TRI-STATE

June 9, 2025

Ms. Hunter Ridley
Environmental Protection Specialist
Colorado Division of Reclamation, Mining & Safety
Department of Natural Resources
1313 Sherman Street, Room 215
Denver, CO 80203

RE: Colowyo Coal Company L.P.
Permit No. C-1981-019
MR-264 Midterm Review (MT-9)

Dear Ms. Ridley,

Tri-State Generation and Transmission Association Inc. (Tri-State) is the parent company to Axial Basin Coal Company, which is the general partner to Colowyo Coal Company L.P. (Colowyo). Therefore, Tri-State on behalf of Colowyo is submitting minor revision 264 (MR-264) to Permit No. C-1981-019.

On May 7, 2025, the Division issued a midterm review (MT-9) of Colowyo's Permit No. C-1981-019. MR-264 provides the requested information outlined in MT-9 by the Division. This minor revision is broken out into three parts including comments on the Division's MT-9 Findings Document, response to the Division's adequacy comments, and comments on the reclamation cost estimate provided with MT-9. Adequacy comments by the Division have been provided in their full context below with an individual response to each item.

MT-9 Finding Document Comments

1. Under *Mining History*, the Division states that Colowyo operated underground mining operations at the Red Wing Mine from 1945-1974. This is incorrect as Colowyo Coal Company L.P. (Colowyo) was not the operator of the Red Wing Mine or Streeter Mine that occurred in the early to mid-1900's in the vicinity of Colowyo. It is requested that the Division correct this and reissue a corrected MT-9 document.

2. Under *Mining History*, the Division states that mining operations begin in the Collom Pit in 2016. This timeframe is incorrect as mining commenced in the Collom Pit in 2019. Please refer to the mined-out areas shown on Map 23B. It is requested that the Division correct this and reissue a corrected MT-9 document.

3. Stipulations 19 and 20 provided under MT-9 are different from Stipulations 19 and 20 issued under permit renewal 08 on February 27, 2023. The Division issued a corrected MT-9 Findings Document addressing this issue on May 9, 2025; therefore, this comment has been satisfied.

4. Under *Permit Variances*, Rule 2.06.2, The Division discusses the Streeter Fill as an experimental practice employed at Colowyo. While historically this is correct, the Streeter Fill has been released from regulatory authority, and the associated items in Volume 1, Section

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2.06.2 reflect that no experimental practices are currently used at Colowyo. It is requested that the Division remove this narrative and cite that Colowyo is not permitted for any experimental practices as noted in Volume 1, Section 2.06.2 and reissue a corrected MT-9 document.

Divisions Comment and Responses

Volume 1 Rule 2.01 - General Requirements

1. *Please update the total permit area referenced in Section 2.01.6 for Volume 1.*

Response: Volume 1, Section 2.01.6, is related to permit fees paid with the initial permit application. There are not any references to the permit area to update. No changes have been made in response to this comment.

2. *In previous years, Colowyo's Certificate of Liability Insurance has been submitted to the Division via a Minor Revision to incorporate the certificate into the formal permit file. This year, Colowyo submitted their Certificate of Liability Insurance to the Division's public records via a General Documents upload. The Certificate of Liability Insurance document is not required by Rule to be included in the formal permit. If Colowyo wishes to cease formal documentation of the Certificate of Liability Insurance via Minor Revisions, please request that this section, Exhibit 03, be removed from the permit.*

Response: Rule 2.03.9 states, "Prior to issuance of a permit each applicant shall submit to the Division for inclusion [*emphasis added*] in the permit application, a certificate certifying that the applicant has a public liability insurance policy in force for the surface coal mining and reclamation operation for which the permit is sought."

Additionally, Rule 2.03.9(2) states, "The policy shall be maintained in full force during the life of the permit and any renewal thereof, including completion of all reclamation operations under Rule 4."

Earlier guidance from the Division has required submittal and inclusion of the certificate of liability insurance to comply with Rule 2.03.9. Now the Division in this comment states there is not an applicable Rule; however, Rule 2.03.9 does require a certificate of liability insurance to be included in the permit application. It is requested that the Division provide guidance to all mine permittees that is consistent in how permittees need to comply with Rule 2.03.9.

Volume 1 Rule 2.03.5 - Compliance Information

3. *Exhibit 2, Item 3 lists violation notices received during the last three years by Colowyo in connection with the surface coal mining operation and lists violation notices received by those companies related through the " ownership and control" relationship. Please update these sections to include the following violations cited for Colowyo and other sites related to Colowyo through 'ownership and control': Colowyo, CV2022001 and Trapper Mine, CO-2023001 and CV2023001.*

Response: Exhibit 2, Item 3 has been updated as requested.

Volume 1 Rule 2.04.4 – Cultural and Historical Resource Information

4. *Several time, this section sites Map 16 as the 'Historical and Archaeological Site Map'. However, this map has since been updated to the label 'Map 16B'. Please revise this portion of the permit narrative to reflect the new map citation.*

Response: Two citations for Map 16 have been revised to Map 16B as noted.

Volume 1 Rule 2.04.6 – Geology Description

5. *Pages 2.04-9 and 2.04-10 cite a 'Map 7' as the Geology Map. However, this map has since been updated to the label 'Map 7A' and is correctly referenced a such mid page 2.04-10. Please revise this portion of the permit narrative to reflect the new map citation.*

Response: Two citations for Map 7 have been revised to Map 7A as noted.

Volume 1 Rule 2.04.7 – Hydrology Information

6. *Page 2.04-22 lists all surface water ponds in the mine area. Currently, this list does not include reference to the newly built Upper and Lower Section 3 Ponds or to Section 15 Pond. Please revise this portion of the permit narrative to reflect the pond additions.*

Response: References to both Section 3 Ponds and Section 15 have been included in 2.04.7 as requested.

Volume 1 Rule 2.04.10 – Vegetation Information

7. *Page 2.04-52 references a 'Regional Vegetation Map (Map 3)'. However, regional vegetation maps for the entire permit area are currently found on Map 4C Sheets 1 – 11. Please revise this portion of the permit narrative to reflect the updated map citation.*

Response: One citation in Section 2.04.10 has been updated from Map 3 to Map 4. The Division should note that the approved vegetation map is found on Map 4. Under TR-135, Colowyo consolidated Map 4C Sheets 1 -11 to Map 4.

Volume 1 Rule 2.04.11 – Fish and Wildlife Resources Information

8. *Please review and update Threatened and Endangered Wildlife/Plant Species sections of the Colowyo's PAP as necessary.*

Response: Table 2.04.11-14 has been updated as requested. Table 2.04.11-15 has not been updated as there has been any new plant species listed federally or state with Moffat and Rio Blanco Counites.

9. *Page 2.04-58, 2.04-65 and 2.04-67 reference a 'Map 14, Wildlife Agent Information', but no such map exists within the permit file. The Division assumes that Map 15B Sheets 1-3 is the correct citation for these wildlife maps. If so, please update the map citation in this section. If not, please clarify the correction citation for 'Map 14, Wildlife Agent Information'.*

Response: References for Map 14 have been removed from the permit or updated to Map 15B Sheet 1 as requested.

10. *Pages 2.04-59, 2.04-60 and 2.04-62 reference a 'Big Game Use Information Map (Map 13)'. However, this information is currently found on Map 13B Sheets 1 and 2. Please revise this portion of the permit narrative to reflect the updated map citation.*

Response: References for Map 13 have been removed from the permit or updated to Map 13B Sheet 1 as requested.

11. *Page 2.04-63, 2.04-65 and 2.04-67 reference a 'Wildlife Observations Map (Map 15)'. However, this information is currently found on Map 15B Sheets 1 - 3. Please revise this portion of the permit narrative to reflect the updated map and sheet citations.*

Response: References for Map 15 have been removed from the permit or updated to Map 15B Sheet 1 as requested.

Volume 1 & 12 Rule 2.05.3 - Operations Plan

12. *Please update the following tables as necessary.*

- *Table 2.03-1 -Affected Areas for Mining and Reclamation*

Response: The acreages provided on Table 2.03-1 reflect current estimates for the permit term.

- *Table 2.04.10-1-4 Vegetation Community Distribution on Areas to be Mined*

Response: Colowyo's permit does not contain Table 2.04.10-1-4; therefore, no change has been made in response to this comment.

- *Table 2.04.9-7 - Topsoil Mass Balance - South Taylor Mine Area*

Response: Colowyo's permit does not contain Table 2.04.9-7; therefore, no change has been made in response to this comment.

- *Table 2.04.11-15 - Threatened and Endangered Species Potentially Occurring within the Moffat and Rio Blanco Counties*

Response: Please see response to comment 8 above.

- *Table 2.05-1 -Topsoil Balance as of December, 2023*

Response: Table 2.05-1 has been updated as requested.

- *Table 2.05-2 - Historical Coal Shipped (Sold) and Anticipated Annual Shipped (Sold)*

Response: Table 2.05-2 has been updated as requested.

- *Table 2.05.2-22 -Total Colowyo Coal Production, 2006 - 2017*

Response: Colowyo's permit does not contain Table 2.05.2-22; therefore, no change has been made in response to this comment.

- *Table 2.05.6-5 - Collom Coal Production and Collom Mine Plan Volumetric Balance*

Response: Colowyo's permit does not contain Table 2.05.6-5; therefore, no change has been made in response to this comment.

Volume 1 Rule 2.05.4 - Reclamation Plan

13. *The Reclamation Plan cites the Postmining Topography Map as Map 19. However, this information is also presented on Map 44. Please revise this portion of the permit narrative to reflect the additional map citation.*

Response: A citation for Map 44 was added to Section 2.05.4 as requested.

