325 for the fiscal year 2014-2015. Resource indemnity trust taxes of 0.4 percent of the contract sales price are paid to the indemnity trust. Federal abandoned mine reclamation and black lung taxes are based on production levels (Montana Coal Council 2016).

Under the Proposed Action, Montana revenues could total approximately \$175 million and federal revenues could total \$7.5 million over the life of the mine. The primary difference between state and federal revenues is related to the fact that bonus bid payments for federal leased coal have been paid by SCC and severance taxes are only paid to the state of Montana.

Continued mining in the EA tracts would not directly create new jobs and therefore, the availability of housing units would not be impacted. No additional employees are anticipated as a result of the tracts being mined, although the additional lease would prolong the duration of employment for current employees. No additional changes in the current socioeconomic situation, as described in **section 3.5**, are anticipated.

4.17.1.2 No Action Alternative

Under the No Action Alternative, SCC would terminate federal coal recovery operations within the boundaries of the MTM 94378 tracts in September 2016. However, approximately 554.2 acres within the four tracts have been disturbed, as approved by SCC's Pearson Creek Amendment for SMP C1979012 and OSMRE's 2012 federal MPDD. In terms of coal conservation; the No Action Alternative would mean that mineable federal coal within MTM 94378 would not be recovered. Approximately 84.8 million tons of federal coal would not be recovered along margins of existing leases. Montana revenues of approximately \$175 million and federal revenues of approximately \$7.5 million related to this coal would not be realized over the LOM under No Action Alternative.

4.17.2 Cumulative Impacts

Cumulative impacts related to the Proposed Action are not significantly different than those described in 4.1.16 of the 2006 LBA EA. Since mining has been occurring within the tracts since 2012, revenues have been collected during that time. The remaining estimated LOM state revenues have declined by approximately \$50 million and the estimated federal revenues have declined by approximately \$56.1 million.

4.17.3 Mitigation Measures

No mitigation measures specific to reducing socioeconomic impacts are necessary.

4.18 Short Term Uses and Long Term Productivity

The discussions contained within this environmental consequences chapter, and the Coal Lease EA incorporated by reference, provides the analysis and relationships of shorter uses (such as mining coal) and long-term productivity (such as generating electricity for homes, schools, and industry).

4.19 Unavoidable Adverse Effects

Unavoidable adverse impacts are the effects on natural and human resources that would remain after mitigation measures have been applied. For the Proposed Action, details regarding these impacts are presented in the preceding resource sections and the 2006 LBA EA. Unavoidable adverse effects are summarized in **Table 4-6**.

Table 4-6. Unavoidable Adverse Effects of the Proposed Action

Resource	Unavoidable Adverse Effect
Topography and Physiography	Topographic effects of mining are unavoidable because waste must generate and permanently stored to conduct operations in an economical manner and to maximize coal quality.
Geology, Mineral Resources and Paleontology	Buried paleontological resources may be permanently impacted by mining activities. Such impacts are unavoidable as the resources are not locatable and, therefore, cannot be avoided by construction.
Air Quality	Emissions and associated impacts are unavoidable, but are not expected to degrade ambient air quality in the area. Mined coal is primarily used for combustion; therefore, any associated GHG emissions are unavoidable if the Proposed Action is implemented.
Water Resources	Impacts to water resources resulting from coal extraction are unavoidable. However, these impacts would be mitigated through replace of groundwater supply for domestic, agricultural, industrial, or any other legitimate use if such a supply is diminished, interrupted, or contaminated, to the extent of precluding use of the water, as a result of mining
Soil	Soil in disturbance areas would exhibit more homogenous textures and may have more coarse fragments near the surface following mining. Some soil loss may occur As a result of erosion, prior to stabilization.
Vegetation	Vegetation would be eliminated beginning with the initial disturbance and continuing until reclamation is complete, which would extend to the end of the mining term for many facilities. Noxious weeds may be introduced as a result of mining activity, potentially affecting vegetation communities and requiring implementation of control measures in the long term.
Wildlife	Wildlife would be temporarily affected by mine activities, which would alter habitat conditions, particularly in the vicinity of surface disturbance. These impacts would be short-term and habitats would be reclaimed following mining.
Cultural Resources	Although searches would be conducted, undiscovered cultural resources could be impacted by subsidence and surface disturbing activities. All discovered sites would be mitigated as required by Section 106 of the NHPA.
Visual Resources	Mining activity and associated disturbances and facilities would unavoidably alter the landscape during the mining term, affecting the aesthetic qualities. Some features would be visible from public access points, including US Highway 87. The effects would be negligible following reclamation.
Noise	Noise would result from mining activities similar to the existing condition.
Transportation Facilities	Route FAS 314 and Big Horn County Road 380 would be periodically affected by construction of road crossings associated with mining activity. The effects would occur during the mining term.
Hazardous and Solid Waste	Economical coal mining and associated coal processing would yield coal waste.

5.0 Consultation and Coordination

5.1 Public Comment Process

OSMRE released a Public Notice of the availability of the EA in the Hardin Times and the Sheridan Press on June 2, 2016 and again on June 16, 2016. Written comments were solicited until July 5, 2016. **Appendix E** presents a summary of the comments received by the public and the OSMRE's responses to these comments.

Public outreach letters describing the EA and soliciting comments were mailed on February 11, 2016 to a total of 92 recipients, including city governments, adjacent landowners, and other interested parties. The legal notices and letters invited the public to comment on issues of concern related to the EA. OSMRE also sent letters of notification to 26 tribes/tribal representatives. These tribal notification letters were mailed on February 11, 2016,

OSMRE developed a project specific website that provided legal notices, outreach notice letters, mailing address, and an email address for comments to be sent. The website was activated on February 11, 2016 and was available at

<http://www.wrcc.osmre.gov/initiatives/SpringcreekMineLBA1.shtm>.

A total of 1,889 comment letters were received during the public scoping period. Comment letters received during the public review period for this EA will be considered during the ASLM approval process.

5.2 Preparers and Contributors

OSMRE personnel that contributed to the development of this EA are listed in **table 5-1**.

Table 5-1. OSMRE Personnel

Name	Organization	Project Responsibility
Bob Postle	OSMRE	Project Lead
Marcelo Calle	OSMRE	Project Coordination
Lauren Mitchell	OSMRE	Project Assistance
Roberta Martinez Hernandez	OSMRE	Air Quality
Alex Birchfield	OSMRE	Fish and Wildlife

Third party contractors who contributed to the development of this EA are identified in **table 5-2**.

Table 5-2. Third Party Contractor Personnel

Name	Organization	Project Responsibility	Education/Experience
John Berry	WWC Engineering	Project Manager, Primary Author	B.S. Wildlife Management 41 years of experience
Chris McDowell	WWC Engineering	QA/QC	B.S. Civil Engineering

5.3 Distribution of the EA

This EA will be distributed to individuals who specifically request a copy of the document. It will also be made available electronically on the OSMRE website at <http://www.wrcc.osmre.gov/initiatives/SpringcreekMineLBAI.shtm>.

6.0 References and Abbreviations/Acronyms

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6.2 Abbreviations/Acronyms

AERMOD	American Meteorological Society/EPA Regulatory Model Improvement Committee Dispersion Model
AIRFA	American Indian Religious Freedom Act of 1978
ANFO	Ammonium Nitrate and Fuel Oil
AQRVs	Air Quality Related Values
ARM	Administrative Rules of Montana
ARMB	Air Resources Management Bureau
ASLM	Assistant Secretary, Land and Mineral Management (DOI)
AVF	alluvial valley floor
BCR	Bird Conservation Region
BLM	U.S. Bureau of Land Management
BMC	Big Metal Coal Co. LLC
BMP	Best management practice
Btu	British thermal unit
CAA	Clean Air Act, as amended
CAPS	Crucial Areas Planning System
CCAC	Climate Change Action Committee
CEQ	Council on Environmental Quality
CFR	Code of Federal Regulations
CH ₄	Methane
CHIA	Cumulative Hydrologic Impacts
CO	Carbon monoxide
CO ₂	Carbon dioxide
CO ₂ e	Equivalent CO ₂
CPE	Cloud Peak Energy
CPP	Clean Power Plan
dBA	Adjusted decibels, a logarithmic unit of sound levels
DM	Departmental Manual
DOI	U.S. Department of the Interior
DR	Decision Record
EA	Environmental Assessment
EUG	Electric Generating Unit
EIS	Environmental Impact Statement
EPA	U.S. Environmental Protection Agency
EPCA	Energy Policy and Conservation Act (2005)
ESA	Endangered Species Act of 1973
FCLAA	Federal Coal Leasing Act Amendment (1976)
FEIS	Final Environmental Impact Statement
FLPMA	Federal Land Policy Management Act of 1976
FONSI	Finding of No Significant Impact
GHG	Greenhouse gas
GPO	U.S. Government Publishing Office

GRSG	Greater Sage-Grouse
H+	Hydrogen ion
H ₂ S	Hydrogen Sulfide
Hg	Mercury
HAP	Hazardous air pollutants
HIH	high first high, a term in air quality monitoring
HRRP	Habitat Recovery and Replacement Plan
LAC	Level of Acceptable Change
LBA	Lease by Application
LOM	Life of mine
µg/m ³	micrograms per cubic meter
MAAQS	Montana Ambient Air Quality Standards
MAQP	Montana Air Quality Permit
MATS	Mercury and Air Toxic Standards
MBOGC	Montana Board of Oil and Gas Conservation
MBTA	Migratory Bird Treaty Act of 1918, as amended
MDEQ	Montana Department of Environmental Quality
MEPA	Montana Environmental Policy Act
MFWP	Montana Fish, Wildlife & Parks
MNHP	Montana Natural Heritage Program
MLA	Mineral Leasing Act (1920)
MPDD	Mining Plan Decision Document
Mt	million tons
Mtpy	million tons per year
N ₂ O	Nitrous oxide
NAAQS	National Ambient Air Quality Standards
NEPA	National Environmental Policy Act (1969)
NH ₃	Ammonia
NHPA	National Historic Preservation Act
NHTSA	National Highway Traffic Safety Administration
NRHP	National Register of Historic Places
NO _x	Oxides of Nitrogen
NOA	Notice of Availability
NOI	Notice of Intent
NSPS	New Source Performance Standards
O ₃	Ozone
OSMRE	Office of Surface Mining Reclamation and Enforcement
PAP	Permit Application Package
Pb	Lead
PCD	Permitting and Compliance Division
ppm	parts per million
PM _{2.5}	Fine particulates less than 2.5 microns
PM ₁₀	Fine particulates less than 10 microns

PSD	Significant Deterioration Program
PTE	Potential to Emit
R2P2	Resource Recovery and Protection Plan
RMP	Resource Management Plan
SAR	Sodium Adsorption Rate
SCC	Spring Creek Coal Company
SCM	Spring Creek Mine
SDWA	Safe Drinking Water Act
SIP	State Implementation Plan
SMP	State Mining Permit
SMCRA	Surface Mining Control and Reclamation Act (1977)
SO ₂	Sulfur dioxide
SOSI	Species of Special Interest
STP	Standard Temperature and Pressure
TDS	Total dissolved solids
T&E	threatened, endangered, and candidate
tpy	tons per year
USDOE	U.S. Department of Energy
USEIA	U.S. Energy Information Administration
USFWS	U.S. Fish and Wildlife Service
USGS	U.S. Geological Survey
VOC	Volatile organic compound
VRM	Visual Resource Management
WET	Whole effluent toxicity

APPENDIX A

COURT-RELATED DOCUMENTS
FOR FEDERAL LEASE MODIFICATION APPROVAL - MTM 94378

**IN THE UNITED STATES DISTRICT COURT
FOR THE DISTRICT OF MONTANA
BILLINGS DIVISION**

WILDEARTH GUARDIANS,

CV 14-13-BLG-SPW-CSO

Plaintiff,

vs.

**FINDINGS AND
RECOMENDATIONS**

U.S. OFFICE OF SURFACE MINING,
RECLAMATION AND
ENFORCEMENT, AL KLEIN, in his
official capacity as Western Regional
Director of the Office of Surface Mining
Reclamation and Enforcement, Denver,
Colorado, and SALLY JEWELL, in her
capacity as U.S. Secretary of the
Interior,

Defendants,

and

STATE OF MONTANA, SPRING
CREEK COAL LLC, NATIONAL
MINING ASSOCIATION,

Defendant-Intervenors.

NORTHERN PLAINS RESOURCE
COUNCIL INC., WESTERN
ORGANIZATION OF RESOURCE
COUNCILS INC,

CV 14-103-BLG-SPW-CSO

Plaintiffs,

vs.

SALLY JEWELL, in her official capacity as U.S. Secretary of the Interior, U.S. OFFICE OF SURFACE MINING RECLAMATION AND ENFORCEMENT,

Defendants,

and

STATE OF MONTANA, SPRING CREEK COAL LLC, NATIONAL MINING ASSOCIATION,

Defendant-Intervenors.

This action arises from the Office of Surface Mining Reclamation and Enforcement's ("OSM") approval of a mining plan modification for the Spring Creek Mine in Montana. This agency decision gave rise to two actions in this court: (1) *Northern Plains Resource Council et al. v. Jewell et al.* ("NPRC"), No. CV-14-103-BLG-SPW-CSO (D. Mont. Aug. 14, 2014), and (2) *WildEarth Guardians v. U.S. Office of Surface Mining, Reclamation and Enforcement, et al.*, No. CV 14-13-BLG-SPW-CSO (D. Mont. Feb. 27, 2013). These actions have been consolidated with the consent of the parties. *ECF 70*.

The following motions are pending:

- (1) Motion for Summary Judgment filed by Plaintiffs Northern Plains Resource Council, Inc. and Western Organization of Resource Councils, Inc. (collectively "NPRC") (*ECF 76*),

- (2) Motion for Summary Judgment filed by Plaintiff WildEarth Guardians (“WildEarth”) (*ECF 78*),
- (3) Motion for Summary Judgment filed by Defendant-Intervenor State of Montana (“State”) (*ECF 89*),
- (4) Cross Motion for Summary Judgment filed by Defendant-Intervenors Spring Creek Coal LLC (“SCC”) and the National Mining Association (*ECF 93*), and
- (5) Federal Defendant’s¹ Cross-Motion for Summary Judgment (*ECF 97*).

I. BACKGROUND

A. PROCEDURAL

WildEarth’s claims against Federal Defendants were first asserted in the District of Colorado, along with challenges to other mine plan decisions regarding other mines in various states. The United States District Court for the District of Colorado severed the claims related to the Spring Creek Mine and transferred them to this Court on February 10, 2014. *ECF 32*. Spring Creek Coal LLC, the National Mining

¹ The Federal Defendants named in these two actions include: U.S. Office of Surface Mining, Reclamation and Enforcement; Al Klein, in his official capacity as Western Regional Director of the Office of Surface Mining Reclamation and Enforcement; and Sally Jewell, in her capacity as U.S. Secretary of the Interior.