14. *Page 2.05-28 states that "haul road and road embankment slopes and adjacent areas have been mechanically stabilized and seeded with a mixture shown in Table 7 – Reclamation Seed Mixture". Please clarify if this reference is referring to Table 2.05-7 Grazingland Seed Mixture. If so, please update this section of the permit narrative.*

Response: A narrative addressing haul road embankment seedings has been updated as the mixture used predates Colowyo's currently approved seed mixtures. A reference to Table 2.05-7 has been added for future seeding if necessary.

15. *Pages 2.05-38 through 52 are repeated pages. A new section 2.05.4 section of the permit narrative should be submitted which omits these pages.*

Response: This comment signifies the issue is with the Division files. It is suggested that the Division remove the pages that have the most outdated revision date in the footer to correct this issue in their files.

Volume 1 Rule 3

16. *This section references a Map 39 as depicting Bond Calculation Cross Sections. However, no such map is currently found within the permit. Please submit this map or update and replace the map citation.*

Response: Map 39 is noted as being cited in the short narrative under the Rule 3 section which is incorrect. Colowyo directs the Division to Rule 3 page 3-1, approved under permit revision 08.

Volume 1 Rule 4

17. *Page 4-2 references 'Map 19' to represent approved AOC for South Taylor and Lower Wilson areas. However, this information can also be found on Maps 19A and 19B in the permit. Please revise this portion of the permit narrative to reflect the updated map citations.*

    Response: An additional citation to Map 19B has been added to the narrative under Section 4.03.1. A citation to Map 19A has not been included as Map 19A refers to the Gossard Loadout area.

18. *Page 4-6 references Map 21 and 22 to depict the location of Existing Structures used in support of the mining operation for the South Taylor and Lower Wilson areas. However, this information can also be found on Map 22A in the permit. Please revise this portion of the permit narrative to reflect the updated map citations.*

    Response: A reference to Map 22A has been added to Section 4.04 on page 4-6.

19. *Page 4-10 references a 'Soils - South Map (Map 6) and Soils - North Map (Map 5)'. The Soils - North Map (Map 5) does not exist within the permit. Please either submit this map to the permit record or update this section of the permit narrative to use a different map citation.*

    Response: The noted map references have been corrected to Map 5A through 5D.

Volume 12 Rule 2.0

20. *Rule 2, page 14 references Map 7A as a map which depicts the location of boreholes related to the evaluation of geochemical properties of overburden in the South Taylor area. However, the Map 7A included in the permit file does not show these borehole locations. Please update this section with a corrected citation or remove the citation if no map of the borehole locations exists.*

    Response: Map 7A reference has been revised to Map 11B.

21. *Rule 2, Page 19 references a 'Map 10' to depict bedrock and shallow monitoring wells for South Taylor. However, this information is also currently found on Maps 10A and 10B in the permit. Please revise this portion of the permit narrative to reflect the updated map citations.*

    Response: The reference to Map 10 has been revised to Maps 10A and 10B as noted.

22. *Rule 2, Pages 30, 31, 36 reference a 'Map 5A' to represent soils information for South Taylor and Lower Wilson areas. However, this information is also currently found on Map 05D Sheets 1 – 6 in the permit. Please revise this portion of the permit narrative to reflect the updated map citations.*

Response: Map 5D Sheets 1 – 6 provides soils information west of Moffat County Road 51 for Collom Pit area only. The citations to Maps 5A and 5B are correct in Volume 12. No changes have been made in response to this comment.

23. *Rule 2, Page 42 references 'Maps 4A and 4B' to represent native vegetation type distribution in South Taylor and Lower Wilson areas. However, this information is currently found on Maps 04 and 04C in the permit. Please revise this portion of the permit narrative to reflect the updated map citations.*

Response: The citation for Maps 4A and 4B has been revised to Map 4. Colowyo does not have a Map 4C in the permit as noted by the Division.

24. *Rule 2, Page 60 references 'Maps 13A, 14A, and 15A' to delineate the distribution of all special-interest habitats identified in the South Taylor area. However, no such map exists within the permit file. Please update the map citation in this section.*

Response: Maps 13A, 14A, and 15A references have been revised to Maps 13B and 15B as requested.

25. *Rule 2, Page 62 references 'Map 13B' to represent mule deer ranges in South Taylor and Lower Wilson areas. This citation is incomplete, as this information is found more specifically on Map 13B Sheet 2. Please revise this portion of the permit narrative to reflect the updated map citation.*

Response: The citation has been revised to include "Sheet 2" as requested.

26. *Rule 2, Page 72 references 'Map 23' to represent locations of the East Taylor Fill and West Taylor Fill areas. However, this information can also be found on Map 23A in the permit. Please revise this portion of the permit narrative to reflect the updated map citations.*

Response: Colowyo could not locate the Division's citated map reference on Rule 2, Page 72. However, a citation to Map 35A for the East and West Taylor Fills has been corrected to Map 45 on Rule 2, Page 72.

Volume 12 Rule 3.0

27. *This section lists Map 40A as the Bond Calculation Cross Sections. However, the current permit and map submitted is titled 'Map 40'. Please revise this portion of the permit narrative to reflect the updated map citation.*

Response: Map 40A does not exist Colowyo's permit. The correct citation is Map 39, which has been updated under Rule 3, Page 1.

28. *Map 38, as referenced to in this section, has been renumbered and moved in the permit file. Please update this section's citation to reflect this change.*

Response: There is not a reference to Map 38 on Rule 3, Page 1. No changes have been made in response to this comment.

Volume 15 Rule 2.0

29. *Rule 2, Page 14 is repeated in the Division's version of Volume 15 Rule 2.0. Please submit an updated Rule 2 with this extraneous page removed.*

Response: This comment signifies the issue is with the Division files. It is suggested that the Division remove the pages that have the most outdated revision date in the footer to correct this issue in their files.

30. *Rule 2, Page 69 references a 'Map 11B', stating that geologic cross sections for Collom Pit are represented on this map. However, Map 11B is the 'Groundwater Well and Drillhole Locations' map and no cross sections are present on the map. Please correct this map citation and submit a revised page.*

Response: The citation to Map 11B has been revised to Figures 2.04.6 Sheets 1 and 2 as requested.

Volume 15 Rule 4.0

31. The second paragraph on Rule 4, Page 19 repeatedly mentions a map which depicts the location of possible raptor nesting sites and the location of habitat enhancement 'stock ponds', but no map citation is found in this section. Please update the page and add an appropriate citation.

Response: Map citations has been added as requested.

32. Rule 4, Pages 24 – 38 are repeats of pages already listed in Volume 15, Rule 4.0. Please provide a full document of Volume 15, Rule 4 with these extraneous pages removed.

Response: This comment signifies the issue is with the Division files. It is suggested that the Division remove the pages that have the most outdated revision date in the footer to correct this issue in their files.

Section VI - Bonding Summary

The Division currently holds bond monies, in the form of one corporate surety in the amount of $119,000,000.00. A compiled reclamation cost estimate was developed by the Division as a part of the Permit Renewal No. 8 process issued on February 25, 2023. The Division's reclamation costs have been updated since that date. Per Rule 3.02.1(6), Colowyo has elected to file a cumulative bond schedule for the permit term and not the life of the Mine. For the worst-case-scenario at Colowyo, the Division has determined the reclamation liability for the 2023 - 2028 permit term is $134,625,646.00. The previous worst-case-scenario at Colowyo was $117,304,293.00. The difference between this amount for the worst-case-scenario and the previously calculated worst-case-scenario bond reported is an increase of $17,321,353.00. Therefore, with a bond held in the amount of $119,000,000.00 by the Division, the Division

has an insufficient amount in bond monies to assure completion of the remaining reclamation work at the Colowyo Mine if the work had to be performed by the Division, including the cost of reestablishing vegetation on any revegetated areas, should those areas fail. The Division will initiate a surety increase revision pursuant to Rule 3.02.2(4) and provide the permittee with an opportunity for an informal conference on the adjustment pursuant to Rule 3.02.2(4)(a).

Response: Colowyo has reviewed the Division's reclamation cost estimate for MT-09, and has the following comments on the Division's estimate:

1. Task 018. Under permit renewal 08 (RN-08), Colowyo provided the Division with overburden volumes that are applicable to the blocks shown on Map 35A. For Task 018, Load and Haul Spoil to TS-17, the Division has an initial and loose volume of 1,261,780 cubic yards which does not match the volume provided to the Division under RN-08. The correct volume for Task 018 is 1,200,585 cubic yards (loose). It is requested the Division update Task 018 accordingly.

2. All tasks that include Colowyo's sagebrush steppe and grazingland seed mixtures are not applicable to current seed costs per acre. Current pricing for the sagebrush steppe seed mixture is $242.90 per acre and the grazingland seed mixture is $282.55 per acre. Please revise all tasks and costs related to Colowyo's seed mixtures with correct cost per acre.

3. Please explain what Tasks 98B and 98C pertain to and how the Division calculated the acreages associated with both tasks. Further, Task 98B acreage seeded assumption has increased from 0.14 acres to 4.8 acres, and Task 98C was not included in RN-08 but has been added to MT-09.

4. Under RN-08 reclamation cost estimate, the Division had duplicated Task 006 and 159 (Load and Haul Spoil to TS-5 for $464,621). Please confirm this duplication of tasks been corrected in MT-09, and how the costs have been accounted for in MT-9.

5. Colowyo requests Task 160 and 161 be consolidated into Task 402 to avoid future confusion when Colowyo applies for bond release on the Collom Haul Road/County Road 51 crossing.

6. Task 166 is confusing, and Colowyo requests the Division delineate Task 166 in a manner that is clear and concise. Additionally, it appears Task 166 costs may be suited to be included in Task 162.

7. Task 169 includes the post mine channel Dusky Draw in the Collom Pit. Please explain how Task 169 relates to the Collom post mine channels Task 460? It is possible that the Division is duplicating costs, or the Division should consolidate the Dusky Draw costs with Task 460.