Association, and the State of Montana moved to intervene. Their motions were granted by this Court. *ECF 49, 58, 60.*

Following briefing of the pending summary judgment motions, the Court conducted a hearing on the motions. *ECF 120.* At the conclusion of the hearing, the court agreed to allow the parties 60 days to attempt settlement. This period was later extended at the request of the parties. *ECF 126.* Having been advised that settlement attempts were unsuccessful (*ECF 127*), the Court enters these Findings and Recommendations to the presiding judge, rather than endorsing additional delay through further briefing or hearing.

B. FACTS

The Spring Creek Mine is a surface coal mine located in Big Horn County, Montana. It is situated in the northwest portion of Montana's Powder River Basin, which contains large reserves of fossil fuels including coal. *ECF 97-2* at 2. Mining operations began at the Spring Creek Mine in 1980. *ECF 97-3* at 4. Approximately two hundred and eighty (280) people are now employed at the mine. *Tr. of Hearing (ECF 123) ("Tr.") at 106.*

In 2005, SCC² filed an application to lease an additional 1207.5 acres of federal coal in order to extend the life of the Spring Creek Mine. *SPRING CREEK_000027*, (“AR”) *et seq.*³ After determining that the lease application met the regulatory requirements, the Bureau of Land Management (“BLM”) prepared an Environmental Assessment (“EA”), designating the additional tracts as case file number MTM 94378. OSM was a cooperating agency in completing this EA. *AR 16*. After completing the EA, the BLM issued the lease to SCC, effective December 1, 2007. *AR 5360–5362*. With respect to additional mining operations, BLM’s EA explained:

The BLM does not authorize mining operations by issuing a lease. After a lease has been issued but prior to mine development, the lessee must file a permit application package with the MDEQ [Montana Department of Environmental Quality] and Office of Surface Mining Reclamation and Enforcement (OSM) for a surface mining permit and approval of the Mineral Leasing Act of

² The Spring Creek Mine is owned and operated by Spring Creek Coal LLC, which is a wholly owned subsidiary of NERCO Coal LLC. The stock of NERCO Coal LLC is ultimately held by Cloud Peak Energy, Inc. (“Cloud Peak”). Spring Creek Coal LLC was formally known as Spring Creek Coal Company. *ECF 97-3* at 4–5.

³ Federal Defendants have produced the Administrative Record (“AR”), which has been Bates stamped *SPRING CREEK_000001* through *SPRING CREEK_005625*, with copies provided to the Court and all counsel of record. When referring to the AR, the Court will cite to the Bates stamped pages.

1920 (MLA) mining plan. An analysis of a detailed site-specific mining and reclamation plan occurs at that time.

AR 27.

Accordingly, in 2008, SCC submitted a permit application to extend coal mining onto this lease. *ECF 95 at 4.* Spring Creek revised the permit application several times in response to comments from MDEQ. *Id.* MDEQ approved the permit to expand the Spring Creek Mine on June 23, 2011. *Id. at 5.*

On June 5, 2012, OSM issued a one-page Finding of No Significant Impact for the mining plan modification allowing recovery of coal from Federal Lease MTM94378. The reasons for this finding were stated in one sentence, without further explanation or elaboration:

The finding of no significant impact is based on the attached Environmental Assessment: *Environmental Assessment for Spring Creek Coal Lease by Application, MTM,94378 (November 2006)* prepared by the Bureau of Land Management with the MDEQ and OSM as cooperating agencies which has been independently evaluated by OSM and determined to assess the environmental impacts of the proposed action adequately and accurately and to provide sufficient evidence and analysis for this finding of no significant impact.

AR 16. On June 12, 2012, the OSM Regional Director recommended that the OSM Director approve the mining plan modification. *AR 4–11.*

With respect to the environmental analysis, this document stated:

I have determined that approval of this mining plan modification will not have a significant impact on the quality of the human environment. The environmental analysis entitled ENVIRONMENTAL ASSESSMENT FOR SPRING CREEK COAL LEASE MODIFICATION MTM94378 (November 2006) prepared by BLM with OSM as a cooperating agency and other environmental documents noted in the Finding of No Significant Impact (FONSI), describe the impacts that may result from approval of this mining plan modification and its alternatives.

AR 10. Despite the representation above, no “environmental documents” other than the 2006 EA were noted in the 2012 FONSI.

On June 26, 2012, the Director of OSM recommended to the Acting Assistant Secretary for Land and Minerals Management that the proposed mining plan modification be approved. *AR 3.* On June 27, 2012, the Assistant Secretary of the Interior approved the mining plan modification. *AR 191–198.*

The mining plan amendment extended surface coal mining operations onto federal lease MTM 94378 for the first time. The expansion: (1) increases the permit area by 2,042 acres, to a total of 9,103 acres; (2) increases surface disturbance at the mine by 1,224 acres; (3) increases the number of acres of federal coal mined to 1,118; (4) adds an additional 117 million tons of federal coal; and (5) extends the mine’s life by an additional 10.9 years, through 2022. *See AR 8; ECF 91 at 6, 97 at 14–15.*

II. PARTIES' ARGUMENTS

Collectively, the Plaintiffs argue that the approval of the Mining Plan Amendment violated the Administrative Procedure Act (“APA”), 5 U.S.C. §§ 701 *et seq.*, and the National Environmental Policy Act (“NEPA”), 42 U.S.C. §§ 4321 *et seq.*, because OSM failed to provide notice of its FONSI to the public and it failed to take the requisite hard look as required by NEPA. *ECF 76-1* at 8; *ECF 78-1* at 9.

More specifically, NPRC argues that: (1) the U.S. Secretary of the Interior (“Secretary”) failed to provide public notice of the decision to approve the mining plan amendment and failed to provide an opportunity for public participation in the NEPA process; and (2) the Secretary failed to take the required “hard look” at the impacts of the mining plan expansion to land and water resources by authorizing the mine expansion in light of the mine’s failure to achieve successful, contemporaneous reclamation in the past, and by relying on an outdated EA in approving the expansion. *ECF 22–34*.

WildEarth argues that OSM failed to provide notice of its decision or an opportunity for public involvement in the NEPA process, *ECF 78-1* at 17–21, and failed to take a hard look at the direct impacts to air quality from mine expansion by: (1) not assessing whether any changes

affecting air quality had occurred in the intervening years, *id.* at 22–25; (2) not analyzing air quality impacts under NEPA distinct from the State, *id.* at 25–27; and (3) failing to supplement the EA’s air quality analysis to consider new standards from PM_{2.5} emissions,⁴ ozone emissions, and nitrogen dioxide (“NO₂”) emissions, *id.* at 27–32. Finally, WildEarth argues that OSM failed to take a hard look at indirect impacts to air quality from coal combustion. *Id.* at 32–35.

In support of their motion for summary judgment, the Federal Defendants argue that Plaintiffs’ air quality and reclamation claims are waived because WildEarth did not alert the agency to its air quality concerns and NPRC did not alert the agency to its concerns until filing this action. *ECF 97* at 20–24. They argue that Plaintiffs could have taken steps to participate in the proceedings but, by failing to do so, they waived their air quality and reclamation claims. *Id.* at 24.

Next, Federal Defendants argue that Plaintiffs’ claims lack merit because: (1) Federal Defendants complied with NEPA’s public participation requirements because there was no obligation to circulate its FONSI for comments and circumstances here do not trigger any requirement to formally notify the public, *id.* at 24–28, 44–46; (2) NEPA

⁴ Particulate matter less than 10 microns in diameter (“PM_{2.5}”).

does not require analysis of combustion impacts because it is too speculative and beyond the scope of the agency's responsibilities, *id.* at 28–33; (3) OSM's analysis of air quality impacts is adequate, *id.* at 33–39; and (4) the EA's consideration of reclamation issues was adequate and Plaintiffs misstate actual progress of reclamation and failed to identify any reclamation violations. *Id.* at 39–42.

Defendant-Intervenors add that: (1) WildEarth fails to recognize that OSM's obligations are circumscribed by other legal requirements governing the development of federally leased coal, *id.* at 26–27; and (2) a change in environmental laws, such as National Ambient Air Quality Standards (“NAAQS”), does not require a new NEPA review because the standards do not constitute new information, nor do they provide a seriously different picture of the environmental landscape, as would require supplementation. *Id.* at 33.

Regarding Plaintiffs' contemporaneous reclamation argument, the State argues that bond release status is not an accurate indicator for evaluating the success of contemporaneous reclamation, nor do Plaintiffs correctly state how such reclamation is measured, and that the EA thoroughly considered the impacts of reclamation. *ECF 89*, 14–17.

In response, WildEarth argues that it did not waive its claims because there are no statutory exhaustion requirements in NEPA and because OSM provided no opportunity for participation in its NEPA process. *ECF 100* at 22–24.

NPRC argues that the Secretary’s decision to shut out impacted local communities and then suggest that the same communities have “waived” their ability to raise and protest legitimate concerns is capricious and arbitrary. *ECF 101* at 9.

III. STANDARD OF REVIEW

The Administrative Procedure Act (“APA”) provides the authority for a court’s review of agency decisions under NEPA. 5 U.S.C. §§ 701 *et seq.*; *Barnes v. U.S. Dept. of Transp.*, 655 F.3d 1124, 1132 (9th Cir. 2011). Under the APA, a court may set aside an agency action only if it is “arbitrary, capricious, an abuse of discretion, or otherwise not in accordance with law.” *Barnes*, 655 F.3d at 1132 (quoting 5 U.S.C. § 706(2)(A)). In APA actions, the court’s review is based on the agency’s administrative record. *See Lujan v. Nat’l Wildlife Fed’n*, 497 U.S. 871, 883-84 (1990).

Under this standard, the court’s role is to determine whether the agency’s record supports the agency’s decision as a matter of law. An

agency decision is arbitrary and capricious where it “relied on factors Congress did not intend it to consider, entirely failed to consider an important aspect of the problem, or offered an explanation that runs counter to the evidence before the agency [at the time of its decision] or is so implausible that it could not be ascribed to a difference in view of the product of agency expertise.” *Lands Council v. McNair*, 537 F.3d 981, 987 (9th Cir. 2008).

A review of an agency’s decision not to prepare an EIS requires a court to “determine whether the agency has taken a ‘hard look’ at the consequences of its actions, ‘based [its decision] on consideration of the relevant factors,’ and provided a ‘convincing statement of reasons to explain why a project’s impacts are insignificant.” *Id.* (quoting *Envntl. Prot. Info. Ctr. v. U.S. Forest Serv.*, 451 F.3d 1005, 1009 (9th Cir.2006)).

IV. DISCUSSION

NEPA is “our basic national charter for protection of the environment.” 40 C.F.R. § 1500.1(a). It establishes “a ‘national policy [to] encourage productive and enjoyable harmony between man and his environment,’ and was intended to reduce or eliminate environmental damage and promote ‘the understanding of the ecological systems and

natural resources important to' the United States." *Dept. of Transp. v. Public Citizen*, 541 U.S. 752, 756–757 (2004) (quoting 42 U.S.C. § 4321).

NEPA is a procedural statute that does not “mandate particular results but simply provides the necessary process to insure that federal agencies take a hard look at the environmental consequences of their actions.” *High Sierra Hikers Ass'n v. Blackwell*, 390 F.3d 630, 639–40 (9th Cir. 2004) (internal citations omitted); *Robertson v. Methow Valley Citizens Council*, 490 U.S. 332, 351 (1989) (NEPA “prohibits uninformed—rather than unwise—agency action”). NEPA requires government agencies to “consider every significant aspect of the environmental impact of a proposed action.” *Baltimore Gas & Elec. Co. v. NRDC*, 462 U.S. 87, 97 (1983). NEPA also requires that relevant information be made available to the public so that they “may also play a role in both the decision making process and the implementation of that decision.” *Robertson*, 490 U.S. at 349.

While courts must “strictly interpret the procedural requirements in NEPA and the CEQ [Counsel of Environmental Quality] regulations,” *Churchill County v. Norton*, 276 F.3d 1060, 1071 (9th Cir.2001), courts must “be mindful to defer to agency expertise, particularly with respect to scientific matters within the purview of the agency.” *Klamath–*

Siskiyou Wildlands Center v. Bureau of Land Mgt., 387 F.3d 989, 993 (9th Cir. 2004) (*internal citations omitted.*) The standard of review is “highly deferential” and the courts must defer to an agency’s decision that is “fully informed and well-considered”, being careful not to substitute the court’s judgment for that of the agency experts. *Blue Mountains Biodiversity Project v. Blackwood*, 161 F.3d 1208, 1211 (9th Cir. 1998). *See also Greenpeace Action v. Franklin*, 14 F.3d 1324, 1332 (9th Cir. 1993).

A. APPLICABLE DOI STATUTES AND REGULATIONS

The Mineral Leasing Act authorizes the Secretary to manage the leasing of public lands for developing deposits of coal and other minerals. *See generally* 30 U.S.C. §§ 181-287; 42 U.S.C. §§ 1701-1787. Prior to taking any action on a leasehold which might cause a significant disturbance of the environment, a coal lessee must submit for the Secretary’s approval an operation and reclamation plan. 30 U.S.C § 207(c).

The Surface Mining Control and Reclamation Act, 30 U.S.C. §§ 1201 *et seq.*, requires that environmental impacts from surface mining be minimized and that mined lands be fully reclaimed. The Department

of Interior has adopted comprehensive regulations to accomplish these goals. *See* 30 C.F.R. §§ 700 *et seq.* Although the regulations contemplate a system of cooperative federalism, the Secretary may not delegate to any State authority to approve mining plans or modifications thereto, nor may the Secretary delegate to any State the authority to comply with NEPA. 30 C.F.R. § 745.13(b), (i). Even if a state has a cooperative agreement with the Secretary regarding surface coal mining, approval of a mining plan or a mining plan modification remains with the Secretary and is not delegable. 30 U.S.C. § 1273(c) (“Nothing in this subsection shall be construed as authorizing the Secretary to delegate to the States his duty to approve mining plans on Federal Lands....”). Prior to the Secretary’s decision on mining plan applications, OSM prepares and submits a decision document recommending approval, disapproval, or conditional approval of the mining plan. 30 C.F.R. § 746.13.

The Council of Environmental Quality (“CEQ”) regulations allow the preparation of an EA, a more limited document than an EIS, if the agency makes a finding of no significant impact. 40 C.F.R. § 1501.4(e). The EA is to be a concise public document that briefly provides

“sufficient evidence and analysis for determining whether to prepare an [EIS] or a [FONSI].” 40 C.F.R. § 1508.9(a). A FONSI should briefly describe why the action will not have a significant effect on the human environment. It must include the environmental assessment or a summary of it and must note any other documents related to it.

40 C.F.R. § 1508.13. *See Public Citizen*, 541 U.S. at 757–58. An EA and associated FONSI must be made available to the affected public. 40 C.F.R. §§ 1501.4(e)(1), 1506.6(b); 43 C.F.R. § 46.305(c).

An agency may prepare an EA “to decide whether the environmental impact of a proposed action is significant enough to warrant preparation of an EIS.” *Blue Mountains Biodiversity Project*, 161 F.3d at 1212 (*quoting* 40 C.F.R. § 1508.9). EAs may “tier” to earlier NEPA documents, but tiering does not eliminate the need to “summarize the issues discussed in the broader statement and incorporate discussions from the broader statement by reference,” concentrating “on the issues specific to the subsequent action.” 40 C.F.R. §§ 1502.20, 1508.28. When existing environmental analyses prepared pursuant to NEPA and CEQ regulations are used in their entirety, the “supporting record must include an evaluation of whether new circumstances, new

information or changes in the action or its impacts not previously analyzed may result in significantly different environmental effects.” 43 C.F.R. § 46.120(c). *See also Western Watersheds Project v. Lueders*, 2015 WL 4773871 (D. Nev. Aug. 13, 2015) (holding EA sufficient where BLM did not simply tier to previous plans, but also discussed “past, present, and reasonably foreseeable future actions” in its EA and “implemented specific mitigation methods to be utilized”). When using tiered documents, the agency must “include a finding that the conditions and environmental effects described in the broader NEPA document are still valid or address any exceptions.” 43 C.F.R. § 46.140.

B. FEDERAL DEFENDANTS FAILED TO GIVE REQUIRED PUBLIC NOTICE

NEPA procedures ensure that the agency will “inform the public that it has indeed considered environmental concerns in its decision making process.” *Baltimore Gas and Elec. Co.*, 462 U.S. at 97. CEQ regulations require public involvement to the extent practicable in preparing an EA. 40 C.F.R. § 1501.4(b). The Department of Interior’s regulations require that a bureau or office within the Department “notify the public of the availability of an environmental assessment and any associated [FONSI] once they have been completed.” 43 C.F.R. §§

46.30, 46.305(c). Although the Ninth Circuit has “not established a minimum level of public comment and participation required by the regulations governing the EA and FONSI process,” it has found that “a complete failure to involve or even inform the public about an agency’s preparation of an EA and a FONSI” violates these regulations. *Citizens for Better Forestry v. U.S. Dept. of Agric.*, 341 F.3d 961, 970 (9th Cir. 2003). “An agency, when preparing an EA, must provide the public with sufficient environmental information, considered in the totality of circumstances, to permit members of the public to weigh in with their views and thus inform the agency decision-making process.” *Bering Strait Citizens for Responsible Resource Dev. v. U.S. Army Corps of Engineers*, 524 F.3d 938, 953 (9th Cir. 2008).

The administrative record here includes no suggestion of public notice by the Federal Defendants of the FONSI. Although the Federal Defendants argue that they placed the documents in a reading room in a Denver high-rise office building (*ECF 97* at 18), they acknowledge that they gave the public no notice that the document had been placed there. And, as counsel for the Federal Defendants acknowledged at the hearing, there is no indication in the Administrative Record that the FONSI actually was placed in a reading room in Denver. *Tr. at 130*.

This contention is merely asserted, without citation, in the Defendants' briefs. *See ECF 97* at 18.

OSM made no effort to inform or involve the public in its decisions at issue. No notice was provided to the public regarding the existence of the FONSI, nor any notice indicating that it was placed in a reading room for public review. Under the applicable standards, the Court finds that this complete lack of notice violates the public participation and notice provisions of NEPA, and thus the Court recommends that Plaintiffs' motions be granted based on a lack of public notice.

C. FEDERAL DEFENDANTS FAILED TO TAKE THE REQUIRED "HARD LOOK"

As noted, if an agency decides that an EIS is not necessary based on an EA, the agency must issue a FONSI to briefly present the reasons why the proposed agency action will not have a significant impact on the environment. *Public Citizen*, 541 U.S. at 757–758. In reviewing a decision not to prepare an EIS, courts determine, under the arbitrary and capricious standard, “whether the agency has taken a ‘hard look’ at the consequences of its actions, based [its decision] on a consideration of the relevant factors, and provided a convincing statement of reasons to explain why a project’s impacts are insignificant.’” *In Def. of Animals*,

Dreamcatcher Wild Horse and Burro Sanctuary v. U.S. Dept. of Int., 751 F.3d 1054, 1068 (9th Cir. 2014) (quoting *Envntl. Prot. Info. Ctr.*, 451 F.3d at 1009).

Plaintiffs argue that OSM failed to analyze the mine expansion's effects on air quality, coal combustion, or reclamation. Because the FONSI itself fails to explain how OSM, in 2012, gave a hard look at the consequences of approving the mining plan amendment, the Court must agree. The FONSI, without any elaboration or explanation, simply states only the conclusion that it is based on the 2006 EA, which "has been independently evaluated by OSM and determined to assess the environmental impacts of the proposed action adequately and accurately and to provide sufficient evidence and analysis for this finding of no significant impact." *AR 16*. It does not explain, for example, why a six-year-old document can be exclusively relied upon in this regard, particularly when that earlier document expressly stated that it was not analyzing site-specific mining or reclamation plans. *See supra at 4-5*.

Applying the applicable standards, the Court concludes that such conclusory statements do not comply with governing laws and regulations summarized above. Although the 2006 EA was attached to the FONSI, there is no indication as to why and how an EA created

before the mining plan amendment application was filed properly analyzes its effects. Based on the lack of the required non-delegable environmental analysis in the NEPA documents at issue here, the Court recommends that Plaintiffs' motions be granted to the extent that they argue OSM failed to take a hard look under NEPA at their recommended approval of the SCC mining plan amendment.

D. WAIVER

Defendants and Intervenors argue that Plaintiffs' did not alert the agency to its concerns early enough to provide a meaningful opportunity to rectify the alleged violations. *ECF 97* at 21; *ECF 93-1* at 24; *ECF 89* at 18.

In *Department of Transportation v. Public Citizen*, the Court highlighted the general principle that anyone challenging an agency's compliance with NEPA "must 'structure their participation so that it . . . alerts the agency to the [parties'] position and contentions' in order to allow the agency to give the issue meaningful consideration." 541 U.S. at 764 (quoting *Vermont Yankee Nuclear Power Corp. v. Natural Resources Defense Council, Inc.*, 435 U.S. 519, 553 (1978)). The Ninth Circuit, however, has "declined to adopt a broad rule which would require participation in agency proceedings as a condition precedent to seeking

judicial review of an agency decision.” *Ilio‘ulaokalani Coalition v. Rumsfeld*, 464 F.3d 1083, 1092 (9th Cir. 2006) (internal quotations omitted). In *Ilio‘ulaokalani Coalition*, the court emphasizes the primary responsibility for NEPA compliance remains with the agency and that “an EA’s or EIS’ flaws might be so obvious that there is no need for a commentator to point them out specifically in order to preserve its ability to challenge a proposed action.” *Id.* (quoting *Public Citizen*, 541 U.S. at 765).

Here, Plaintiffs could not waive their objections where the Federal Defendants failed to inform the public of its NEPA process. Though the Plaintiffs’ arguments, if made at an earlier stage of the proceedings to either the State or to BLM, might have alerted OSM to their concerns, Plaintiffs cannot have waived claims against these Federal Defendants that they were not able to bring earlier due to a lack of public notice. Thus, the Court recommends that the Defendants’ waiver argument be denied.

E. REMEDY

Having found Federal Defendants in violation of NEPA, it is necessary to determine the appropriate remedy. The Plaintiffs’ Complaints each request the Court to vacate the mining plan approval

pending Federal Defendants' compliance with NEPA. *ECF 40* at 19–21; *NPRC*, No. CV-14-103-BLG-SPW-CSO, *ECF 1*. SCC is prohibited from operating without a mining plan approval, so mine operations would have to be suspended pending NEPA compliance.⁵

While vacating the mining plan approval is an available remedy under the APA, a court is not required to vacate every unlawful agency action. *Natl. Wildlife Federation v. Espy*, 45 F.3d 1337, 1343 (9th Cir. 1995). Because a remedy is controlled by principles of equity, a court may remand without vacatur to allow the agency action to remain in force until the action can be considered or replaced. *Humane Soc. of U.S. v. Locke*, 626 F.3d 1040, 1053 n.7 (9th Cir. 2010). To determine whether a procedurally invalid agency decision should be left in place or vacated, the Ninth Circuit has found that courts should consider “how serious the agency’s errors are and the disruptive consequences of an interim change that may itself be changed.” *California Communities Against Toxics v. U.S. E.P.A.*, 688 F.3d 989, 992 (9th Cir. 2012) (internal quotation omitted).

⁵ At the hearing, counsel for NPRC appeared to amend this position by stating: “It is not the intention of my clients to shut down this mine operation. Tr. at 119.

The Secretary's decision to approve the mining plan amendment at issue here was the result of a long application process involving multiple state and federal agencies. A vacatur at this point, seven years after the initial application for the mining plan amendment was filed and three years after its approval, would have detrimental consequences for SCC and its employees, for the State of Montana, and for other agencies involved in this process. *See, e.g., Tr. at 106-109.* Not only production at the mine, but also reclamation and remediation efforts, would come to a halt. Additionally, a vacatur may result in duplication of efforts regarding the State permitting process, which was accomplished in what appears to be a correct and thorough manner, with proper notice. Equity warrants a decision to allow the mining plan amendment approval to remain in force, provided that Federal Defendants must correct the errors in its NEPA process.

Based on the circumstances of this case, the Court recommends that vacatur be deferred for a period of 180 days from the date of a final order on the pending motions for summary judgment. The Court further recommends that Federal Defendants, during this time period, be required to correct the NEPA violations by preparing an updated environmental assessment, taking a hard look at the direct and indirect

environmental effects of the SSC mining plan amendment, and complying with applicable public notice and participation requirements. *See Ctr. for Biological Diversity v. Nat'l Highway Traffic Safety Admin.*, 538 F.3d 1172, 1225 (9th Cir. 2008) (“If ... an EA is so procedurally flawed that we cannot determine whether the proposed rule or project may have a significant effect, the court should remand for the preparation of a new EA”). *See also Wildearth Guardians v. U.S. Office of Surface Mining, Reclamation and Enforcement, et al.*, 2015 WL 2207834 (D. Colo. May 8, 2015) (remanding case to OSM to take a hard look at environmental effects of mining plan revision and to provide public notice and opportunity for public involvement before reaching its decisions).

The Court additionally recommends that Plaintiffs be awarded reasonable attorney’s fees under the Equal Access to Justice Act, 28 U.S.C. § 2412, because there are no special circumstances here to make such an award unjust, and because the position of the Federal Defendants was not substantially justified.

V. CONCLUSION

Based on the foregoing, IT IS RECOMMENDED that Defendants’ and Defendant-Intervenors’ summary judgment motions (*ECF 97, 93*,

and 89) be DENIED, and Plaintiffs' summary judgment motions (*ECF* 76 and 78) be GRANTED in part, as set forth herein.

NOW, THEREFORE, IT IS ORDERED that the Clerk shall serve a copy of the Findings and Recommendations of United States Magistrate Judge upon the parties. The parties are advised that pursuant to 28 U.S.C. § 636, any objections to the findings and recommendations must be filed with the Clerk of Court and copies served on opposing counsel within fourteen (14) days after entry hereof, or objection is waived.

DATED this 23rd day of October, 2015.

/s/ Carolyn S. Ostby

United States Magistrate Judge

FILED

JAN 21 2016

Clerk, U.S. District Court
District Of Montana
Billings

**IN THE UNITED STATES DISTRICT COURT
FOR THE DISTRICT OF MONTANA
BILLINGS DIVISION**

WILDEARTH GUARDIANS,

Plaintiff,

vs.

CV 14-13-BLG-SPW

OPINION and ORDER

U.S. OFFICE OF SURFACE MINING,
RECLAMATION AND ENFORCEMENT,
AL KLEIN, in his official capacity as
Western Regional Director of the Office of
Surface Mining Reclamation and
Enforcement, Denver, Colorado, and
SALLY JEWELL, in her capacity as U.S.
Secretary of the Interior,

Defendants,

and

STATE OF MONTANA, SPRING CREEK
COAL LLC, NATIONAL MINING
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NORTHERN PLAINS RESOURCE
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Plaintiffs,

vs.

SALLY JEWELL, in her official capacity as
U.S. Secretary of the Interior, U.S. OFFICE

CV 14-103-BLG-SPW

OF SURFACE MINING RECLAMATION
AND ENFORCEMENT,

Defendants,

and

STATE OF MONTANA, SPRING CREEK
COAL LLC, NATIONAL MINING
ASSOCIATION,

Defendant-Intervenors.

Plaintiffs WildEarth Guardians (“WildEarth”) and Northern Plains Resource Council and Western Organization of Resource Councils (collectively “Northern Plains”) initiated these actions after the Federal Defendants approved a mining plan modification for the Spring Creek Mine. WildEarth, Northern Plains, Defendant-Intervenor State of Montana (“State”), Defendant-Intervenors Spring Creek Coal LCC and the National Mining Association (collectively “SpringCreek”), and the Federal Defendants have moved for summary judgment.

On October 23, 2015, United States Magistrate Judge Carolyn Ostby issued Findings and Recommendations on the pending motions. In the Findings and Recommendations, Judge Ostby concluded that the Office of Surface Mining Reclamation and Enforcement (“OSMRE”) violated the public participation and notice provisions of the National Environmental Policy Act (“NEPA”) by not notifying the public of a Finding of No Significant Impact (“FONSI”). Judge Ostby also concluded that OSMRE failed to take the requisite “hard look” at the

consequences of approving the mining plan amendment. Judge Ostby further found that because of the lack of public notice, WildEarth and Northern Plains did not waive their objections. Because of these NEPA violations, Judge Ostby recommends that this Court grant in part the motions filed by WildEarth and Northern Plains and deny the motions filed by the Federal Defendants, the State, and Spring Creek. To remedy the NEPA violations, Judge Ostby recommends that this Court defer vacating the mining plan approval for 180 days to allow the Federal Defendants to correct the NEPA violations.

Spring Creek, the Federal Defendants, and the State timely objected and are therefore entitled to *de novo* review of the specified findings or recommendations to which they object. 28 U.S.C. § 636(b)(1). Spring Creek objects to four of Judge Ostby's conclusions. First, Spring Creek argues that the Federal Defendants' failure to notify the public about the FONSI was harmless error. Second, Spring Creek argues that Judge Ostby erred by not examining the entire administrative record when she determined that the OSMRE failed to take a "hard look." Third, Spring Creek argues that WildEarth and Northern Plains waived their right to challenge the OSMRE's approval of the mining plan amendment. Fourth, Spring Creek objects to Judge Ostby's proposed remedy. The State and Federal Defendants do not challenge Judge Ostby's conclusions regarding the NEPA violations, but object to the proposed remedy.

The Court will address each objection separately. For the following reasons, this Court adopts the Findings and Recommendations with one exception. The Court modifies the Federal Defendants' deadline to correct the NEPA violations from 180 days to 240 days. Because the parties are familiar with the procedural and factual background of this case, it will not be restated here.

I. Harmless Error

Spring Creek argues that Judge Ostby erred by not applying the harmless error rule to OSMRE's failure to provide public notice of the completed FONSI. Spring Creek contends that even if OSMRE had notified the public, OSMRE still would have approved the mining plan modification. The Court disagrees with Spring Creek and finds that the lack of public notification was not harmless.