8. Tasks 401 and 402 both relate to the Collom Haul Road and culverts. It is unclear how these tasks relate to Tasks 404 – 413. Please verify.

9. Task 402 includes costs to demolish the Collom facilities and Collom Haul Road crossing at Moffat County 51. The Division cites inclusion of the salt storage building which was permitted under MR-223 is included in Task 402. However, Task 127 includes costs for demolition of the salt storage building. Please verify the task to demolish the salt storage building are not duplicated and clarify where these costs are calculated.

10. Tasks 415 and 416 both include the term "regrade" for the Collom facilities. Please confirm if regrade costs are included in Task 415 only, and please revise the name of Task 416 by removing the word regrade.

11. Task 415 includes 1,834,625 cubic yards of material necessary to regrade the Collom facilities, and the Division states the source of the estimated volume was calculated by the Division. The Collom Pit is on a cumulative bond schedule as approved by the Division. Table 13C-2 states there is 1,484,400 cubic yards of cut necessary to regrade the Collom facilities. The 1,484,400 cubic yards noted is loose volume as it has already been swelled. It is requested that the Division update Task 415 with the correct volume as provided on Table 13C-2.

12. Task 416. The initial volume of 327,278 cubic yards is the correct volume that should be applied to this task. The 327,278 cubic yards is presented on Table 13C-9 and has swelled already factored in. Please revise the loose volume accordingly.

13. Task 446. Table 13C-25 provides 1,550,987 cubic yards of topsoil denoted for reclamation of the Collom Pit and out of pit stockpile area. The Division states 1,715,743 cubic yards for this task which does not correspond to the volume provided on Table 13C-25. Please update Task 446 with the volume provided on Table 13C-25, which is a swelled volume.

14. Task 447. The initial volume (6,608,464 cubic yards) for this task correctly corresponds to Colowyo's volume on Table 13C-23. However, the Division incorrectly applies swell to an out of pit stockpile volume that swell has already been included in Colowyo's volume. Please remove the swell factor and adjust the loose volume accordingly.

15. It is unclear what Task 486 is related to on the ground. It is requested that the Division provide a clear task name, so the task matches a structure or disturbance area on the ground at Colowyo.

16. Task 487 appears to duplicate costs applied in Task 446. The total topsoil volume necessary to reclaim the Collom Pit and out of pit stockpile is provided on Table 13C-

25. Given this, Task 487 should be removed from the Division's cost estimate as the topsoil volume is already included in Task 446. Please see comment 13 above also.

17. Task 489. This task appears to be a duplicate task for cost provide in Task 446. Please verify what this task is related to or remove it as the total volume of topsoil necessary to reclaim the Collom Pit and out of pit stockpile is provided on Table 13C-25 which his associated with Task 446.

Included in this minor revision is a change of index sheet to ease incorporation of this minor revision into the permit document. If you should have any additional questions or concerns, please feel free to contact Tony Tennyson at (970) 824-1232 at your convenience.

Sincerely,

DocuSigned by:
Chris Gilbreath
D250C711D0BF450...

Chris Gilbreath
Senior Manager,
Remediation and Reclamation

CG:TT

Enclosure

cc: Tom Cummins (BLM-WRFO)
Tony Tennyson (via email)
File: C. F. 1.1.1.24

CHANGE SHEET FOR PERMIT REVISIONS, TECHNICAL REVISION, AND MINOR REVISIONS

Mine Company Name: **Colowyo Coal Company**
Permit Number: **C-1981-019**
Date: **June 4, 2025**
Revision Description: **MR-264 Midterm Review**

Volume Number	Page, Map or other Permit Entry to be REMOVED		Page, Map or other Permit Entry to be ADDED		Description of Change
1	List of Maps ix and x (2 pages)		List of Maps ix and x (2 pages)		List of Maps has been updated.
1	Page 2.04-4 (1 page)		Page 2.04-4 (1 page)		Map citation has been updated.
1	Page 2.04-7 (1 page)		Page 2.04-7 (1 page)		Map citation has been updated.
1	Pages 2.04-9 and 2.04-10 (2 pages)		Pages 2.04-9 and 2.04-10 (2 pages)		Map citations have been updated.
1	Page 2.04-22 (1 page)		Page 2.04-22 (1 page)		Pond citation has been updated.
1	Page 2.04-52 (1 page)		Page 2.04-52 (1 page)		Map citation has been updated.
1	Pages 2.04-58 through 2.04-60 (3 pages)		Pages 2.04-58 through 2.04-60 (3 pages)		Map citations have been updated.
1	Pages 2.04-62 through 2.04-70 (9 pages)		Pages 2.04-62 through 2.04-70 (9 pages)		Map citation was updated which caused a pagination shift.
1	Page 2.05-17 (1 page)		Page 2.05-17 (1 page)		Map citation has been updated.
1	Page 2.05-28 (1 page)		Page 2.05-28 (1 page)		Table citation has been updated.
1	Pages 4-2 and 4-3 (2 pages)		Pages 4-2 and 4-3 (2 pages)		Map citations have been updated.
1	Pages 4-6 (1 page)		Pages 4-6 (1 page)		Map citation has been updated.
1	Pages 4-10 (1 page)		Pages 4-10 (1 page)		Map citation has been updated.
1	Tables Page 106 (1 page)		Tables Page 106 (1 page)		Table 2.04.11-14 has been updated.
1	Tables Page 108 and 109 (2 pages)		Tables Page 108 and 109 (2 pages)		Tables 2.05-1 and 2.05-2 have been updated.
2A	Page Exhibit 2-10 (1 page)		Page Exhibit 2-10 (1 page)		List of NOV's has been updated.
2B					No Change
2C					No Change
2D					No Change
2E					No Change
3					No Change
4					No Change
5A					No Change
5B					No Change
6	List of Maps (2 pages)		List of Maps (2 pages)		List of Maps has been updated.
7	List of Maps (2 pages)		List of Maps (2 pages)		List of Maps has been updated.

CHANGE SHEET FOR PERMIT REVISIONS, TECHNICAL REVISION, AND MINOR REVISIONS

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Volume Number	Page, Map or other Permit Entry to be REMOVED		Page, Map or other Permit Entry to be ADDED		Description of Change
8	List of Maps (2 pages)		List of Maps (2 pages)		List of Maps has been updated.
9	List of Maps (2 pages)		List of Maps (2 pages)		List of Maps has been updated.
10	List of Maps (2 pages)		List of Maps (2 pages)		List of Maps has been updated.
10	Map 40				Map 40 is being removed from the permit as it is not applicable anymore.
12	South Taylor/Lower Wilson viii and ix (2 pages)		South Taylor/Lower Wilson viii and ix (2 pages)		List of Maps has been updated.
12	Rule 2, Page 14 (1 page)		Rule 2, Page 14 (1 page)		Map citation has been updated.
12	Rule 2, Page 19 (1 page)		Rule 2, Page 19 (1 page)		Map citation has been updated.
12	Rule 2, Page 42 (1 page)		Rule 2, Page 42 (1 page)		Map citation has been updated.
12	Rule 2, Page 60 (1 page)		Rule 2, Page 60 (1 page)		Map citation has been updated.
12	Rule 2, Page 62 (1 page)		Rule 2, Page 62 (1 page)		Map citation has been updated.
12	Rule 2, Page 72 (1 page)		Rule 2, Page 72 (1 page)		Map citation has been updated.
13					No Change
14	List of Maps (2 pages)		List of Maps (2 pages)		List of Maps has been updated.
15					No Change
16					No Change
15	List of Maps pages xi and xii (2 pages)		List of Maps pages xi and xii (2 pages)		List of Maps has been updated.
15	Rule 4, Page 19 (1 page)		Rule 4, Page 19 (1 page)		Map citiations have been inserted.
17					No Change
18A					No Change
18B					No Change
18C					No Change
18D					No Change
19					No Change
20					No Change
20					No Change

CHANGE SHEET FOR PERMIT REVISIONS, TECHNICAL REVISION, AND MINOR REVISIONS

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Date: **June 4, 2025**
Revision Description: **MR-264 Midterm Review**

Volume Number	Page, Map or other Permit Entry to be REMOVED		Page, Map or other Permit Entry to be ADDED		Description of Change
21	List of Maps (2 pages)		List of Maps (2 pages)		List of Maps has been updated.
22	List of Maps (2 pages)		List of Maps (2 pages)		List of Maps has been updated.

LIST OF MAPS

The approximate underground mining limits are shown on the Existing Structures - South Map (Map 22).

Existing Land Use and Land Use Classifications Under Local Law

The Moffat County Commissioners, in conjunction with the Moffat County Planning Commission, have designated the lands within the permit and adjacent area for uses of agricultural (rangeland). The land use in the permit area is rangeland used mainly for domestic livestock and wildlife use; no commercial forestry work has ever been conducted within the permit area. Colowyo currently holds special use permits from both Moffat County and Rio Blanco County to conduct mining and reclamation activities.

2.04.4 Cultural and Historical Resource Information

The objectives of this section is to meet the requirements of Rule 2.04.4 et seq by furnishing Cultural and Historic Resource Information for the proposed permit revision area in sufficient detail to determine the presence of cultural and historic resources listed or eligible for listing on the National Register of Historic Places and known significant archaeological sites.

Archaeological Resources

During the summer of 1975, an intensive cultural resource survey and literature search was conducted under the direction of Dr. Joseph Lischka from the University of Colorado. Despite the abundant faunal and floral food resources available on the mine site, only two prehistoric sites (5MF401 and 404) were found within the boundaries of the mine site, while one site (5MF402) was discovered just outside the south boundary of the mine site as shown on the Historical and Archaeological Site Map (Map 16B). Both 5MF401 and 5MF402 are located on a terrace edge about half way down the canyon. This pattern of site distribution suggests that lack of water was of primary importance in listing more substantial occupation of the area. The principal aboriginal activities in the mine site area probably consisted of relatively short term visits by hunting parties. All three sites contained surface finds of lithic materials (worked stone) including several chert flakes, projectile points, and knife tips.

The survey work of Dr. Lischka is found in Exhibit 5, Archaeological Information.

The Northwest Colorado Coal Environmental Impact Statement (EIS) states on page GIII-5:

"Given the nature of these archaeological values (see Exhibit 5), projected impacts would not be significant locally or regionally".

Extensive archaeological investigations have been conducted along the route of Colowyo's railspur, and a final report for this work was prepared by the Laboratory of Public Archeology at Colorado State University.

The report covers the cultural resources inventory of a potential coal mining project by Consolidation Coal Company in the Danforth Hills south of Colowyo. The inventory covered much of the area included in the 1991 permit area expansion. A copy of the pertinent sections of the report can be found in Exhibit 5. Additional sites noted in this report are included on Map 16B, Historical and Archeological sites.

In October, 1988, the report titled "Cultural Resource Inventory of a Proposed Lease Addition and A-Conveyor Corridor at the Colowyo Mine, Moffat County, Colorado" by Paul R. Nickens and Associates was completed. This report covered the remainder of the 1991 permit area expansion. A copy of the report is included in Exhibit 5.

In September 1991, a report titled "An Archaeological Evaluation of 5MF402, Moffat County, Colorado, September 1991" was completed by Alpine Archaeological Consultants, Inc. A copy of the report is included in Exhibit 5. 5MF402 had been recommended for testing by the 1975 Lischka report. No significant findings were noted.

On October 2, 1996 Metcalf Archaeological Consultants, Inc. conducted additional cultural resources inventory within the Permit area for an exploration drilling program and possible conveyor system. A copy of the report is included in Exhibit 5.

2.04.5 General Description of Hydrology and Geology

This application provides a detailed description and maps, as necessary, of geology, hydrology, and ground and surface water quality and quantity of all lands within the permit area, the adjacent area, and the general area, as defined in Rule 1.04 of the Coal Regulations of the Colorado Mined Land Reclamation Board.

Since 1973, detailed data and information have been collected, compiled and analyzed by Colowyo on the geology and hydrology of all lands within the permit area, the adjacent area and the general area. This information is a result of high density exploration drilling, field investigations, geologic mapping, aerial photography, topographic mapping, data from several investigations by independent consultants, and monitoring data from on-site and the Craig and Meeker climatological stations.

Colowyo has maintained close cooperation with many government agencies and has invited and permitted numerous agencies to conduct investigations and experiments within and adjacent to the mining area. Such investigations and experiments have been conducted by the Water Resources and the Conservation Divisions of the U.S. Geological Survey, Colorado State University, Bureau of Reclamation and the Bureau of Land Management. A complete list of all government agencies and consultants is provided in the discussion under Section 2.03.3.

The "general area" with respect to hydrology is defined by Rule 1.04, as that topographic basin that surrounds the area to be mined during the life of the operation. This area includes several watersheds and a groundwater zone, which will allow assessment of the probable cumulative impacts of the quantity and quality of the surface and groundwater system.

forming unit in the Danforth Hills, has been called the "White Rock" because of its characteristic exposures.

The deposition of the Trout Creek Sandstone marked a major regression of the Late Cretaceous seaway over a large region.

The resulting clean, well sorted blanket sand formed by this migrating beach and barrier island complex is an aquifer of regional extent in Northwest Colorado. Under the area to be mined within the Colowyo Permit area, the Trout Creek sandstone underlies the lowest surface recoverable seam to be mined by 800 feet. Considering the nature of the intervening strata which is comprised of primarily claystone, shales, and siltstones; it is very doubtful the Colowyo operation will impact the Trout Creek sandstone.

The Iles Formation in the permit area is estimated to be 1,375 feet thick. The Iles Formation forms most of the cliffs that surround the Axial Basin. The Iles Formation lies approximately 1,700 feet beneath the actual mining area; however, minor folds or faults in the regional trend bring the formation nearer the surface.

Williams Fork Formation - The Williams Fork Formation consists of alternating beds of sandstone, sandy shale and coal. It is distinguished from the Iles Formation by its thick zones of brick red sandstone and shale, which have been colored from adjacent naturally-burning coal beds, a common occurrence in the Axial area. The coal beds in the formation are uniformly distributed in the vicinity of the mine but generally vary greatly within the regional extent of the unit. The stratigraphic thickness of the Williams Fork Formation in the permit area has been estimated to be about 1,600 feet; its degree of areal extent in the Axial Basin is similar to that of the Iles Formation. The Williams Fork Formation is the predominant coal-bearing formation in the Mesa Verde Group. Mesa Verde coals associated with the Fairfield Group, the coal-bearing zone above the Trout Creek Sandstone, rank in quality about midway between bituminous and sub-bituminous. Although the Twenty Mile Sandstone Member is a regional aquifer noted within the Williams Fork Formation in the Craig, Hayden and Steamboat Springs area, a facies change within the Williams Fork Formation has eliminated the Twenty Mile Sandstone in the Danforth Hills Area.

Structure

The area around the mine is dominated by the Axial Basin Uplift, an anticline, or arch, which is a southeastward extension of the larger Uinta Mountain Arch. The Axial Basin anticline is an asymmetrical fold, the axis of which trends north 60° west, with strata dipping (inclining) steeper on the south side of the axis than on the north. The south flank of the anticline has several secondary folds trending subparallel and at approximate right angles to the main anticlinal axis. In general, the rocks of the broad anticline have not been stressed sufficiently to cause them to break severely, but a few discontinuous normal faults trending primarily parallel to the anticlinal axis are found in the area.

The structure of the permit area is geologically simple. The axis of the Collom syncline, a downward fold, passes through the permit area as shown on the Geology Map (Map 7A). Bedding orientation, as measured on surface outcrops, generally has a strike of N 70° W and is characterized

by dips from nearly horizontal to as much as 20° to the north. As the mine advances southward, the structure is influenced by the Elkhorn Syncline and a change in attitude of the structure occurs resulting in an eastward dip and nearly north-south strike. Local deviations in this general trend are the result of discontinuous minor folds resulting from differential compaction.

During geologic mapping, there was no evidence of faulting in the rock units within the mining area; however, some linear features that may be fault controlled were observed on aerial photographs of the property. Such lineations may also be related to joints (fractures without appreciable movement) in the rock. Three major joint trends that generally coincide with these lineations were observed within the permit area. These are nearly vertical or vertical and strike approximately north 70° west, north 45° west, and north 30° east. In surface exposures, sandstone exhibits joints more readily than highly oxidized and weathered coal beds do; however, both have undergone similar stresses and have developed similar readjustment features that are apparent in the subsurface.

The site specific stratigraphy is described in Exhibit 6, Geological Information, and is graphically shown on the Geologic Cross Section A-A' (Map 8) and the Geologic Cross Section B-B' (Map 9). Three additional geologic cross sections (C-C', D-D', and E-E') that show the coal seam geometry and pit limits are provided in Map 9A. The topographic locations of the geological cross sections are found on the Geology Map (Map 7A).

The coal seams to be mined at the Colowyo operation are the "Y3","Y2","X","A2","A3","B1", "C", "D", "E", and "F" coal seams. These coal seams are found in the Williams Fork Formation and lie within a sequence of sedimentary rocks characterized by sandstones, claystones, siltstones, shales and carbonous and silty shales. This sedimentary sequence is typical of cyclothems deposited along the linear clastic shoreline located at the western edge of an epicontinental seaway which was located in interior western North America during most of Late Cretaceous time.

The analyses of the various coal seams to be mined are shown in Table 2.04.6-1, Typical Coal Seam Analyses.

Exploration test borings have been conducted within the permit area and have been utilized for the following purposes:

Location of Subsurface Water - Since the holes were generally dry, the primary circulation medium for most exploration bore holes drilled within the mine plan area was either compressed air or drilling mud when fractures were encountered. Several drill holes throughout the area encountered minor amounts of ground water; however, all of the data obtained to date by Colowyo and the USGS have indicated that groundwater occurrences in the are not continuous but rather are a series of perched systems. Information on groundwater occurrence is set forth under Section 2.04.7.

Drill Hole Logs - Exhibit 6, Geological Information, contains numerous lithologic logs which show and describe the lithologic characteristics and thickness of each strata and each coal seam. The location of each drill hole presented in Exhibit 6, Geological Information, is shown on the Geology Map (Map 7A).

available in the Annual Reclamation and Hydrology Reports submitted to the CDRMS for the period 1983 through the present.

Permit Area

Surface water in the mine area is limited to Streeter Gulch, East Taylor Gulch, East Taylor Pond, West Pit Pond, Warehouse Pond and sediment sump, Work Area Pond, three evaporative sewage ponds, Section 16 Pond, Prospect Pond, West Taylor Pond, Upper and Lower Section 3 Ponds, Section 15 Pond, and Section 28 Pond. Three additional detention ponds are located at the Loadout Area. All ponds, with the exception of the warehouse/sewage pond complex, are sedimentation ponds and respond only to runoff related events. The ponds are designed to treat the 10-year, 24-hour precipitation event, or fully contain the 100-year, 24-hour precipitation event. Additionally, water flowing off of the reclaimed lands is retained by contour furrows, revegetated slopes and a number of small depressions/stock ponds. A number of permanent drainage channels and temporary drainage channels will also be incorporated into the final reclaimed landscape to route water efficiently to sediment ponds. Refer to Map 12 and Map 12A and Exhibit 7 for the location and information about these various pond, depressions and ditch structures.