One of NEPA's "twin aims" is to ensure "that the agency will inform the public that it has indeed considered environmental concerns in its decision making process." *Baltimore Gas & Elec. Co. v. Nat. Res. Def. Council, Inc.*, 462 U.S. 87, 97 (1983). An error cannot be harmless if it prevents "a proper, thorough, and public evaluation of the environmental impact of the Project." *Lands Council v. Powell*, 395 F.3d 1019, 1037 n. 25 (9th Cir. 2005). While an administrative decision should not be vacated based on a "trivial violation," 40 C.F.R. § 1500.3, a trivial violation is one that "does not frustrate NEPA's twin goals of ensuring that the decision-maker was otherwise fully informed as to the environmental

consequences of the proposed action and that members of the public had sufficient information with respect to the omitted topic.” *Sierra Club v. Bosworth*, 199 F. Supp. 2d 971, 986 (N.D. Cal. 2002) (quoting *Laguna Greenbelt v. Department of Transportation*, 42 F.3d 517, 527 (9th Cir.1994)).

Regulation required the Federal Defendants to notify the public of the completed FONSI. 43 C.F.R. § 46.305(c). No party contests that the Federal Defendants did not comply with that regulation. Failure to provide public notice of a completed FONSI not only violated 43 C.F.R. § 46.305(c), but also prevented a public evaluation of OSMRE’s decision to issue the FONSI. Since one of NEPA’s purposes is to keep the public informed of environmental decisions, failing to publicize the completed FONSI cannot be harmless error. *Lands Council*, 395 F.3d at 1037 n. 25.

II. The “Hard Look”

Spring Creek argues that Judge Ostby erred by failing to examine the entire record before OSMRE when she concluded that the agency did not take the requisite “hard look.” This Court disagrees and finds that Judge Ostby correctly concluded that OSMRE failed to take a hard look at the mining plan amendment under NEPA.

An agency’s decision may be upheld only “on the basis articulated by the agency itself.” *Motor Vehicle Mfrs. Ass’n of U.S., Inc. v. State Farm Mut. Auto.*

Ins. Co., 463 U.S. 29, 50 (1983). If the grounds stated in the agency decision are inadequate, courts cannot substitute any alternative grounds to support the finding. *Ctr. for Biological Diversity v. Kempthorne*, 466 F.3d 1098, 1103 (9th Cir. 2006). Here, the only information that OSMRE cited in the FONSI was the Environmental Assessment (“EA”) prepared in 2006. AR 16. However, the Bureau of Land Management specifically stated in the EA that it does not authorize mining operation by issuing a lease. AR 27. Instead, the EA noted that:

After a lease has been issued but prior to mine development, the lessee must file a permit application package with the MDEQ and Office of Surface Mining Reclamation and Enforcement (OSMRE) for a surface mining permit and approval of the Mineral Leasing Act of 1920 (MLA) mining plan. An analysis of a detailed site-specific mining and reclamation plan occurs at that time.

Id. By relying on a document that specifically did not analyze “a detailed site-specific mining and reclamation plan,” OSMRE did not provide “a convincing statement of reasons to explain why [the] project's impacts are insignificant.”

In Def. of Animals, Dreamcatcher Wild Horse & Burro Sanctuary v. U.S. Dep't of Interior, 751 F.3d 1054, 1068 (9th Cir. 2014). If OSMRE relied upon other information in rendering its decision, it did not say so in the FONSI. The Court is precluded from speculating what other information OSMRE may have looked to prior to issuing the FONSI. Accordingly, the Court agrees with Judge Ostby that based on the administrative record, OSMRE failed to take the requisite hard look.

III. Waiver

Spring Creek argues that WildEarth and Northern Plains waived their right to challenge the nonpublication of the FONSI by not participating in the administrative process leading to the mining plan's approval. A party may forfeit the opportunity to challenge an agency decision by not raising it during the administrative process. *Dep't of Transp. v. Pub. Citizen*, 541 U.S. 752, 764-65 (2004). However, OSMRE's lack of public notification of the FONSI prevented WildEarth and Northern Plains from raising their concerns. WildEarth and Northern Plains' absence from other aspects of the approval process does not prohibit their ability to challenge the FONSI. Since WildEarth and Northern Plains never had the opportunity to object to the FONSI, they could not have waived their right to challenge it.

IV. Remedy

As noted above, Judge Ostby recommends that this Court defer the vacatur of the mining plan amendment for 180 days. During that time period, Judge Ostby recommends that this Court allow the Federal Defendants to correct the NEPA deficiencies. Spring Creek and the State object to the automatic vacatur after the 180-day period and argue that this Court should later consider an appropriate remedy if the process is not completed after 180 days. The Federal Defendants ask for 240 days to complete a corrective NEPA analysis.

While WildEarth supports Judge Ostby's 180-day deadline, Northern Plains suggests a different course of action. Northern Plains recommends that this Court allow the Federal Defendants 240 days to complete the process. To ensure that OSMRE is making progress, Northern Plains suggests that the Court require monthly status reports. Northern Plains also would allow the Federal Defendants to seek leave to extend the 240-day deadline upon a showing of good cause. Good cause would include unforeseen circumstances or a decision to complete an Environmental Impact Statement.

The Court agrees with Northern Plains. Given the Federal Defendants' representations, 240 days is a more realistic deadline. Further, the Court finds that it would be appropriate to allow the Federal Defendants an opportunity to show good cause to extend the deadline. The Court cautions that the deadline will not automatically be extended; the Federal Defendants must make a showing that they have diligently attempted to complete the process within 240 days and subsequent developments have delayed the process.

V. Conclusion

For the foregoing reasons, IT IS HEREBY ORDERED:

1. With the exception of the proposed remedy, Judge Ostby's Findings and Recommendations (Doc. 129) are ADOPTED.

2. WildEarth's and Northern Plains' summary judgment motions (Docs. 76 and 78) are GRANTED IN PART as set forth in the Findings and Recommendations.

3. Spring Creek's, the Federal Defendants', and the State's summary judgment motions (Docs. 89, 93, and 97) are DENIED.

4. Vacatur of the mining plan amendment is deferred for a period of 240 days. During that time period, the Federal Defendants shall correct the NEPA violations by preparing an updated environmental assessment, taking a hard look at the direct and indirect environmental effects of the mining plan amendment, and complying with the applicable public notice and participation requirements. The Federal Defendants may seek leave to extend the 240-day deadline upon a showing of good cause.

5. The Federal Defendants shall file monthly status reports by the last business day of each month during the 240-day time period. The first status report is due February 29, 2016.

6. WildEarth and Northern Plains are awarded reasonable attorney's fees under the Equal Access to Justice Act, 28 U.S.C. § 2412.

DA TED this 21st day of January, 2016.

SUSAN P. WATERS
United States District Judge

APPENDIX B

STANDARD and SPECIAL LEASE STIPULATIONS DEVELOPED for LEASE BY APPLICATION
TRACTS

SPECIAL STIPULATIONS - In addition to observing the general obligations and standards of performance set out in the current regulations, the lessee shall comply with and be bound by the following stipulations. These stipulations are also imposed upon the lessee's agents and employees. The failure or refusal of any of these persons to comply with these stipulations shall be deemed a failure of the lessee to comply with the terms of the lease. The lessee shall require his agents, contractors and subcontractors involved in activities concerning this lease to include these stipulations in the contracts between and among them. These stipulations may be revised or amended, in writing, by the mutual consent of the lessor and the lessee at any time to adjust to changed conditions or to correct an oversight.

(a) CULTURAL RESOURCES -

(1) Before undertaking any activities that may disturb the surface of the leased lands, the lessee shall conduct a cultural resource intensive field inventory in a manner specified by the Authorized Officer of the BLM (hereinafter referred to as the Authorized Officer) on portions of the mine plan area, or exploration plan area, that may be adversely affected by lease-related activities and which were not previously inventoried at such a level of intensity. Cultural resources are defined as a broad, general term meaning any cultural property or any traditional lifeway value, as defined below:

Cultural property: a definite location of past human activity, occupation, or use identifiable through field inventory (survey), historical documentation, or oral evidence. The term includes archaeological, historic, or architectural sites, structure, or places with important public and scientific uses, and may include traditional cultural or religious importance to specified social and/or cultural groups. Cultural properties are concrete, material places, and things that are classified, ranked, and managed through the system of inventory, evaluation, planning, protection, and utilization.

Traditional lifeway value: the quality of being useful in or important to the maintenance of a specified social and/or cultural group's traditional systems of (a) religious belief, (b) cultural practice, or (c) social interaction, not closely identified with definite locations. Another group's shared values are abstract, nonmaterial, ascribed ideas that one cannot know about without being told. Traditional lifeway values are taken into account through public participation during planning and environmental analysis.

The cultural resources inventory shall be conducted by a qualified professional cultural resource specialist; i.e., archaeologist, anthropologist, historian, or historical architect, as appropriate and necessary, and approved by the Authorized Officer (BLM if the surface is privately owned). A report of the inventory and recommendations for protection of any cultural resources identified shall be submitted to the Western Regional Director of the Office of Surface Mining (hereinafter referred to as the Assistant Director) by the Authorized Officer. Prior to any on-the-ground cultural resource inventory, the selected professional cultural resource specialist shall consult with the BLM, the Northern Cheyenne Cultural Protection Board, and the Crow Historic and Cultural Committee. The purpose of this consultation will be to guide the work to be performed and to identify cultural properties or traditional lifeway values within the immediate and surrounding mine plan area. The lessee shall undertake measures, in accordance with instructions from the Assistant Director to protect cultural resources on the leased lands. The lessee shall not commence the surface-disturbing activities until permission to proceed is given by the Assistant Director in consultation with the Authorized Officer.

(2) The lessee shall protect all cultural resource properties within the lease area from lease related activities until the cultural resource mitigation measures can be implemented as part of an approved mining and reclamation plan or exploration plan.

(3) The cost of carrying out the approved site mitigation measures shall be borne by the lessee.

(4) If cultural resources are discovered during operations under this lease, the lessee shall immediately bring them to the attention of the Assistant Director, or the Authorized Officer if the Assistant Director is not available. The lessee shall not disturb such resources except as may be subsequently authorized by the Assistant Director. Within two (2) working days of notification, the Assistant Director will evaluate or have evaluated any cultural resources discovered and will determine if any action may be required to protect or preserve such discoveries. The cost of data recovery for cultural resources discovered during lease operations shall be borne by the surface managing agency unless otherwise specified by the Authorized Officer.

(5) All cultural resources shall remain under the jurisdiction of the United States until ownership is determined under applicable law.

(6) If Cultural Resource Site 24BH404 is disturbed, SCCC will be required to mitigate the loss the site of according the mitigation plan outlined in Appendix D.

(b) PALEONTOLOGICAL RESOURCES -

If a paleontological resource, either large and conspicuous, and/or of significant scientific value is discovered during construction, the find will be reported to the authorized officer immediately. Construction will be suspended within 250 feet of said find. An evaluation of the paleontological discovery will be made by a BLM approved professional paleontologist within five (5) working days, weather permitting, to determine the appropriate action(s) to prevent the potential loss of any significant paleontological value. Operations within 250 feet of such discovery will not be resumed until written authorization to proceed is issued by the Authorized Officer. The lessee will bear the cost of any required paleontological appraisals, surface collection of fossils, or salvage of any large conspicuous fossils of significant interest discovered during the operation.

(c) PUBLIC LAND SURVEY PROTECTION -

The lessee will protect all survey monuments, witness corners, reference monuments, and bearing trees against destruction, obliteration, or damage during operations on the lease areas. If any monuments, corners or accessories are destroyed, obliterated or damaged by this operation, the lessee will hire an appropriate county surveyor or registered land surveyor to reestablish or restore the monuments, corners, or accessories at the same locations, using surveying procedures in accordance with the "Manual of Surveying Instructions for the Survey of Public Lands of the United States." The survey will be recorded in the appropriate county records, with a copy sent to the authorized officer.

(d) RESOURCE RECOVERY AND PROTECTION PLAN (R2P2) -

Notwithstanding the approval of a resource recovery and protection plan (R2P2) by the BLM, lessor reserves the right to seek damages against the operator/lessee in the event (i) the operator/lessee fails to achieve maximum economic recovery (MER) [as defined at 43 CFR 3480.0-5.2(21)] of the recoverable coal reserves or (ii) the operator/lessee is determined to have caused a wasting of recoverable coal reserves. Damages shall be measured on the basis of the royalty that would have been payable on the wasted or unrecovered coal.

The parties recognize that under an approved R2P2, conditions may require a modification by the operator/lessee of that plan. In the event a coal bed or portion thereof is not to be mined or is rendered unmineable by the operation, the operator shall submit appropriate justification to obtain approval by the authorized officer to leave such reserves unmined. Upon approval by the authorized officer, such coal beds or portions thereof shall not be subject to damages as described above. Further, nothing in this section shall prevent the operator/lessee from exercising its right to relinquish all or a portion of the lease as authorized by statute and regulation.

In the event the authorized officer determines that the R2P2 as approved will not attain MER as the result of changed conditions, the authorized officer will give proper notice to the operator/lessee as required under applicable regulations. The authorized officer will order a modification if necessary, identifying additional reserves to be mined in order to attain MER. Upon a final administrative or judicial ruling upholding such an ordered modification, any reserves left unmined (wasted) under that plan will be subject to damages as described in the first paragraph under this section.

Subject to the right to appeal hereinafter set forth, payment of the value of the royalty on such unmined recoverable coal reserves shall become due and payable upon determination by the authorized officer that the coal reserves have been rendered unmineable or at such time that the lessee has demonstrated an unwillingness to extract the coal.

The BLM may enforce this provision either by issuing a written decision requiring payment of the Minerals Management Service (MMS) demand for such royalties, or by issuing a notice of non-compliance. A decision or notice of non-compliance issued by the lessor that payment is due under this stipulation is appealable as allowed by law.

(e) MULTIPLE MINERAL DEVELOPMENT

Operations will not be approved which, in the opinion of the authorized officer, would unreasonably interfere with the orderly development and/or production from a valid existing mineral lease issued prior to this one for the same lands.

The BLM realizes that coal mining operations conducted on Federal coal leases issued within producing oil and gas fields may interfere with the economic recovery of oil and gas; just as Federal oil and gas leases issued in a Federal coal lease area may inhibit coal recovery. BLM retains the authority to alter and/or modify the R2P2 for coal operations on those lands covered by Federal mineral leases so as to obtain maximum resource recovery.

(f) LAND USE

SCCC will be required to release the affected portions of Land Use Lease MTM-74913 if the lease by application is approved.

(g) RECLAMATION/WILDLIFE -

SCCC will be required to reclaim disturbed habitats within the areas designated as Unsuitable for Lease with Exceptions and Suitable with Stipulations back to wildlife habitat as outlined in the reclamation requirements of state and federal mine permits that would be revised as a result of approving the lease by application.