Surface Water Quality

General Area

Surface water quantity in the general area is variable and inconsistent from drainage to drainage. Drainages in the general area have not received the attention that the drainages adjacent to and within the permit area have received because there is no hydrologic connection between these areas. Flow estimates and water balance calculations for these areas have not been examined because they will not be disturbed by the Colowyo Mine.

Permit Area

The drainages that have been the most intensively studied in and adjacent to the mine area include Taylor Creek, Goodspring Creek and Wilson Creek. Continuous flow recorders have been maintained on Taylor Creek and Wilson Creek by the USGS since 1974. A continuous recorder was operated on Goodspring Creek from 1974 to 1978. The flow information resulting from these gages is presented in Table 2.04.7-8.

These data reflect the highly variable nature of surface flows in the drainages. Taylor Creek, the intermittent stream, had mean monthly flows of 0.0 cubic feet per second (cfs) for much of the period of record. Mean flows greater than 0.0 cfs were extremely low and reached a peak of 2.80 cfs in May 1980 reflecting the high snowmelt generated runoff. The maximum and minimum monthly flows also included for Taylor Creek give a further insight into its dependence on snowmelt and rainstorm runoff. This information supports the contention of very limited groundwater seepage to sustain flows near the mining area. The maximum daily flow value of 18.00 cfs in February, 1980 was a result of high snowmelt runoff and rainfall on a melting snowpack. Minimum flows of 0.0 cfs again reflect the highly sporadic nature and intermittency of this stream.

2.04.10 Vegetation Information

Six vegetation communities and a small amount of cropland exist within the Colowyo permit boundary. The vegetation communities are sagebrush, mountain shrub, juniper, aspen woodland, riparian and grassland.

The approximate extent of the vegetation communities throughout the permit area is shown on Regional Vegetation Map (Map 4). The vegetation communities on the area to be disturbed by' mining are mapped in more detail on the Vegetation Map (Map 4). The amount of area comprising each type to be mined is found in Table 2.04.10-1, Vegetation Community Distribution on Areas to be Mined.

During the summer of 1980, an intensive vegetation study was completed covering the initial permit area to be disturbed by mining. The area to be mined consists, primarily, of the sagebrush and mountain shrub communities with small inclusions of aspen and grass.

During the summer of 1988 vegetation study was completed for the additional areas to be added to the permit. The additional areas to be mined consisted, primarily, of the sagebrush, mountain shrub and aspen communities.

Vegetative mapping was accomplished utilizing information from previous vegetation surveys in the area, the 1976 VTN Colorado Inc. study, color aerial photography and on the ground observations. Sampling locations were selected by using 300 foot by 300 foot numbered grid system covering the entire area to be sampled. Individual transect sites were sampled at random using the numbers from the grid system for each vegetation type. At each selected point, a 100 foot transect was laid out oriented in a randomly selected compass direction. Five random points along each transect were then selected for the quantitative vegetation sampling.

Herbaceous cover data was collected using a 10 point frame at each of the five points along the transect. The first hit by each pin on the herbaceous vegetation was then recorded by species.

Production samples were taken by clipping a 30cm x 60cm plot at each of the same five points along the transect. The clipped herbaceous vegetation was separated into grasses and forbs. There were no measurable amounts of annuals sampled. The samples were air dried then weighed. 60cm x 60cm plots were used for the 1988 data and samples were oven dried prior to weighing.

Woody plant density data was obtained by recording the numbers of woody plants along a three foot wide belt the entire 100 foot length of each transect.

Species composition and cover for the initial 1980 data is shown in Table 2.04.10-2, 1980 Herbaceous Cover by Species. The 1988 data is summarized in Table 2.04.10-3, 1988 Herbaceous Cover by Species. Summaries of the data can be found on Table 2.04.10-4, Summary of Herbaceous Cover.

The report provides an inventory of site specific and regional wildlife resources of the Danforth 1 and 3 Federal Coal Leases and vicinity and was complete April 1984 through June 1985. Existing background information was complemented by a year-long program of site-specific field studies.

Although the focus of the study is of a much broader regional scale than necessary for areas to be mined by Colowyo, it offers very valuable information to update the original baseline information in the initial Colowyo permit. In most cases the report serves to reconfirm many of the predictions initially made by Colowyo regarding the impacts of mining to local wildlife populations.

Colowyo has made every effort to coordinate all studies, management techniques, and habitat improvement programs with the State and Federal agencies having responsibility for managing wildlife habitat. Several meetings were held with USFWS and CPW personnel during 1979 and 1980 to discuss any additional resource information that is available and also to assess the management techniques employed by Colowyo. CPW personnel were contacted November, 1990 regarding any significant updates on their Wildlife Value Maps. Map 14, (now Maps 13B and 15B) was updated and reflects these changes.

The following wildlife resource information has been developed from five years of observations, site specific analysis, existing literature, contracts with wildlife biologists at other mines in northwest Colowyo, and numerous contacts with State and Federal Wildlife officials. Most of the following information remains virtually unchanged as submitted initially in the First Colowyo Permit Application. Notations are made where necessary to refer the reader to substantially updated information in the CDM November, 1985 report.

Wildlife Habitat Use Study

Colowyo initiated a revegetation and wildlife habitat use study in 1974 to determine the feasibility and techniques of revegetating with native shrub revegetation adapted to the mine site. The study consisted of two separate but closely coordinated areas. The main objective of the revegetation test plot study was to determine the most cost effective and successful methods of establishing mature shrubs. The revegetation test plot study is set forth in Exhibit 10, Vegetation Information. The wildlife habitat use study was designed to determine the condition, trends, and seasonal use characteristics within the anticipated areas of disturbance.

Large Mammals

The wildlife habitat use study was primarily oriented towards evaluating the use of the mine site and surrounding area by big game, i.e., deer and elk. The study which was conducted by VTN, consisted of aerial and ground observations, browse utilization studies, and pellet group transects. Specifically the studies were directed towards providing the following information:

(1) Seasonal habitat use patterns by deer, elk, and cattle and competition for browse between these species.

(2) Condition of range and browse and trends in the habitat carrying capacity (i.e., increasing or decreasing).

(3) Interspecific differences in utilization of browse species and intraspecific differences in utilization under different conditions at various sites.

(4) Impacts of mining and habitat management measures to maintain total browse availability.

The techniques used to provide this information included intensive and extensive browse utilization transects and pellet group plot counts.

Methodology

Eight intensive browse transects were established in fall 1974, and two extensive browse transects were established in spring 1975. Three additional extensive transects were run in 1976. Both intensive and extensive browse transects were used also as pellet group transects in addition to the pellet group plot transects established in the habitat improvement areas in summer 1975 and 1976.

Each intensive transect was comprised of ten stations along a 1000 ft. transect line. Each station consisted of a plant of the species which the transect was sampling. A major stem of that plant with 10 to 20 young shoots was designated for measurement and identified by a metal tag. All shoots above the metal tag were measured in centimeters and converted to inches. Measurements were made in the fall (October) after the growing season had ended, but before the deer and elk moved into the range, and again in the spring (late April - early May) after the deer and elk moved off the range but prior to the start of the growing season.

Sampling consisted of measuring and recording the length of all the current year's growth above the metal tag on the designated stem in the fall. The same shoot (stem) was measured again in the spring. By comparing the fall and subsequent spring measurement the amount of growth consumed during the winter was determined, expressed as percent utilization. comparison of fall measurements and winter utilization values over a period of years indicate the average amount of annual growth and use, respectively, and the trends (increase or decrease) in both parameters.

Data from the intensive browse transects are shown in Table 2.04.11-1, Intensive Browse Transects.

Extensive browse transects were placed in known high-use areas on the site to supplement the intensive transect data on deer and elk winter use. By sampling the known high-use areas over a number of years, the browse utilization in these key wintering areas could be more accurately estimated. Each extensive transect consisted of 50 stations. Since these were randomly selected each spring, the same plants were usually not evaluated from year to year.

Data from the extensive browse transects are set forth in Table 2.04.11-2, Extensive Browse Transects.

The investigator would walk ten paces, select the plant nearest his left or right foot and determine: first the condition of the plant (vigorous down to decadent) and second the amount of the current available growth (estimated) has been utilized to the nearest 10%. After 50 shrubs have been evaluated, the average percent utilization of each recorded species is calculated.

The pellet group studies were conducted to determine the average daily use of browse species by season (expressed as days use per acre) and the percentage breakdown of utilization by deer, elk and cattle. Pellet group counts were conducted at each station on the intensive transects on lines paralleling the extensive transects, and in addition at two separate locations in the habitat improvement areas. There were ten pellet group plots or stations in each intensive transect. The pellet group plot transects consisted of 25 stations approximately 100 feet apart. Each pellet group plot was a circular area with an 11-foot 9-inch radius.

The pellet group sampling consisted of counting and recording the number of pellet groups of deer, elk, or cattle within the plot each spring and fall. After they were counted, the pellet groups were swept off the plot to provide a clear base for the subsequent count.

Information on pellet counts for deer, elk, and cattle in set forth in Table 2.04.11-3, Pellet Group Plot Transects For Deer, Elk and Cattle; Table 2.04.11-4, Pellet Group Plot Transects For Deer, Elk and Cattle - Habitat Improvement Areas; and Table 2.04.11-5, Pellet Group Plots - Intensive Transects.

Observations through six winters have indicated there are more deer on the site when snows are minimal and, therefore, movement has not been limited. As the snows become increasingly deeper and conditions more severe, the deer either move to the sagebrush-covered south and southeast-facing exposures above Highway 13 adjacent to the mine site and Streeter Mountain, or they move out of the study area.

The elk normally remain in areas from upper Taylor Creek to several areas in the permit area moving further downslope into Axial Basin only when snows become deep and foraging becomes difficult. However, a few scattered elk are normally observed within the study permit area regardless of snow depth.