SCCC will be required to mitigate the loss of the prairie falcon eyrie in Section 14, T.8S., R.39E. according the mitigation plan outlined in Appendix C.

SCCC will be required to consult with the USFWS and secure a nest take permit for any golden eagle nests identified within the SCCC disturbance boundary. The take of the inactive nests would occur one year prior to disturbance of the site.

APPENDIX C

SPRING CREEK MINE OBSERVED WILDLIFE SPECIES LIST
SPECIAL STATUS SPECIES AFFECTS DETERMINATIONS SUMMARY TABLES
FOR FEDERAL LEASE MODIFICATION APPROVAL - MTM 94378

Appendix C

SPRING CREEK MINE OBSERVED WILDLIFE SPECIES LIST

MAMMALS	Historical Occurrence in Annual Monitoring Area (1994-2009)	2010	2011	2012	2013	2014 and/or 2015 Annual Area	2014 and/or 2015 Expanded Area
SHREWS							
Sorex species Sorex spp.	Once	--	--	--	--	--	--
BATS							
Myotis species Myotis spp.	Regularly	X*	--	X*	X*	X*	--
Big brown bat <i>Eptesicus fuscus</i>	Unknown	--	--	X*	X*	X*	--
Spotted bat <i>Euderma maculatum</i>	Unknown	--	--	--	--	X*	--
Townsend's Big-eared Bat ¹ <i>Corynorhinus townsendii</i>	Never	--	--	--	--	--	--
Eastern red bat <i>Lasiurus borealis</i>	Unknown	--	--	X*	--	--	--
Hoary bat ² <i>Lasiurus cinereus</i>	Unknown	--	--	X*	X*	X*	--
Little brown myotis ² <i>Myotis lucifugus</i>	Unknown	--	--	X*	X*	X*	--
Silver-haired bat <i>Lasionycteris noctivagans</i>	Unknown	--	--	X*	X*	X*	--
Western small-footed myotis <i>Myotis ciliolabrum</i>	Unknown	--	--	X*	X*	X*	--
Long-eared myotis <i>Myotis evotis</i>	Unknown	--	--	X*	X*	X*	--
Fringed myotis ² <i>Myotis thysanodes</i>	Unknown	--	--	--	X*	X*	--
HARES AND RABBITS							
Cottontail species <i>Sylvilagus</i> spp.	Regularly	X*	X*	X*	X*	X*	X
White-tailed jackrabbit <i>Lepus townsendii</i>	Occasionally	--	--	--	--	--	--
RODENTS							
Least chipmunk <i>Tamias minimus</i>	Often	X	--	--	X	--	--
Yellow-bellied marmot <i>Marmota flaviventris</i>	Infrequently	--	--	--	--	--	--
Thirteen-lined ground squirrel <i>Spermophilus tridecemlineatus</i>	Infrequently	--	--	--	--	--	X
Black-tailed prairie dog ^{1,2} <i>Cynomys ludovicianus</i>	Regularly	X	X	X	X*	X*	X
Northern pocket gopher <i>Thomomys talpoides</i>	Regularly	--	X	--	--	X	--

SPRING CREEK MINE OBSERVED WILDLIFE SPECIES LIST (Continued)

MAMMALS	Historical Occurrence in Annual Monitoring Area (1994-2009)	2010	2011	2012	2013	2014 and/or 2015 Annual Area	2014 and/or 2015 Expanded Area
Olive-backed pocket mouse <i>Perognathus fasciatus</i>	Rarely	--	--	--	--	--	--
Ord's kangaroo rat <i>Dipodomys ordii</i>	Infrequently	--	--	--	--	--	--
Beaver <i>Castor canadensis</i>	Once	--	--	--	--	--	X
Plains harvest mouse <i>Reithrodontomys montanus</i>	Once	--	--	--	--	--	--
Western harvest mouse <i>Reithrodontomys megalotis</i>	Once	--	--	--	--	--	--
Deer mouse <i>Peromyscus maniculatus</i>	Infrequently	--	X	--	--	X	X
Northern grasshopper mouse <i>Onychomys leucogaster</i>	Once	--	--	--	--	--	--
Bushy-tailed woodrat <i>Neotoma cinerea</i>	Regularly	--	--	--	--	--	--
Prairie vole <i>Microtus ochrogaster</i>	Twice	--	--	--	--	X*	--
Muskrat <i>Ondatra zibethicus</i>	Once	--	--	--	--	--	--
Porcupine <i>Erethizon dorsatum</i>	Regularly	--	X	--	--	X	X
CARNIVORES							
Coyote <i>Canis latrans</i>	Regularly	X*	X	X	X*	X*	X
Red fox <i>Vulpes vulpes</i>	Infrequently	--	--	X*	--	X*	--
Raccoon <i>Procyon lotor</i>	Twice	--	--	--	--	--	X
Mink <i>Mustela vison</i>	Once	--	--	--	--	--	--
Striped skunk <i>Mephitis mephitis</i>	Twice	--	--	--	--	--	--
Badger <i>Taxidea taxus</i>	Occasionally	--	X	--	--	X*	--
Mountain lion <i>Puma concolor</i>	Once	--	--	--	--	X*	--
Bobcat <i>Lynx rufus</i>	Infrequently	--	--	--	--	--	--
Black bear <i>Ursus americanus</i>	Twice	--	--	X	--	--	X

SPRING CREEK MINE OBSERVED WILDLIFE SPECIES LIST (Continued)

BIRDS	Historical Occurrence in Annual Monitoring Area (1994-2009)	2010	2011	2012	2013	2014 and/or 2015 Annual Area	2014 and/or 2015 Expanded Area
LOONS AND GREBES							
Pied-billed grebe <i>Podilymbus podiceps</i>	Infrequently	--	--	X	--	X*	--
Eared grebe <i>Podiceps nigricollis</i>	Rarely	--	X*	--	--	--	--
Horned Grebe ² <i>Podiceps auritus</i>	Never	--	--	--	--	--	--
Western grebe <i>Aechmophorus occidentalis</i>	Twice	--	--	--	--	--	--
PELICANS							
American white pelican ² <i>Pelecanus erythrorhynchos</i>	Rarely	--	--	--	--	X*	--
CORMORANTS							
Double-crested cormorant <i>Phalacrocorax auritus</i>	Occasionally	--	X*	--	--	X*	--
BITTERNS, HERONS, AND IBISES							
Great blue heron ² <i>Ardea herodias</i>	Regularly	X*	X*	X	--	X*	--
GEESE AND DUCKS							
Canada goose <i>Branta canadensis</i>	Regularly	--	X*	X*	X*	X*	X
Green-winged teal <i>Anas crecca</i>	Regularly	X*	X*	--	X*	--	--
Mallard <i>Anas platyrhynchos</i>	Regularly	X*	X*	X*	X*	X*	X
Northern pintail <i>Anas acuta</i>	Rarely	--	--	--	--	X*	--
Blue-winged teal <i>Anas discors</i>	Occasionally	--	--	--	X*	X*	X
Cinnamon teal <i>Anas cyanoptera</i>	Once	--	X*	--	--	--	--
Northern shoveler <i>Anas clypeata</i>	Regularly	--	--	X*	--	X*	--
Gadwall <i>Anas strepera</i>	Regularly	X*	X*	X*	--	X*	--
American wigeon <i>Anas americana</i>	Regularly	--	X*	X*	--	X*	--
Redhead <i>Aythya americana</i>	Infrequently	--	X	--	--	--	--
Ring-necked duck <i>Aythya collaris</i>	Occasionally	--	X*	--	X*	X*	--

SPRING CREEK MINE OBSERVED WILDLIFE SPECIES LIST (Continued)

Appendix C

BIRDS	Historical Occurrence in Annual Monitoring Area (1994-2009)	2010	2011	2012	2013	2014 and/or 2015 Annual Area	2014 and/or 2015 Expanded Area
Lesser scaup <i>Aythya affinis</i>	Infrequently	--	--	--	--	X*	--
Greater scaup <i>Aythya marila</i>	Once	--	--	--	--	--	--
Ruddy Duck <i>Oxyura jamaicensis</i>	Once	--	--	--	--	X*	--
Common goldeneye <i>Bucephala clangula</i>	Twice	--	--	--	--	--	--
Bufflehead <i>Bucephala albeola</i>	Rarely	--	--	--	--	--	--
Hooded merganser <i>Lophodytes cucullatus</i>	Once	--	X*	--	--	--	--
Common merganser <i>Mergus merganser</i>	Rarely	--	--	--	--	--	--
DIURNAL RAPTORS							
Turkey vulture <i>Cathartes aura</i>	Regularly	X	--	X	X*	X*	X
Osprey <i>Pandion haliaetus</i>	Regularly	X*	X*	X*	X*	X*	X
Bald eagle ^{1,2} <i>Haliaeetus leucocephalus</i>	Infrequently	--	--	--	--	X	X
Golden eagle ^{1,2} <i>Aquila chrysaetos</i>	Regularly	X	X	X*	X	X	X
Northern harrier <i>Circus cyaneus</i>	Regularly	X	X	--	X	X	X
Sharp-shinned hawk <i>Accipiter striatus</i>	Twice	--	--	--	--	--	--
Cooper's hawk <i>Accipiter cooperii</i>	Infrequently	--	--	--	--	--	--
Northern goshawk ² <i>Accipiter gentilis</i>	Once	--	--	--	--	--	--
Swainson's hawk <i>Buteo swainsoni</i>	Rarely	--	--	--	--	--	--
Red-tailed hawk <i>Buteo jamaicensis</i>	Regularly	X*	X*	X*	X*	X*	X
Ferruginous hawk ^{2,3} <i>Buteo regalis</i>	Once	--	--	--	X	--	--
Rough-legged hawk <i>Buteo lagopus</i>	Twice	--	--	--	X	--	X
American kestrel <i>Falco sparverius</i>	Regularly	X	X	X	X*	X*	X

SPRING CREEK MINE OBSERVED WILDLIFE SPECIES LIST (Continued)

BIRDS	Historical Occurrence in Annual Monitoring Area (1994-2009)	2010	2011	2012	2013	2014 and/or 2015 Annual Area	2014 and/or 2015 Expanded Area
Merlin <i>Falco columbarius</i>	Once	--	--	--	--	--	--
Prairie falcon ² <i>Falco mexicanus</i>	Regularly	--	--	--	--	X*	--
Peregrine falcon ^{1,2,3} <i>Falco peregrinus</i>	Twice	--	--	--	--	--	--
COOTS AND RAILS							--
American coot <i>Fulica americana</i>	Rarely	--	--	--	--	X*	--
CRANES							--
Sandhill crane <i>Grus canadensis</i>	Twice	X	X	--	--	--	--
GALLINACEOUS BIRDS							--
Gray partridge <i>Perdix perdix</i>	Occasionally	--	X*	X	--	X*	X
Ring-necked pheasant <i>Phasianus colchicus</i>	Infrequently	--	--	--	--	--	--
Ruffed grouse <i>Bonasa umbellus</i>	Twice	--	--	--	--	--	--
Greater sage-grouse ^{1,3} <i>Centrocercus urophasianus</i>	Regularly	X*	X	X	--	X	--
Sharp-tailed grouse <i>Tympanuchus phasianellus</i>	Regularly	X	X	X	X*	X*	--
Wild turkey <i>Meleagris gallopavo</i>	Occasionally	X	--	--	--	--	--
SHOREBIRDS, AVOCETS, GULLS, AND TERNS							--
Killdeer <i>Charadrius vociferus</i>	Regularly	X*	X*	X*	X*	X*	X
American avocet <i>Retrocurvirostra americana</i>	Infrequently	--	--	--	--	X*	--
Lesser yellowlegs <i>Tringa flavipes</i>	Twice	--	--	X*	--	--	--
Solitary sandpiper <i>Tringa solitaria</i>	Rarely	--	--	--	--	--	--
Willet <i>Catoptrophorus semipalmatus</i>	Occasionally	--	X*	--	X*	--	--
Spotted sandpiper <i>Actitis macularia</i>	Regularly	--	X*	X*	X*	X*	--
Upland sandpiper ² <i>Bartramia longicauda</i>	Regularly	--	--	--	--	X	--
Long-billed curlew ^{2,3} <i>Numenius americanus</i>	Rarely	--	--	--	--	--	--
Marbled godwit ² <i>Limosa fedoa</i>	Once	--	--	--	--	--	--

SPRING CREEK MINE OBSERVED WILDLIFE SPECIES LIST (Continued)

Appendix C

BIRDS	Historical Occurrence in Annual Monitoring Area (1994-2009)	2010	2011	2012	2013	2014 and/or 2015 Annual Area	2014 and/or 2015 Expanded Area
Wilson's snipe <i>Gallinago delicata</i>	Infrequently	--	--	--	--	--	--
Wilson's phalarope <i>Phalaropus tricolor</i>	Infrequently	--	--	--	X*	--	--
Ring-billed gull <i>Larus delawarensis</i>	Twice	--	--	--	--	--	--
Franklin's Gull ³ <i>Larus pipixcan</i>	Once	--	--	--	--	--	--
PIGEONS AND DOVES							
Rock pigeon <i>Columba livia</i>	Infrequently	--	--	X*	X	X	X
Mourning dove <i>Zenaida macroura</i>	Regularly	X*	X*	X*	X*	X*	X
OWLS							
Great horned owl <i>Bubo virginianus</i>	Regularly	X	--	X*	X*	X*	X
Burrowing owl ^{1,2,3} <i>Athene cunicularia</i>	Regularly	X	X	X	--	X	--
Short-eared owl ² <i>Asio flammeus</i>	Twice	--	--	X	--	--	--
CUCKOOS							
Black-billed Cuckoo ² <i>Coccyzus erythrophthalmus</i>	Never	--	--	--	--	--	--
Yellow-billed Cuckoo ^{1,2} <i>Coccyzus americanus</i>	Never	--	--	--	--	--	--
GOATSUCKERS							
Common nighthawk <i>Chordeiles minor</i>	Regularly	X*	X*	X	X*	X*	X
Common poorwill <i>Phalaenoptilus nuttallii</i>	Regularly	--	--	--	--	--	--
WOODPECKERS							
Lewis' woodpecker ^{2,3} <i>Melanerpes lewis</i>	Occasionally	--	--	--	--	--	--
Red-headed woodpecker ^{1,2,3} <i>Melanerpes erythrocephalus</i>	Twice	X*	--	--	--	--	--
Hairy woodpecker <i>Picoides villosus</i>	Twice	--	--	X*	--	--	--
Downy woodpecker <i>Picoides pubescens</i>	Twice	--	--	--	X*	--	--
Northern flicker <i>Colaptes auratus</i>	Regularly	X*	X	X	X*	X	X

SPRING CREEK MINE OBSERVED WILDLIFE SPECIES LIST (Continued)