Data collected to date indicate that both deer and elk herds using the site and surrounding areas are in good condition, with a young age structure and good reproduction. This is especially evident in the fall, when high numbers of young bucks and bulls have been observed.

Initial observations indicated the presence of suitable, traditional elk habitat located adjacent to the southwest of the Colowyo mine site in an area dominated by aspen and serviceberry as shown on Map 13B Sheet 1. Information presented in the CDM report, as well as CPW information indicates this limited area located in the upper reaches of Taylor Creek is on the fringe of a much larger elk calving, nursery and summer range. The area is located in the west fork of Goodspring Creek, east fork of Wilson Creek and the Hole-in-the-Wall Gulch. Based on the data presented in the CDM report for the 1983 and 1984 calving/rearing seasons, this adjacent area likely provides habitat requirements for less than 0.1 percent of the White River herd.

large expanses of south and east-facing sagebrush-covered slopes where there is less snow cover throughout the winter.

Traditionally, the most extensive use on the site has been during the summer and fall months by cattle, deer, and elk. Over-grazing at times by cattle in conjunction with high numbers of deer and elk have resulted in reduced carrying capacity and a general decline in the condition of the range over several years.

The reduced carrying capacity resulting from the overuse of the range created an increase of pressure on the more healthy plants. Certain more desirable species, such as bitterbrush, were overutilized throughout the year and offered little or no forage during the critical winter months. In most instances, 8 to 10 inches of snow totally covered the plants.

Colowyo initiated range management and habitat improvement programs, and other mitigation measures in 1976 to offset the expected impacts of mining. A detailed discussion of the wildlife mitigation plans is set forth in Section 2.05.6.

Aerial Counts (See CDM report for update information)

Initial aerial transects were flown monthly throughout the winters of 1974-1975 and 1975-1976, and one flight in 1977 to count elk and deer as well as coyotes, bobcats, raptors, etc. The counts were made to establish population trends, activity patterns, and estimate numbers of animals wintering on the site. The areas were flown on an east-west pattern. Flight lines were normally about one-half mile apart, which allowed observations to be made a quarter of a mile on either side of the aircraft. All observations were recorded on standard forms and included numbers of animals location, habitat type, and when possible sex and age.

During the two winters of observations (1974-1975 and 1975-1976), deer and elk numbers fluctuated from 43 to 101 and from 20 to 119, respectively. Conclusions that can be drawn from the data are as follows: (1) the number of animals observed is greatly affected by counting conditions; (2) the severity of winter affect the total number of animals observed within the area; (3) certain areas are utilized more than others; and (4) deep snows have a greater impact on deer numbers and areas of use than on elk.

As discussed earlier in this section, use of the winter range by deer and elk is directly related to weather conditions and snow depth.

Information from the aerial surveys are shown in Table 2.04.11-6, Aerial Game Counts.

Calving and Fawning Areas

Counts were made each spring in late May and early June (peak of calving and fawning activities) of 1974 and 1975 and again in 1980. The study site was traversed by vehicle and on foot to identify the more desirable areas as shown by the number of females with young. The counts were made early in the morning or late evening. Binoculars or a spotting scope are used to observe the animals

at considerable distance. This technique helps to minimize undesirable or unnecessary flushing of the animals. By not driving the animals into the heavy cover, more accurate counts can be made.

By establishing a baseline for numbers of calves and fawns born each spring, average reproductive rates, and identification of desirable calving and fawning locations, potential or actual impacts can be evaluated. Appropriate mitigation measures (as discussed in Section 2.05.6) have been implemented.

The deer and elk observations are summarized in Table 2.04.11-7, Sex and Age Ratios.

1980 Observations

Observations were conducted along a 15.6 mile road transect during the summer of 1980. The transect was divided into eight segments to more accurately, determine distribution of animals. The counts were made in early morning and late evening during June through August. All species observed along the transect were noted, together with location and vegetation type. Information on sex, age, condition, etc. were also recorded. The information will be used to compare calving and fawning activity, brood site, etc. in the spring with population numbers, sex and age ratios, etc. through the end of the summer to determine the condition of the potential breeding populations and what impacts, if any, have occurred. Winter aerial counts will also be used to supplement the summer observations. The results of the observations and location of the transect are summarized in Table 2.04.11-8, Wildlife Transect Observations.

Rodent Studies

The purpose of the rodent studies was to determine densities of rodents within the various habitat types on the site. From the data collected, the diversity, density, and the potential influence by rodents on the revegetation program were evaluated.

Small mammals (rodents) were sampled using two methods.' First, two grids each 120 by 135 (72 traps) were set on two different locations on the site. Grid No. l was located in sagebrush-grass habitat type. The conditions at this site were conclusive to a large rodent population. Grid No. 2 was located. near -the revegetation study plot, the sagebrush-grass-serviceberry type of less quality. The grids were trapped for five consecutive night using oatmeal as bait in the traps. Rodents trapped were eartagged using Monell No. 1 tags for positive identification and released. Records of the species, age conditions, sex, trap location and capture - recapture were kept. From these data, species diversity and densities were calculated. This information is set forth in Exhibit 11, Wildlife Information.

To supplement data collected from the grids, a 24 station trap transect was located adjacent to each of five browse transects. These transects were trapped for three consecutive nights, each spring and in the fall through the spring of 1976. The transects were designed only to give supplemental data on species diversity and relative abundance within the various habitat types. No absolute numbers or abundance were generated; only an indication of abundance was derived. In addition, 24-station trap transects were located in habitat improvement areas two and three. As with the

other transects, these were trapped for three consecutive nights in the spring of 1976. These transects were conducted to collect data on small mammal response to the removal of cover in the habitat improvement areas.

The rodent trapping grids were sampled during the fall of 1975 and spring of 1976. For the fall of 1975, grid 1 (in sage-grass habitat type) averaged 36.7 rodents/acre, 99% of which were deer mice. Grid 2 (in sage grass -serviceberry habitat type) was in poor condition (shrubs were sprayed in the past to improve grazing) and produced an average of 25 rodents per acre on grid 2, 96+% of the rodents captured were deer mice. During the spring of 1976, grid l produced an average of 25.4 rodents/acre, and grid 2 produced an average of 20 rodents/acre. Trapping success for grids l and 2 were 30% and 23%, respectively.

Total numbers of rodents captured and density per acre were higher in the fall than in the spring. This is a function of post-reproduction versus pre-reproduction numbers.

Data from the trapping transects located adjacent to the browse transects was collected only to determine rodent species diversity within the habitat types. Table 2.04.11-9, Rodent Species/Habitat Type, shows the habitat types and the species captured.

The U.S. Fish and Wildlife Service also conducted a nine day small mammal sampling program in 1975. Five traps were used on a 5-acre grid in a mark-recapture effort for six days. After the 6th day, a transect line (20 stations, 3 traps per station) was used to sample the area for three days and nights. Results of the small mammal sampling are shown in Table 2.04.11-10, USFWS - Small Mammal Transects. Additional information concerning the USFWS sampling program is found in Exhibit 11, Wildlife Information.

Data collected for 1975 and 1976 show that, (1) rodent densities on the site were high compared to those of other areas of the west; (2) total numbers of rodents were affected by condition of the habitat; (3) habitat type also affected the diversity and numbers of rodents; and d(4) rodents were not drastically affected by cover removal of the habitat improvement areas.

Lagomorphs

When the pre-mining wildlife studies began in 1974, Lagomorph numbers were extremely low. The CPW estimated jackrabbit densities at 4.0 animals/square mile and cottontail densities at about 10.0 animals/square mile in 1974. Observations from 1974-1979 showed a stead increase in numbers with a peak probably occurring in 1979. Cyclic population fluctuations of these two species is a common occurrence which makes it difficult to accurately estimate numbers.

Relative abundance, presence, and probably habitat of Lagomorphs are set forth in Table 2.04.11-11, Wildlife Species that Occur or are Likely to Occur in the Colowyo Permit Area.

Avifauna

Species of birds that occur or are likely to occur in the permit area and the habitat where the species is likely to occur are listed in Table 2.04.11-11, Wildlife Species That Occur Or Are Likely To Occur In The Colowyo Permit Area. All species that were observed during field surveys are noted on the list.

Raptors

Surveys were conducted by VTN personnel during baseline data collection in 1974-1977, and again by Colowyo personnel during the spring and summer of 1980. The most common raptors observed on the permit area from 1974 to the present include Red-tail Hawks, Marsh Hawks, American Kestrels, Great Horned Owls, Golden Eagles, Prairie Falcons, and Turkey Vultures, all of which represent year-round residents with the exception of the turkey vulture. Other raptors that have been observed include the Swainson's Hawk, Cooper's Hawk, Rough Legged Hawk, and Perigrine Falcon.

Raptor nests located during field surveys are recorded Map 15B Sheet 1. Red-trailed hawks are known to have nested on the northern side of the Streeter Draw lease in 1975 and 1978. A pair of Red-tailed Hawks nested on a power pole in Taylor Creek in 1980. One Fledgling was observed. A pair of Cooper's Hawks has been observed at a possible nesting site during 1979 and 1980. The location of two Golden Eagle nesting complexes were obtained from the CPW. The nests are located on sandstone cliffs adjacent to State Highway #13 as shown on the Map 15B Sheet 1.

The area to be mined does not provide suitable nesting habitat for most of the species mentioned. Most of the preferable nesting habitat such as sandstone cliffs, rock outcropping, and trees are found to the north in Axial Basin, to the west along Taylor and Wilson Creeks, and to the east along Good Spring Creek. To date no raptor nests have been found in the area to be mined, although these areas and the reseeded areas provide excellent hunting areas for raptors.

Raptor species that occur or are likely to occur in the permit area are listed in Table 2.04.11-11, Wildlife Species that Occur Or Are Likely To Occur In The Colowyo Permit Area.