Appendix C

BIRDS	Historical Occurrence in Annual Monitoring Area (1994-2009)	2010	2011	2012	2013	2014 and/or 2015 Annual Area	2014 and/or 2015 Expanded Area
FLYCATCHERS							
Western wood-pewee <i>Contopus sordidulus</i>	Never	--	--	--	--	X	--
Hammond's flycatcher <i>Empidonax hammondii</i>	Never	--	--	--	--	X	--
Dusky flycatcher <i>Empidonax oberholseri</i>	Once	--	--	--	--	--	--
Say's phoebe <i>Sayornis saya</i>	Regularly	--	X*	X*	X*	X*	X
Western kingbird <i>Tyrannus verticalis</i>	Regularly	--	X*	X*	X*	X*	X
Eastern kingbird <i>Tyrannus tyrannus</i>	Regularly	X	X*	X*	X	X*	X
Cassin's kingbird <i>Tyrannus vociferans</i>	Twice	--	--	--	--	--	--
LARKS							
Horned lark <i>Eremophila alpestris</i>	Regularly	X*	X	X*	X*	X*	X
SWALLOWS							
Tree swallow <i>Tachycineta bicolor</i>	Once	--	--	--	--	--	--
Violet-green swallow <i>Tachycineta thalassina</i>	Regularly	--	--	--	X*	X*	--
Cliff swallow <i>Hirundo pyrrhonota</i>	Regularly	X*	X*	X*	X*	X*	X
Barn swallow <i>Hirundo rustica</i>	Regularly	X*	X*	X*	--	X*	X
Bank swallow <i>Riparia riparia</i>	Once	--	--	--	--	--	--
JAYS, MAGPIES, AND CROWS							
Gray jay <i>Perisoreus canadensis</i>	Once	--	--	--	--	--	--
Pinyon jay ^{1,2} <i>Gymnorhinus cyanocephalus</i>	Regularly	--	--	--	--	X*	X
Scrub Jay <i>Aphelocoma coerulescens</i>	Once	--	--	--	X*	--	--
Clark's nutcracker ² <i>Nucifraga columbiana</i>	Rarely	--	--	--	--	--	--
Black-billed magpie <i>Pica hudsonia</i>	Regularly	X*	X*	X*	X*	X*	X
American crow <i>Corvus brachyrhynchos</i>	Regularly	--	--	X	--	X	--
Common raven <i>Corvus corax</i>	Rarely	X	X	--	X*	X*	X

SPRING CREEK MINE OBSERVED WILDLIFE SPECIES LIST (Continued)

Appendix C

BIRDS	Historical Occurrence in Annual Monitoring Area (1994-2009)	2010	2011	2012	2013	2014 and/or 2015 Annual Area	2014 and/or 2015 Expanded Area
CHICKADEES							
Black-capped chickadee <i>Parus atricapillus</i>	Regularly	--	X	--	--	X*	X
NUTHATCHES							
Red-breasted nuthatch <i>Sitta canadensis</i>	Occasionally	--	--	--	--	--	--
White-breasted nuthatch <i>Sitta carolinensis</i>	Rarely	--	--	--	--	--	--
WRENS							
Rock wren <i>Salpinctes obsoletus</i>	Regularly	X*	X*	X*	X*	X*	X
House wren <i>Troglodytes aedon</i>	Regularly	--	--	--	--	X	--
Bewick's wren <i>Thryomanes bewickii</i>	Never	--	--	X	--	--	--
GNATCATCHERS AND THRUSHES							
Ruby-crowned kinglet <i>Regulus calendula</i>	Once	--	--	--	--	--	--
Blue-gray gnatcatcher ^{1,3} <i>Poliophtila nigriceps</i>	Once	--	--	--	--	--	--
Mountain bluebird <i>Sialia currocooides</i>	Regularly	X*	X*	X*	X*	X*	X
Townsend's solitaire <i>Myadestes townsendi</i>	Occasionally	--	X	--	--	--	--
American robin <i>Turdus migratorius</i>	Regularly	X	X*	X*	X*	X*	X
MIMIC THRUSHES							
Sage thrasher ^{1,3} <i>Oreoscoptes montanus</i>	Rarely	--	--	--	--	--	--
Brown thrasher <i>Toxostoma rufum</i>	Twice	--	--	--	--	X*	--
PIPITS							
American Pipit <i>Anthus rubescens</i>	Once	--	--	--	--	--	--
Sprague's Pipit ^{2,3} <i>Anthus spragueii</i>	Never	--	--	--	--	--	--
SHRIKES							
Loggerhead shrike ^{1,2,3} <i>Lanius ludovicianus</i>	Regularly	--	X*	X*	--	X*	--
STARLINGS							
European starling <i>Strunus vulgaris</i>	Regularly	X*	X	X	--	--	X

SPRING CREEK MINE OBSERVED WILDLIFE SPECIES LIST (Continued)

Appendix C

BIRDS	Historical Occurrence in Annual Monitoring Area (1994-2009)	2010	2011	2012	2013	2014 and/or 2015 Annual Area	2014 and/or 2015 Expanded Area
VIREOS							
Plumbeous vireo <i>Vireo plumbeus</i>	Rarely	--	--	--	--	X*	
WARBLERS							
Orange-crowned warbler <i>Oreothlypis celata</i>	Once	--	--	--	--	--	--
Yellow warbler <i>Setophaga petechia</i>	Regularly	--	--	--	--	X	X
American redstart <i>Setophaga ruticilla</i>	Never	--	--	--	--	--	X
Magnolia warbler <i>Setophaga magnolia</i>	Once	--	--	--	--	--	--
Yellow-rumped warbler <i>Setophaga coronata</i>	Regularly	--	X	--	--	X*	X
Black-and-white warbler <i>Mniotilta varia</i>	Once	--	--	--	--	--	--
Common yellowthroat <i>Geothlypis trichas</i>	Once	--	--	--	--	--	--
SPARROWS AND TOWHEES							
Green-tailed towhee ³ <i>Pipilo chlorurus</i>	Once	--	--	--	--	--	--
Spotted towhee <i>Pipilo maculatus</i>	Regularly	--	X	X	X*	X*	X
Chipping sparrow <i>Spizella passerina</i>	Regularly	--	X	X	X*	X	X
Brewer's sparrow ^{1,2,3} <i>Spizella breweri</i>	Regularly	--	X*	X*	X*	X*	X
Vesper sparrow <i>Pooecetes gramineus</i>	Regularly	X*	X*	X*	X*	X*	X
Lark sparrow <i>Chondestes grammacus</i>	Regularly	X*	--	X*	X*	X*	X
Lark bunting <i>Calamospiza melanocorys</i>	Regularly	X*	X*	X*	X*	X*	X
Song sparrow <i>Melospiza melodia</i>	Once	--	--	--	--	--	--
Savannah sparrow <i>Passerculus sandwichensis</i>	Once	--	--	--	--	--	--
Grasshopper sparrow <i>Ammodramus savannarum</i>	Never	X	X*	X	X*	X*	--
White-crowned sparrow <i>Zonotrichia leucophrys</i>	Infrequently	--	--	--	--	X	--

Appendix C

SPRING CREEK MINE OBSERVED WILDLIFE SPECIES LIST (Continued)

BIRDS	Historical Occurrence in Annual Monitoring Area (1994-2009)	2010	2011	2012	2013	2014 and/or 2015 Annual Area	2014 and/or 2015 Expanded Area
Chestnut-collared Longspur ^{1,2} <i>Calcarius ornatus</i>	Never	--	--	--	--	--	--
Dark-eyed junco <i>Junco hyemalis</i>	Infrequently	--	--	--	--	--	--
BLACKBIRDS, MEADOWLARKS, AND ORIOLES							
Red-winged blackbird <i>Agelaius phoeniceus</i>	Regularly	X	X*	X	X*	X*	X
Western meadowlark <i>Sturnella neglecta</i>	Regularly	X*	X*	X	X*	X*	X
Yellow-headed blackbird <i>Xanthocephalus xanthocephalus</i>	Twice	--	--	X	--	--	--
Brewer's blackbird <i>Euphagus cyanocephalus</i>	Regularly	X	X	--	X*	X*	X
Common grackle <i>Quiscalus quiscula</i>	Occasionally	X	X*	X	X*	--	--
Brown-headed cowbird <i>Molothrus ater</i>	Occasionally	--	--	X	X*	X*	X
Bullock's oriole <i>Icterus bullockii</i>	Occasionally	--	--	--	X*	X*	X
FINCHES							
Red crossbill <i>Loxia curvirostra</i>	Rarely	--	X	--	--	--	--
Pine siskin <i>Carduelis pinus</i>	Rarely	--	--	--	--	--	--
Cassini's finch ² <i>Haemorhous cassinii</i>	Never	--	--	--	--	--	--
American goldfinch <i>Carduelis tristis</i>	Occasionally	--	--	X	X	X*	X
WEAVER FINCHES							
House sparrow <i>Passer domesticus</i>	Twice	--	--	--	--	--	--

¹ BLM Sensitive Species

² Animals on the Montana natural; Heritage Program Species of Concern, updated June 23, 2015.

³ USFWS 2008 Birds of Conservation Concern

* Observed in the SCM permit area.

USFWS Bird Species of Conservation Concern: 27 (16 Observed in SCC Wildlife Survey Area)

MNHP Species of Concern: 25 (23 Observed in SCC Wildlife Survey Area)

Appendix C

SPRING CREEK MINE OBSERVED WILDLIFE SPECIES LIST (Continued)

REPTILES/AMPHIBIANS	Historical Occurrence in Annual Monitoring Area (1994-2009)	2010	2011	2012	2013	2014 and/or 2015 Annual Area	2014 and/or 2015 Expanded Area
SALAMANDERS							
Tiger salamander <i>Ambystoma tigrinum</i>	Rarely	--	--	--	--	--	--
TRUE TOADS							
Plains spadefoot ^{1,2} <i>Spea bombifrons</i>	Infrequently	--	--	--	--	--	--
Great Plains toad ^{1,2} <i>Bufo cognatus</i>	Infrequently	--	--	--	--	--	--
Woodhouse's toad <i>Bufo woodhousei</i>	Regularly	--	X*	--	--	X*	--
TREE FROGS							
Boreal chorus frog <i>Pseudacris triseriata</i>	Regularly	X*	X*	X*	X	X*	X
TRUE FROGS							
Northern leopard frog ² <i>Rana pipiens</i>	Infrequently	--	--	--	--	--	X
TURTLES							
Snapping turtle ^{1,2} <i>Chelydra serpentina</i>	Never	--	--	--	--	--	--
Spiny softshell ^{1,2} <i>Apalone spinifera</i>	Never	--	--	--	--	--	--
Western painted turtle <i>Chrysemys picta</i>	Rarely	--	--	--	X*	--	--
SPINY LIZARDS							
Common sagebrush lizard <i>Sceloporus graciosus</i>	Infrequently	--	--	--	--	--	--
Greater short-horned lizard ² <i>Phrynosoma hernandesi</i>	Rarely	--	--	X*	--	--	--
COLUBRID SNAKES							
Eastern yellowbelly racer <i>Coluber constrictor</i>	Twice	--	--	--	--	--	--
Western milksnake ^{1,2} <i>Lampropeltis gentilis</i>	Never	--	--	--	--	--	--
Bullsnake <i>Pituophis melanoleucas</i>	Rarely	X	--	--	--	X	--
Common garter snake <i>Thamnophis sirtalis</i>	Twice	--	--	--	--	--	--
Wandering garter snake <i>Thamnophis elegans</i>	Rarely	--	--	--	--	--	X
PIT VIPERS							
Prairie rattlesnake <i>Crotalus viridis</i>	Never	--	--	--	--	--	--

1 BLM Sensitive Species

2 Animals on the Montana Natural Heritage Program Species of Concern List, updated June 23, 2015.

3 USFWS 2008 Birds of Conservation Concern

* Observed in the SCM permit area.

Total Potential Vertebrate Wildlife Species: 39**Species Actually Observed in SCC Wildlife Survey Area: 28**

Federally Listed Threatened and Endangered Species and Species with the Potential to Occur in the Study Area (Determined Using USFWS IPaC System)

Species	Status	In Range (Yes/No)	Habitat Present (Yes/No)	Affects Determination (brief rationale)
Black-footed ferret <i>Mustela nigripes</i>	E/Exp	Yes	Yes	May affect, not likely to adversely affect. See discussion, section 4.10.4.1
Sprague's pipit <i>Anthus spragueii</i>	C	Yes	Yes	May affect, not likely to adversely affect. See discussion, section 4.10.4.1

E/Exp: Endangered/Experimental Population-Non-Essential, C: Candidate

Current Montana Natural Heritage Program Vertebrate Species of Concern¹ in the SCM Lease Modification Project Area (on-line species lists last updated 6/23/2015)

Species	T/R ²	State Rank	Habitat ¹
BIRDS			
Common loon <i>Gavia immer</i>	8S & 9S/40E	S3B	Mountain lakes with emergent vegetation
Burrowing owl <i>Athene cucularia</i>	8S & 9S/39E 8S & 9S/40E	S3B	Open grassland/abandoned burrows
Ferruginous hawk <i>Buteo regalis</i>	8S & 9S/39E 8S & 9S/40E	S3B	Sagebrush/grasslands
Great Blue Heron <i>Ardea herodias</i>	8S & 9S/40E 9S/39E	S3	Riparian woodlands
Franklin's gull <i>Leucophaeus pipixcan</i>	8S & 9S/39E 8S & 9S/40E	S3B	Wetland/lake with emergent vegetation
Golden eagle <i>Aquila chrysaetos</i>	8S & 9S/39E 8S & 9S/40E	S3	Generalist
Loggerhead shrike <i>Lanius ludovicianus</i>	8S & 9S/39E 8S & 9S/40E	S3B	Shrublands
Long billed curlew <i>Numenius americanus</i>	8S & 9S/39E 8S & 9S/40E	S3B	Grasslands
Northern goshawk <i>Accipiter gentilis</i>	8S & 9S/39E 8S & 9S/40E	S3	Mixed conifer
Peregrine falcon <i>Falco peregrinus</i>	8S & 9S/39E 8S & 9S/40E	S3	Cliffs
Sage thrasher <i>Oreoscoptes montanus</i>	8S & 9S/39E 8S & 9S/40E	S3B	Sagebrush
Baird's sparrow <i>Ammodramus bairdii</i>	8S & 9S/39E 8S & 9S/40E	S3B	Grassland
Brewer's sparrow <i>Spizella breweri</i>	8S & 9S/39E 8S & 9S/40E	S3B	Sagebrush
White-faced ibis <i>Plegadis chihi</i>	9S/39E8S & 9S/40E	S3B	Wetland/lake with emergent vegetation
Red-headed woodpecker <i>Melanerpes erythrocephalus</i>	8S & 9S/39E 8S & 9S/40E	S3B	Riparian forest
Yellow-bellied cuckoo <i>Coccyzus americanus</i>	8S & 9S/40E	S3B	Prairie riparian forests