Upland Game Birds

Observations of sage grouse have been common in the vicinity of the mine for the last several years; the area is used heavily for nesting and brood rearing from the nesting season through the fall months. No strutting grounds have been found on or near the area to be mined, but information contained in a July 23, 1980 letter rand map from the CPW noted that the general area immediately north of the Colowyo permit area and west of Milk Creek is a very important sage grouse area. The area supports a strutting nesting complex, and there is a large sage grouse brood concentration area north of the complex. During the summer of 1975, brood size averaged 4.3 birds on the mine site. Observations during the summer of 1980 averaged 3.7 birds.

Observations have been made of sage grouse use on the mine plan area through seven winters beginning with the winter of 1974-1975. It has been commonly observed in mountain shrub communities in Northwest Colorado and in other areas that sage grouse move out of these areas in winter due to high snow depths. Observations at Colowyo support these generally accepted sage

grouse use patterns. The winters of 1976-1977 and 1980-1981 were extremely dry and mild with very limited snow cover. Sage grouse were observed on the mine plan area during the entire winter. The other five winters beginning in 1974 were all normal or above normal winters with snow depths ranging from 75-100 inches. No sage grouse use was observed during the winter months of these years. Snow buildup from drifting snow around oak, serviceberry, chokecherry, and larger sage effectively limits use by most species. Use of the mine plan area as a winter range by deer, elk, or sage grouse is directly in response to the type of winter we have on the site.

A discussion of potential impacts on sage grouse is provided under Section 2.05.6(2).

Sharp-tailed grouse have rarely been observed south of the permit area, but have not been known to nest in the area.

Blue grouse also utilize the area for nesting, but the population is much smaller than the sage grouse population. Brood size averaged 4.8 birds in 1975. Observations during the summer of 1980 showed an average brood size of 3.6 birds.

Morning doves are occasionally observed during the summer months in the mine vicinity; however, the infrequent observations indicate a fairly low population.

Waterfowl

A few species of ducks such as the Mallard and Green-winged teal are occasionally observed on the stock ponds which are scattered around the mine site; however, due to lack of adequate nesting cover it is unlikely that any nesting occurs. Several species of ducks, geese, and shorebirds have been- observed on the Wilson Reservoir which is located at the extreme northern end of the permit area adjacent to State Highway #13. Most of the waterfowl observations have been made at the Wilson Reservoir and are listed in Table 2.04.11-11, Wildlife Species That Occur Or Are Likely To Occur In The Colowyo Permit Area.

Non-Game Birds

A large variety of birds have been observed on the mine site. Most species are migrants that either nest on or near the site during the summer months, or are observed as they pass through the area. The relative abundance of species that could possibly occur on the site and those that have definitely been observed are listed in Table 2.04.11-11, Wildlife Species That Occur Or Are Likely To Occur In The Colowyo Permit Area.

The U.S. Fish and Wildlife Service conducted a seven day breeding bird sampling program on a 40-acre plot on the Colowyo mine site in 1975. The number of birds, by species, that were spot mapped in the various sampling periods is set forth in Table 2.04.11-12, USFWS - Bird Transects. Table 2.04.11-13, USFWS - Breeding Bird Transects, shows the best approximation of number of breeding birds for the Colowyo site and three other areas sampled in northwest Colorado for the seven sampling periods. Additional information and plot location are included in Exhibit 11, Wildlife Information.

Reptiles and Amphibians

The permit and adjacent areas contain rock outcropping, rock ledges, etc. which provide preferred habitat for many of the species listed in Table 2.04.11-11, Wildlife Species That Occur Or Are Likely To Occur On The Colowyo Permit Area. Although no specific population or habitat information has been collected, several species including the northern sagebrush lizard and Great Basin Gopher Snake, and the Prairie Rattlesnake are commonly observed.

Aquatic Biology

Colowyo's permit area contains portions of Good Spring Creek along the eastern edge of the permit boundary. The CPW has classified Good Spring Creek as a non-fishery stream, although it has been assumed that species such as Black Bullheads, Creek Chubs, Fannelmouth and White Suckers, Flathead Minnows, and Red Shiners are likely to be present. The Wilson reservoir is located in the extreme northeast corner of the permit area adjacent to State Highway #13. The reservoir has been stocked regularly in the past with rainbow trout by the CPW and probably contains about 75% of that species. Other species in the reservoir are Black Bullheads, Sunfish, Yellow Perch, Channel Catfish, Crappie, and Largemouth Bass. Good Spring Creek and the Wilson Reservoir will not be disturbed by the mining operation; therefore, no analysis on the potential fisheries population or benthic fauna has been done.

Threatened and Endangered Species

State or federally listed threatened or endangered animal species are known to rarely utilize the habitats present on the permit area; it is unlikely that any impact will occur with respect to those threatened and endangered species which are known to occur on the region.

VTN biologists observed a single Perigrine Falcon hunting on the mine site during summer field work in 1974 and 1975. There have been no observations since 1975, and it is most likely that the observations occurred during migration.

Bald Eagles are frequently observed along the White and Yampa Rivers during the winter months and may rarely be found on the mine site. During the winter of 2005 a pair of Bald Eagles where observed hunting within the permit boundary and were reported in writing to the Colorado Division of Reclamation, Mining and Safety. Please refer to Volume 4, Exhibit 11, Letter dated March 8, 2005 for documentation.

Golden Eagles are known to occasionally hunt on the mine site but are not listed as threatened or endangered. However, they are included under the Bald Eagle Protection Act which basically gives the Golden Eagle the same protection as the Bald Eagle. Golden Eagle nests in the area have been identified by the CPW and are shown Map 15B Sheet 1. Correspondence from the CPW concerning the Golden Eagles is set forth in Exhibit 11, July 23, 1980 letter from Bill Clark of CPW to Colowyo concerning wildlife on the Colowyo mine and adjacent areas.

The permit does not provide suitable nesting habitat for raptor species, except for the cliffs along Good Spring Creek and the south side of Streeter Draw. Raptors are known to occasionally hunt on the site or migrate through the area. The primary impact for raptor species will be loss of hunting habitat until mined areas have been reseeded, but experience has indicated that the Post underground and current surface mining operations have had little negative effect on cliff nesting success especially for the Golden Eagle.

During the 1996 Permit renewal process the Division requested an up-to-date consideration of the latest (August 21, 1996) USFWS list of federal threatened and endangered wildlife species. In particular, the Southwestern willow flycatcher, the Mexican spotted owl, the Mountain plover and the Boreal toad appeared as recently listed T&E species. Subsequent discussions with local BLM officials confirmed that these species would not occur on the Colowyo area. A copy of the BLM correspondence can be found in Exhibit 10 - Vegetation Information.

Impact of Mining Operations on Wildlife Resources Within the Permit Area

Initial wildlife studies beginning in 1974, indicated that prior to mining the following conclusions could be made: (1) some browse species continually receive more use than others; (2) use of browse is both a function of desirability and availability; (3) the general condition of the browse remains poor overall but is steadily being improved by range management practices; (4) carrying capacity is also below the potential for the site, but is steadily increasing as habitat improvement areas accumulate; (5) poor range management practices have occurred in the past; and (6) the study area is utilized on a year-around basis, depending on snow depth with highest use during spring and fall.

Before the startup of mining operations at Colowyo, the potential wildlife impacts predicted in environmental work included the displacement of wildlife from large areas around mine sites; disruption of migration routes; disruption of calving and fawning area with untold negative impacts on populations, habitats lost for long periods of time, etc.

Observations at Colowyo, and at several other mines in northwest Colorado over the last five years, have shown that many of these potential impacts have not materialized. It has become very evident that wildlife are a lot more adaptable than previously predicted in baseline studies. Numerous healthy populations of wildlife, i.e., deer, elk, sage grouse, and raptors, are commonly observed on the mine site and on areas immediately adjacent to the mine. Other than loss of habitat, which had been mitigated for by offsite habitat improvement (Sec. 2.05.6), and successful reclamation efforts, the effect on local deer and elk herds has proven minimal. There has been no evidence that any of the wildlife populations have been adversely affected by the mining activity. None of the species has shown signs of altering seasonal use patterns or in any way avoiding the mining operations. Observations during the last five years at Colowyo confirmed by similar observations at several other mines in northwest Colorado tend to contradict earlier expected impacts on wildlife. This is especially true during the fall months when hunting puts pressures on the local elk and deer herds. The Colowyo permit area has proven to be more of a wildlife preserve. Where elk and deer number in the hundreds adjacent to the mining operations as they feed and rest undisturbed.

Elk and deer are routinely observed foraging on the now extensive reclaimed areas as well. It is well accepted in northwest Colorado that extensive acres of reclaimed grasslands on reclaimed mined lands and CRP cropland serve as "magnets" for elk and deer populations. During the spring greenup of grasses and forbs these reclaimed areas are also providing valuable spring rangeland for the local wintering deer and elk herds. It is not uncommon to see hundreds of elk and deer grazing on the Colowyo reclamation areas early in the spring while snow is still covering adjacent native rangelands.

In summary, the preponderance of evidence provides little doubt that activities associated with the Colowyo mine have in fact proven beneficial to local wildlife populations rather than a detriment.

2.04.12 Prime Farmland Investigation

In order to determine the presence of potential prime farmlands within the permit area, a reconnaissance inspection was conducted to determine if any prime farmland was present in those areas to be disturbed by surface operations or facilities. Results of the investigation indicate that all of the area to be disturbed by surface operations or facilities can be excluded as prime farmland, since the land has not historically been used as cropland. This conclusion is based upon consultation with the local Soil Conservation Service (SCS). Based also on soil-survey information supplied by the Soil Conservation Service, no soil series encountered on the area have been designated as soil mapping units applicable as prime farmland. This conclusion is confirmed by correspondence from Mr. William Lee Hill, the USDA Soil Conservationist for Moffat County, to Colowyo, enclosed as Exhibit 9, Soils information as a December 18, 1980 letter from Mr. William Lee Hill of SCS to Colowyo. The letter states that “No lands in Moffat County have been designated as prime farmland.”