APPENDIX D

CULTURAL RESOURCE MANAGEMENT
INSIDE SMP C1979012

Appendix D

Site ID (NHRP Eligible in BOLD & shaded)	Pit Area	Planned Disturbance Date (estimated 1200' offset from coal block)	Actual Disturbance Date	Additional Investigati on Required (Yes or No)	Mitigati on Require d (Yes or No)	Summary of Mitigation Efforts	Mitigation (Year Planned or Completed)
24BH548	2 SOUTH	2011	2011	N	N/A	N/A	N/A
24BH1600	4 SOUTH	2012	2013	N	N	N/A	N/A
24BH1745	4 NORTH	2012	2013	N	N	N/A	N/A
24BH3402	2 EAST	2012	2013	N	N	N/A	N/A
24BH3403	2 EAST	2012	2012	N	N	N/A	N/A
24BH3405	2 EAST	2012	2015	N	N	N/A	N/A
24BH544	2 EAST	2012	2012	N	N/A	N/A	N/A
24BH547	2 EAST	2012	2012	N	N/A	N/A	N/A
24BH550	2 EAST	2012	2012	N	N/A	N/A	N/A
24BH551	2 EAST	2012	2012	N	N/A	N/A	N/A
24BH558	4 SOUTH	2012	2011	N	N/A	N/A	N/A
24BH566	2 WEST	2012	2012	N	N/A	N/A	N/A
24BH569	2 WEST	2012	2012	N	N/A	N/A	N/A
24BH571	2 WEST	2012	2012	N	N/A	N/A	N/A
24BH577	2 EAST	2012	2012	N	N/A	N/A	N/A
2524	1 WEST	2013	2013	N	N/A	N/A	N/A
L15	1 WEST	2013	2013	N	N/A	N/A	N/A
24BH2254	4 SOUTH	2014	2014	N	Y	Completed in 2002 by GCM	2002
2532	1 WEST	2014	2014	N	N/A	N/A	N/A
24BH2531	1 EAST	2014	2014	N	N	N/A	N/A
24BH3394	2 WEST	2014	2014	N	N	N/A	N/A
24BH3395	2 WEST	2014	2014	N	N	N/A	N/A
24BH570	1 WEST	2014	2014	N	N/A	N/A	N/A
24BH572	1 WEST	2014	2014	N	N/A	N/A	N/A
24BH1589	2 WEST	2015		N	Y	Mitigation Done & Approved	2013
24BH2320	4 SOUTH	2015		N	N	N/A	N/A
24BH3380	6 WEST	2015		N	N	N/A	N/A
24BH1737	4	2016		N	Y	Report sent to MDEQ for	2012-13
24BH1599	4 SOUTH	2016	2014	N	N	N/A	N/A
24BH1744	4 NORTH	2016		N	N	N/A	N/A
24BH1749	4 NORTH	2016		N	N	N/A	N/A
24BH3407	2 EAST	2016		N	N	N/A	N/A
2526	1 WEST	2016		N	N/A	N/A	N/A
24BH2530	1 EAST	2016		N	N	N/A	N/A
24BH2534	1 EAST	2016		N	N	N/A	N/A
24BH3377	4 NORTH	2016		N	N	N/A	N/A
24BH3400	6 EAST	2016		N	N	N/A	N/A
24BH567	1 EAST	2016		N	N	N/A	N/A
24BH568	1 EAST	2016		N	N	N/A	N/A
24BH585	6	2016		N	N	N/A	N/A
24BH592	4 SOUTH	2016		N	N	N/A	N/A
24BH3409	2 EAST	2016		N	N	N/A	N/A
24BG3385	2 EAST	2016		N	N	N/A	N/A
24BG3384	2 WEST	2016		N	N	N/A	N/A
24BH3379	6	2017		N	N	N/A	N/A
24BH3408	2 EAST	2017		N	N	N/A	N/A
24BH581	6	2017		N	N	N/A	N/A
L14	2 EAST	2017		N	N/A	N/A	N/A
24BG3386	2 EAST	2018		N	N	N/A	N/A
24BH2533	1 EAST	2018		N	N	N/A	N/A
24BH3401	1 EAST	2018		N	N	N/A	N/A
24BH3410	2 EAST	2018		N	N	N/A	N/A
24BH3411	2 EAST	2018		N	N	N/A	N/A
24BH1748	4 NORTH	2019		N	Y	Mag Tested 2015, drafting report	2015
24BH1742	4 NORTH	2019		N	N	N/A	N/A
24BG3393	2 EAST	2020		N	N	N/A	N/A

Appendix D

Site ID (NHRP Eligible in BOLD & shaded)	Pit Area	Planned Disturbance Date (estimated 1200' offset from coal block)	Actual Disturbance Date	Additional Investigati on Required (Yes or No)	Mitigati on Require d (Yes or No)	Summary of Mitigation Efforts	Mitigation (Year Planned or Completed)
24BG3397	2 EAST	2020		N	N	N/A	N/A
24BH1743	4 NORTH	2020		N	N	N/A	N/A
24BH2003	2 EAST	2020		N	N	N/A	N/A
24BH3079	2 EAST	2020		N	N	N/A	N/A
24BH3080	2 EAST	2020		N	N	N/A	N/A
24BH3081	2 EAST	2020		N	N	N/A	N/A
D1324BH3391	2 EAST	2020		N	N	N/A	N/A
24BH3080	2 EAST	2021		N	N	N/A	N/A
24BH3210	2 EAST	2021		N	N	N/A	N/A
24BH1059	4 SOUTH	2022		N	N	N/A	N/A
24BH3212	2 EAST	2022		N	N	N/A	N/A
24BH1583	2 WEST	2023		N	N	N/A	N/A
24BH1584	2 WEST	2023		N	N	N/A	N/A
24BH3211	2 EAST	2023		N	N	N/A	N/A
24BH3213	2 EAST	2023		N	N	N/A	N/A
24BH1736	4 NORTH	2025		N	Y	Mag Tested 2015, drafting report	2020
24BH3406	6 WEST	2026		N	N	N/A	N/A
24BH1739	4 NORTH	2028		N	Y	Mag Tested 2015, drafting report	2025
24BH508	6	2028		N	N	N/A	N/A
24BH1598	4 WEST	Future	N/A	N	Y	Report sent to MDEQ	2015
24BH1068	1 EAST	Future	N/A	N	N	N/A	N/A
24BH1740	4 NORTH	Future	N/A	N	N	Tested 2015, drafting report	N/A
24BH2318	4 SOUTH	Future	N/A	N	N	N/A	N/A
24BH3404	6 SOUTH	Future	N/A	N	N	N/A	N/A
24BH3392	2 EAST	Future 2018		N	Y	Data Recovery Apvd., test in '16	2016
2525	1 WEST	N/A	N/A	N	N/A	N/A	N/A
2527	1 SOUTH	N/A	N/A	N	N/A	N/A	N/A
24BH1048	1 WEST	N/A	N/A	N	Y	Completed in 1992 by GCM	N/A
24BH1619	1 WEST	N/A	N/A	N	N/A	N/A	N/A
24BH1734	4 NORTH	N/A	N/A	N	N/A	N/A	N/A
24BH1735	4	N/A	N/A	N	N	N/A	N/A
24BH1738	4 NORTH	N/A	N/A	N	N/A	N/A	N/A
24BH1741	4 NORTH	N/A	N/A	N	N/A	N/A	N/A
24BH1747	4 NORTH	N/A	N/A	N	N/A	N/A	N/A
24BH2008	6 EAST	N/A	N/A	N	N/A	N/A	N/A
24BH2010	6 EAST	N/A	N/A	N	N/A	N/A	N/A
24BH2253	4 SOUTH	N/A	N/A	N	N/A	N/A	N/A
24BH2255	4 NORTH	N/A	N/A	N	N/A	N/A	N/A
24BH2319	4 SOUTH	N/A	N/A	N	N/A	N/A	N/A
24BH2521	1 WEST	N/A	N/A	N	Y	Completed in 1992 by GCM	N/A
24BH2529	1 WEST	N/A	N/A	N	Y	Completed in 1992 by GCM	N/A
24BH2841	4 NORTH	N/A	N/A	N	N/A	N/A	N/A
24BH2842	4 NORTH	N/A	N/A	N	N/A	N/A	N/A
24BH2869	4 SOUTH	N/A	N/A	N	N/A	N/A	N/A
24BH3219	2 WEST	N/A	N/A	N	N/A	N/A	N/A
24BH3297	6 EAST	N/A	N/A	N	N/A	N/A	N/A
24BH3381	6 NORTH	N/A	N/A	N	N/A	N/A	N/A
24BH3382	6 EAST	N/A	N/A	N	N/A	N/A	N/A
24BH3387	2 WEST	N/A	N/A	N	N/A	N/A	N/A
24BH3388	2 WEST	N/A	N/A	N	N/A	N/A	N/A
24BH3396	2 WEST	N/A	N/A	N	N/A	N/A	N/A
24BH3397	2 WEST	N/A	N/A	N	N/A	N/A	N/A
24BH3398	2 WEST	N/A	N/A	N	N/A	N/A	N/A

Appendix D

Site ID (NHRP Eligible in BOLD & shaded)	Pit Area	Planned Disturbance Date (estimated 1200' offset from coal block)	Actual Disturbance Date	Additional Investigation Required (Yes or No)	Mitigation Required (Yes or No)	Summary of Mitigation Efforts	Mitigation (Year Planned or Completed)
24BH579	6 EAST	N/A	N/A	N	N/A	N/A	N/A
24BH583	6 EAST	N/A	N/A	N	N/A	N/A	N/A
24BH584	6 EAST	N/A	N/A	N	N/A	N/A	N/A
24BH587	6 EAST	N/A	N/A	N	N/A	N/A	N/A
L22	1 WEST	N/A	N/A	N/A	N/A	N/A	N/A
24BH2516	1 WEST	N/A	N/A	N	Y	Annual Photos	On going
24BH404	4	No	N/A	N	Y	Report sent to MDEQ for	2012-13

APPENDIX E

PUBLIC SCOPING MAILING LISTS and PUBLIC SCOPING COMMENT LETTERS RECEIVED

Note: Actual copies of the scoping letters have not been included in the 508 Compliant version of Appendix E due to difficulties in providing 508 compliant documents. The summary table on page E-5 provides a summary of the comments and commenters.

Appendix E

Public Outreach Mailing List (addresses deleted)

		BLM Library
	Environmental Protection Specialist	National Park Service - Air Quality
		NPS - Air Quality
Matt	McKeown	Rocky Mtn Region Solicitor
Peter	Morgan	Sierra Club
Taylor	Jones	WildEarth Guardians
		Advisory Council on Historic Preservation
Mitchell	Leverette-Division Chief	BLM WO320
Don	Sutherland	Bureau of Indian Affairs
		Defenders of Wildlife
Hal	Quinn	National Mining Association
		NPS 2310
		U.S. Department of Energy
		US EPA
Dan	Roane	
Jason M. Ryan	Business Analytics Director	US Western Surface Operations
		Big Horn Conservation District
	Weed Control Supervisor	Big Horn County
	Commissioners	Big Horn County
Michael	Gulledge	Billings Gazette
Jamie	Connell-State Director	BLM - Montana State Office
Coal	Coordinator	BLM Montana State Office
Darryl LaCounte	Regional Director	Bureau of Indian Affairs
	Superintendent	Bureau of Indian Affairs-Crow Agency
	District Manager	Bureau of Land Management
		Custer Gallatin National Forest
	Water Protection Bureau	Department of Environmental Quality
	Air Resources Management	Department of Environmental Quality - Air Resources Management
	Regional Supervisor	Department of Fish, Wildlife & Parks
	Regional Supervisor	Department of Fish, Wildlife and Parks
	Safety Bureau	Department of Labor and Industry
	Administrator	Department of Natural Resources and Conservation - Water Resources Division
	Administrator	Department of Natural Resources and Conservation - Trust Land Management Division
Jenny	Harbine	Earthjustice
Steve	Bullock	Governor of Montana

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		BLM Library
Doug	McRae	Greenleaf Livestock
Greg	Julian	Dept of Nat Res & Conservation Mineral Management Service
		Montana Association of Counties
		Montana State Historic Preservation Office
Rae	Peppers	MT State Representative House District 41
Carolyn	Pease-Lopez	MT State Representative House District 42
Sharon	Stewart-Peregoy	MT State Senator Senate District 21
		Northern Cheyenne Cultural Commission
Natalie	Snyders	Northern Plains Resource Council
Mike	Scott	Sierra Club
		US Army Corps of Engineers
		US Army Corps of Engineers, Omaha District
		US Environmental Protection Agency
	Ecological Services	US Fish and Wildlife Service
		US Geological Survey
	State Office	US Natural Resources Conservation Service
Ryan	Zinke	US Representative-Montana
Jon	Tester	US Senator-Montana
Steve	Daines	US Senator-Montana
Clint	McRae	
Daniel	Hadley	
		Montana Environmental Information Center
Don	Bailey	
Shiloh	Hernandez	Western Environmental Law Center
	Administrator	Apache Tribe of Oklahoma
Amy M.	Atwood	Center for Biological Diversity
		BNSF Railway Company
		National Wildlife Federation
	Division of Habitat Resource Conservation	US Fish & Wildlife Service
	Managing Editor	Associated Press
		Biodiversity Conservation Alliance
	Mayor	City of Sheridan
Darryl	Maunder	Cloud Peak Energy
Shannon	Anderson	Powder River Basin Resource Council
	County Engineer	Sheridan County
	County Planner	Sheridan County
Mayor	City of Sheridan	City Hall
Roger	Miller-President	Trout Unlimited

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		BLM Library
Mark	Rogaczewski	WDEQ Land Quality Division
Mike	Evers	WWC Engineering
Jonathan	Downing	Wyoming Mining Association
Alan & Jimmie	Pierce	
Albert & Debra	Pierce	
		Fidelity Exploration
Florence	Young	
James & Margoriem	Hamilton	
Jeanette M	Davis	
Kathy & Dr. Michael	Strahan	Wolf Mountain Coal
Kevin	Smith	Department of Natural Resources and Conservation
Lane	Larson	
Mark & Mary Kay	Van Haele	
		RAIL LINK Decker
Robyn	Kimble	(Schultz Coal Co.)
Ron	Quinn	Decker Coal Company
Todd	Yeager	Bureau of Land Management
Walter J. & Lila V.	Taylor	

Tribal Consultation Mailing List (addresses deleted)

Crow Tribal Council
Crow Tribe
Northern Cheyenne Tribal Council
Northern Cheyenne Tribe
Standing Rock Sioux Tribal Council
Standing Rock Sioux Tribe
Santee Sioux Tribal Council
Apache Tribe of Oklahoma
Cheyenne-Arapaho Tribes of Oklahoma
Comanche Nation
Kiowa Business Committee
Cheyenne River Sioux Tribal Council
Cheyenne River Sioux Tribe
Crow Creek Sioux Tribe
Flandreau Santee Sioux Tribe
Lower Brule Sioux Tribal Council
Oglala Sioux Tribal Council
Oglala Sioux Tribe
Rosebud Sioux THPO
Rosebud Sioux Tribal Council
Rosebud Sioux Tribe
Arapahoe Business Council
Eastern Shoshone Tribe
Northern Arapaho Business Council
Northern Arapaho Tribe
Shoshone Business Council

Appendix E

Commenter	Date	Address/Email	Comment Topic										Notes	# of Comments	
			Water Quality	Air Quality	Wildlife	Level of NEPA/ NEPA Process	Noise	Reclamation	Climate Change	Permitting	Economy	Pro Mining			
Department of the Army	3/4/2016	P.O. Box 2256 Billings MT 59103												Mentions discharge permits for waters of the United States	
David Lagesse	3/7/2016	justdavengwen@comcast.net													
Western Fuels Association	3/7/2016	1901 Energy Court Suite 328 Gillette, WY 82718													
D. Steven Degenfelder	3/8/2016	4491 Sunrise Drive Casper, WY 82604													
Robert K. Green	3/9/2016	Frenchtown, MT													
Northern Plains Resource Council	3/10/2016	220 S. 27th St. Suite A Billings, MT 59101													
Keith Walters	3/11/2016	keith.walters@cldpk.com												Wants to limit the NEPA analysis	
NEPA Environmental Protection Agency	3/11/2016	1595 Wynkoop St. Denver, CO 80202-1129													
Holland & Hart	3/11/2016	acemrich@hollandhart.com												Submitted on behalf of Spring Creek Coal LLC	
Thunder Basin Coal Company LLC	3/11/2016														
Eric Barlow (WY state representative)	3/12/2016	eric.barlow@wyoleg.gov													
Wild Earth Guardians	3/12/2016	2590 Walnut St. Denver, CO 80205												Ensure that SMCRA permit is adequate	
Wyoming Analytical Laboratories, Inc.	3/15/2016	1660 Harrison St. Laramie, WY 82070													
Colorado Mining Association	3/16/2016	216 16th St. Suite 1250 Denver, CO 80202													
Form Letter in Support of Spring Creek	3/5/2016													1875 form letters in support of Spring Creek	1875
Total by Topic			3	3	2	8	1	2	3	2	1883	1885			1889
Percent of Total Number of Comments			0.2%	0.2%	0.1%	0.4%	0.1%	0.1%	0.2%	0.1%	99.7%	99.8%			

APPENDIX F

GREENHOUSE GAS EMISSIONS CALCULATIONS

**2012 Spring Creek Mine GHG Calculation Notes
(CO₂e)
for OSM LBA I EA**

Direct		Unit Used	Metric Tons CH₄	Kilograms CO₂-e	Metric Tons CO₂-e
Fuel	Diesel (Gallons)	4,182,346	42,701,753	42,701,753	42,702
	Gasoline (Gallons)	65,371	573,957	573,957	574
	Propane (Gallons)	62,577	357,940	523,786	524
	Sub total				43,799
Electricity	Electricity (Kilowatt Hours)	63,119,000		19,076,603	19,077
Blasting	ANFO or Emulsion Use (Metric Tons)	17,520			2,701
Methane Release					142,833
	Sub total				208,411
Indirect					
Rail	Transport of coal (one-way)			410,190,284	410,190
	Rail Cars (round trip)			198,846,895	198,847
	Locomotives (round trip)			37,654,753	37,655
	Sub total				646,692
Combustion				28,807,592,000	28,807,592
	Sub total				29,454,284
	Grand Total				29,662,695
	Direct			Fuel	43,799
				Electricity	19,077
				Mining	145,535
				Total Mining Sources	208,411
	Indirect			Total Haulage	646,692
				Combustion	28,807,592
				Total	29,662,695

**2013 Spring Creek Mine GHG Calculation Notes
(CO₂e)
for OSM LBAI EA**

Direct		Unit Used	Metric Tons CH₄	Kilograms CO₂-e	Metric Tons CO₂-e
Fuel	Diesel (Gallons)	4,237,968	43,269,653	43,269,653	43,270
	Gasoline (Gallons)	71,906	631,335	631,335	631
	Propane (Gallons)	89,652	512,809	750,411	750
	Sub total				44,651
Electricity	Electricity (Kilowatt Hours)	65,189,000		19,702,224	19,702
Blasting	ANFO or Emulsion Use (Metric Tons)	20,267			3,125
Methane Release					146,986
	Sub total				214,464
Indirect					
Rail	Transport of coal (one-way)			434,385,188	434,385
	Rail Cars (round trip)			204,627,328	204,627
	Locomotives (round trip)			37,654,753	37,655
	Sub total				676,667
Combustion				29,645,022,000	29,645,022
	Sub total				30,321,689
Grand Total					30,536,153
	Direct			Fuel	44,651
				Electricity	19,702
				Mining	150,110
				Total Mining Sources	214,464
	Indirect			Total Haulage	676,667
				Combustion	29,645,022
				Total	30,536,153

**2014 Spring Creek Mine GHG Calculation Notes
(CO2e)
for OSM LBAI EA**

Direct		Unit Used	Metric Tons CH4	Kilograms CO2-e	Metric Tons CO2-e
Fuel	Diesel (Gallons)	4,279,970	43,698,494	43,698,494	43,698
	Gasoline (Gallons)	71,910	631,370	631,370	631
	Propane (Gallons)	89,650	512,798	750,394	750
	Sub total				45,080
Electricity	Electricity (Kilowatt Hours)	63,119,000		19,076,603	19,077
Blasting	ANFO or Emulsion Use (Metric Tons)	19,133			2,950
Methane Release					143,664
	Sub total				210,771
Indirect					
Rail	Transport of coal (one-way)			414,973,804	414,974
	Rail Cars (round trip)			200,002,981	200,003
	Locomotives (round trip)			37,654,753	37,655
	Sub total				652,632
Combustion				28,975,078,000	28,975,078
	Sub total				29,627,710
	Grand Total				29,838,480
	Direct			Fuel	45,080
				Electricity	19,077
				Mining	146,614
				Total Mining Sources	210,771
	Indirect			Total Haulage	652,632
				Combustion	28,975,078
				Total	29,838,480

**2015 Spring Creek Mine GHG Calculation Notes
(CO2e)
for OSM LBA1 EA**

Direct		Unit Used	Metric Tons CH4	Kilograms CO2-e	Metric Tons CO2-e
Fuel	Diesel (Gallons)	4,459,279	45,529,239	45,529,239	45,529
	Gasoline (Gallons)	79,846	701,048	701,048	701
	Propane (Gallons)	120,717	690,501	1,010,433	1,010
	Sub total				47,241
Electricity	Electricity (Kilowatt Hours)	64,869,000		19,605,510	19,606
Blasting	ANFO or Emulsion Use (Metric Tons)	22,734			3,505
Methane Release					141,173
	Sub total				211,524
Indirect					
Rail	Transport of coal (one-way)			400,706,436	400,706
	Rail Cars (round trip)			196,534,722	196,535
	Locomotives (round trip)			37,654,753	37,655
	Sub total				634,896
Combustion				28,472,620,000	28,472,620
	Sub total				29,107,516
	Grand Total				29,319,040
	Direct			Fuel	47,241
				Electricity	19,606
				Mining	144,678
				Total Mining Sources	211,524
	Indirect			Total Haulage	634,896
				Combustion	28,472,620
				Total	29,319,040

2016-2021 (18 mmtpy) Spring Creek Mine GHG Calculation Notes
(CO2e)
for OSM LBAI EA

Numbers adjusted using 2015 Numbers

	Unit Used	Metric Tons CH4	Kilograms CO2-e	Metric Tons CO2-e	at 17,000,000	at 18,000,000
Direct						
Fuel	Diesel (Gallons)	4,721,590	48,207,429	48,207	4,459,279	4,721,590
	Gasoline (Gallons)	84,543	742,286	742	79,846	84,543
	Propane (Gallons)	127,818	731,119	1,070	120,717	127,818
	Sub total			50,020	63,119,000	66,831,882
Electricity	Electricity (Kilowatt Hours)	66,831,882	20,198,756	20,199	22,734	24,071
Blasting	ANFO or Emulsion Use (Metric Tons)	24,071		3,712	Adjustment Factor	1.06
Methane Release				149,477		
	Sub total			223,407		
Indirect						
Rail	Transport of coal (one-way)		449,234,898	449,235		
	Rail Cars (round trip)		208,095,588	208,096		
	Locomotives (round trip)		37,654,753	37,655		
	Sub total			694,985		
Combustion			30,147,480,000	30,147,480		
	Sub total			30,842,465		
	Grand Total			31,065,872		

Direct	Fuel	50,020
	Electricity	20,199
	Mining	153,188
	Total Mining Sources	223,407
Indirect	Total Haulage	694,985
	Combustion	30,147,480
	Total	31,065,872

2016-2021 (5 mmtpy) Spring Creek Mine GHG Calculation Notes
(CO2e)
for OSM LBAI EA

Adjusted using 2016-2021 Numbers

Direct	Unit Used	Metric Tons CH4	Kilograms CO2-e	Metric Tons CO2-e	Adjusted using 2016-2021 Numbers		
					at 17,000,000	at 18,000,000	
Fuel	Diesel (Gallons)	1,311,553	13,390,953	13,390,953	13,391	4,721,590	1,311,553
	Gasoline (Gallons)	23,484	206,191	206,191	206	84,543	23,484
	Propane (Gallons)	35,505	203,089	297,186	297	127,818	35,505
	Sub total				13,894	66,831,882	18,564,412
Electricity	Electricity (Kilowatt Hours)	18,564,412		5,610,766	5,611	22,734	6,315
Blasting	ANFO or Emulsion Use (Metric Tons)	6,315			974	Adjustment Factor	0.28
Methane Release					41,521		
	Sub total				62,000		
Indirect							
Rail	Transport of coal (one-way)			34,663,187		34,663	
	Rail Cars (round trip)			57,804,330		57,804	
	Locomotives (round trip)			37,654,753		37,655	
	Sub total					130,122	
Combustion				8,374,300,000		8,374,300	
	Sub total					8,504,422	
	Grand Total					8,566,422	

Direct	Fuel	13,894
	Electricity	5,611
	Mining	42,495
	Total Mining Sources	62,000
Indirect	Total Haulage	130,122
	Combustion	8,374,300
Total		8,566,422

Variables	2012	2013	2014	2015	2016-2021	2016-2021
Tons mined	17,200,000	17,700,000	17,300,000	17,000,000	18,000,000	5,000,000
Cars per Train	130	130	130	130	130	130
Tons per Empty Car	23	23	23	23	23	23
Tons coal per Car	119	119	119	119	119	119
Tons coal per trip	15,470	15,470	15,470	15,470	15,470	15,470
Tons per Unloaded Train (Cars Only)	2990	2990	2990	2990	2990	2990
Locomotives Tons	200	200	200	200	200	200
Tons per Unloaded Train - Total	3790	3790	3790	3790	3790	3790
Tons per Loaded Train (Cars Only)	18,460	18,460	18,460	18,460	18,460	18,460
Ton Miles per Gallon	476	476	476	476	476	476
Trips	1112	1144	1118	1099	1164	323
Railroad Miles (one way)	1,100	1,100	1,100	1,100	1,100	1,100
cubic feet Mehtane per Ton coal	41	41	41	41	41	41
methane recovery factor	0.4	0.4	0.4	0.4	0.4	0.4
Pounds CO2e per Megawatt Hours	665.7	665.7	665.7	665.7	665.7	665.7
Kilograms per pound	0.454	0.454	0.454	0.454	0.454	0.454
Megawatt Hours per Kilowatt Hours	0.100	0.100	0.100	0.100	0.100	0.100
Gallons of propane per barrel	42.000	42.000	42.000	42.000	42.000	42.000
Metric tons CO2 per Metric Tons explosive	0.17	0.17	0.17	0.17	0.17	0.17
Kilograms CO2e per Gallon Diesell fuel	10.21	10.21	10.21	10.21	10.21	10.21
Kilograms CO2e per Gal. Gasoline	8.78	8.78	8.78	8.78	8.78	8.78
Kilograms CO2e per Gal. Propane	5.72	5.72	5.72	5.72	5.72	5.72
Kilograms CO2e per Kilowatt Hours	0.303	0.303	0.303	0.303	0.303	0.303
kilograms CO2 per million Btu	61.460	61.460	61.460	61.460	61.460	61.460
Metric Tons per U.S. Tons	0.907	0.907	0.907	0.907	0.907	0.907
CH4 Converstion to CO2e	25	25	25	25	25	25
Combustion (CO2 per ton)	1,675	1,675	1,675	1,675	1,675	1,675
cubic meter per cubic foot	0.0283	0.0283	0.0283	0.0283	0.0283	0.0283
Kilograms per cubic meter	0.7157	0.7157	0.7157	0.7157	0.7157	0.7157
Kilograms CO2 per Gallon of Diesel	10.15					
Kilograms CO2 per Gallon of Gasoline	8.81					

3.8240 million Btu per barrel multiplied by 63.07 kilograms CO2 per million Btu multiplied by 1 barrel per 42 Gallon

665.75pounds CO2 per MWh multiplied by 1 MWh per 1000KWh multiplied by 1 Kilograms per 2.2 pounds multiplied by 1 metric ton per 1000 Kilograms

(41 Cubic Feet CH4 per ton) multiplied by 0.4 [methane remaining after recovery]

Assumes all coal recovered would be combusted at power plants

APPENDIX G

PM₁₀, PM_{2.5}, SO₂, NO_x, AND Hg CONTRIBUTIONS FROM COAL COMBUSTION
CALCULATIONS

Parameters Used to Calculate Combustion Emissions

Btu per short ton	24,930,000
tons per kilogram	0.00110231
tons to generate 1 Kilowatt-Hour	0.00052
tons to generate 1 Megawatt-Hour	0.52
PM10 Emissions per Btu (kilogram per Megawatt-Hour)	0.39
PM10 Emissions per Btu (ton per Megawatt-Hour)	0.000429901
PM2.5 Emissions per Btu (kilogram per Megawatt-Hour)	0.305
PM2.5 Emissions per Btu (ton per Megawatt-Hour)	0.00013112
SO2 Emissions per Btu (kilogram per Megawatt-Hour)	7.192
SO2 Emissions per Btu (ton per Megawatt-Hour)	0.007927814
NOx Emissions per Btu (kilogram per Megawatt-Hour)	2.779
NOx Emissions per Btu (ton per Megawatt-Hour)	0.003063319
Hg Emissions per Btu (kilogram per Megawatt-Hour)	0.028
Hg Emissions per Btu (ton per Megawatt-Hour)	0.00003

Combustion Emissions Values

Years	Past Production				Proposed Action	No Action
	2012	2013	2014	2015	2018-2021	2018-2021
Tons mined (From SCC)	17,200,000	17,000,000	17,300,000	17,000,000	18,000,000	5,000,000
mw-h from coal mined	8,944,000	8,840,000	8,996,000	8,840,000	9,360,000	2,600,000
PM10 Emissions	3845.0	3800.3	3867.4	3800.3	4023.9	1117.7
PM 2.5 Emissions	1172.7	1159.1	1179.6	1159.1	1227.3	340.9
SO2 Emissions	70,906.4	70,081.9	71,318.6	70,081.9	74,204.3	20,612.3
NOx Emissions	27,398.3	27,079.7	27,557.6	27,079.7	28,672.7	7,964.6
Hg Emissions	276.1	272.8	277.7	272.8	288.9	80.2