Based upon the soil survey conducted by the U.S. Soil Conservation Service and subsequent interpretation of that survey by the SCS, Colowyo is hereby requesting a negative determination for prime farmland.

2.04.13 Annual Reclamation and Hydrology Report

By March 15 of each year, Colowyo will file an annual reclamation and hydrology report covering the previous calendar year (January 1 through December 31) for all areas under bond. The report will include text, discussion and maps to address the following:

- The name and address of the permittee and permit number;
- Location and number of acres disturbed during the previous year;
- Location and number of acres backfilled and graded during the previous year;
- Location and number of acres topsoiled during previous year;
- The species, location and number of acres of vegetation planted during previous year, including any augmented seeding or cultural practices. Discrete areas planted with specific seed mixes will be indicated, and seed tags, invoices or other comparable documentation will be included;
- Location, number of acres and date of planting for all previously revegetated areas;
- Overbruden Sampling Results;

- Interim Revegetation Monitoring;
- Topsoil Volume Inventory and Overall Balance;
- Post-Mine Drainge Construction Certifications;
- Weed Management;
- Water Quantity Data for the Report Year;
- Water Quality Data for the Report Year;
- A Written Interpretation of the Water Monitoring

the establishment of reclaimed plant communities that meet the designated post mining land use of rangeland, with the subcomponents of grazingland and wildlife habitat. Please see Map 44 and Section 2.05.5 for a detailed description of the post mine land uses at Colowyo.

Areas designated as grazingland for the post mining land use will aim to establish vegetation communities comprised of species primarily selected for palatability and production, with incidental wildlife habitat. The reclamation seed mixes utilized in grazingland targeted areas are designed to establish highly productive stands of native perennial grasses to support grazing and forage, yet the mixes contain forbs and shrubs to also provide additional benefits for incidental wildlife use.

Areas designated for wildlife habitat as the post mining land use will aim to establish a sagebrush steppe vegetation community. The reclamation seed mix utilized in sagebrush steppe targeted areas is designed to encourage sagebrush establishment by adapting the seed mix to reduce perennial grass competition to give sagebrush and forbs an opportunity to establish. Reclamation techniques that will encourage the deposition and entrapment of blowing snow (to increase spring soil moisture) are also employed in sagebrush steppe targeted areas, to provide a competitive advantage to sagebrush over perennial grasses. These techniques include taking advantage of site-specific opportunities for the development of convex and concave surfaces along with the potential development of small berms along the contour and approximately perpendicular to prevailing winds.

The reclamation timetable and associated acreages for the various aspects of the mining operation are provided on Table 2.03-1.

In the South Taylor reclamation areas, geomorphic reclamation techniques will be implemented in the final PMT surface. Geomorphic reclamation techniques are used to design and construct a PMT, which beaks up long continuous slopes with smaller watersheds, adds sinuosity to the post mine permanent channels, and creates a landform that is erosionally stable. Part of the final configuration of the South Taylor geomorphic reclamation PMT surface specifically targets topography to harvest wind and snow for reestablishment of tall shrubs and aspens, which are required for the revegetation success of the South Taylor Pit.

Backfill and Grading Plan

As discussed in detail in Section 2.05.3, the mining method implemented by Colowyo is referred to as open-pit multiple seam/single seam dragline mining. The overburden material from the initial boxcut area was deposited in a permanent valley fill. As mining progresses, overburden material from each successive cut is backfilled into the previously mined out area. This cycle was repeated for the entire mining area. Because an open-pit mining technique is used, the regrading and backfilling of the spoil material is as contemporaneous as possible behind the mined-out area to facilitate proper leveling of the overburden material.

The backfilled mining areas are graded to establish the approximate original contour and to blend in with the undisturbed areas outside the mining limits. Additional information on the backfilling and regrading plan are discussed further in Section 2.05.3 and Section 4.14.

seeded with a mixture previously approved in the permit but no longer used. Future seedings, if necessary, of haul road embankments will be completed with the mixture shown on Table 2.05-7 Mechanical stabilization has consisted of furrowing, chiseling, "cat tracking" and mulch, depending on accessibility to the slopes.

No travel of unauthorized vehicles will be allowed on anything other than established roads. All overburden haulage equipment will be restricted only to appropriate roads.

Colowyo does not plan to cover any of the haul trucks because the roundtrip between the coal crushing facility and the active mining area will be relatively short, and the loaded trucks will be moving slowly. Also, care will be taken by the front-end loader or shovel operators not to overfill any of the haul trucks so as to cause excessive fugitive dust.

Coal Crushing Facility

Coal will be hauled from the various mining areas in haulage trucks to the primary crusher facility as shown on the Existing Structures - South Map (Map 22). Following primary crushing, the coal is hauled to the Gossard Loadout facility, as shown on the Existing Structures - North Map (Map 21).

The coal crushing and conveying operations at the primary crusher and the Gossard Loadout have been equipped with a water spraying system at all coal transfer points. A four-sided enclosure-bas-been installed on the truck dump at the primary crusher to prevent excessive dust emissions. The secondary crusher at the Gossard Loadout has a bag house to control coal dust emissions. A stacking tube with metal doors is also used to minimize coal dust emissions at the 100,000 ton crushed coal stockpile. The air quality control measures at the coal crushing handling and loadout facilities have been approved by the Colorado Department of Health, Air Pollution Control Division.

Colowyo maintains several areas for coal storage near the shop facilities and also near the Gossard Loadout. Inactive storage piles have been sloped and compacted to prevent wind erosion and spontaneous combustion. If coal dust becomes troublesome in the active coal storage piles, a mobile water truck with a high pressure pump and nozzle is available for dust suppression.
No thermal dryers are used in the coal crushing and handling facilities.

Disturbance

Colowyo, in as much as practical, minimizes the area of land disturbed at any one time. Topsoil is removed only to the extent necessary to accommodate the mining operations. Through the mine plan, the rehandling of both topsoil and overburden is kept to a minimum. Reclamation of disturbed areas will commence as contemporaneously as possible.

As necessary, mobile water truck will be assigned to work in topsoil or overburden removal operations to keep any dusty conditions under control. Planting of special windbreak vegetation in the permit area is not planned.

4.02.4 Duration of Maintenance

Colowyo will maintain signs and markers throughout the life of the operation or post new signs and markers as necessary.

4.02.5 Stream Buffer Zone Markers

All major operations near Good Spring Creek have ceased. Stream buffer zone signs have been posted as appropriate. Stream buffer zone signs will also be placed along Taylor Creek and Jubb Creek as deemed appropriate.

4.02.6 Blasting Signs

Colowyo displays signs reading “Blasting Area” along any blasting area that comes within 50 feet of any road within the permit area or within 100 feet of any public road right-of-way. The blast warning and all-clear signals are clearly explained at the main entrance to the permit area from Highway 13/, where the Collom paved haul road crosses Moffat County Road 51, at the entrance to Lower Wilson along Moffat County 51, at the entrance to the Upper West Fork of Good Springs Creek, and at the Jubb Creek entrance on Moffat County Road 32.

4.02.7 Topsoil Markers

Colowyo clearly marks all stockpile topsoil with signs reading “Topsoil.”

4.03 ROADS

The following sections deal with roads defined per Rule 1.04 (111).

4.03.1 Haul Roads

Haul roads at the Colowyo operation will be utilized and maintained to control or minimize erosion, siltation, air and water pollution, and damage to public or-private property. The main Haul Road A for the Colowyo operation is shown on Maps 21 and 25G. The main Haul Road A runs from the pit area (traffic crossover) to the Gossard Loadout; the approximate length of this haul road is four miles. The profile for haul road A is shown on the Haul Road "A" Profile (Map 25).

The Haul Road B runs from State Highway 13 west to where it intersects Haul Road A and is shown on Existing Structures - North Map (Map 21) and Haul Road "B" Profile (Map 25A). The approximate length of the road is 1.4 miles.

The roads used in the actual mining area constantly change as the operation progresses. The “in-pit” roads are maintained by a motor grader and are regularly wetted to minimize dust. Any drainage off the "in-pit" roads will be retained in the pit or diverted to the drainage and sediment control structures located on the Hydrology - South Map (Map 12). The reclamation timeline is shown on Map 29 – Spoil Grading. Reclamation will include backfilling and/or regrading the road embankments and ditches to the approved post mine topography as shown on Map 19 and 19B.

The regraded areas will then have topsoil replaced and be reseeded. All of this disturbed runoff will drain to either a sediment pond or an approved SAE, as appropriate.

Various best management practices are utilized- to minimize air and water pollution. Haul Roads A and B have been paved with asphalt to control air and water pollution, and ditches and culverts exist to control runoff. The haul road A and B outslopes are vegetated to control sediment. Portions of the Haul Road A are located in. the vicinity of segments of Taylor creek that are deeply incised, eroded and unstable. Rock lined energy dissipators are employed to reduce erosion on these-steep banks. Protected ditch runouts to the natural drainage are employed to reduce erosion. Small dugouts are employed as sediment traps. Vegetated areas are utilized as sediment filters. The Haul Road A is under constant routine maintenance to avoid damage to environmental values.

The construction of both haul road segments A and B was completed in 1977; however, Haul Road A was widened in 2018 including an upper and lower ditch for long term stability of the fill materials (please see Exhibit 7 Item 15) . The design for both haul roads had been prepared based on the anticipated volume of traffic and the weight and speed of vehicles to be used. The Colowyo Coal haulage fleet used for transport of coal from the primary crusher to the Gossard Loadout consists of highway trucks, and transport of large mining equipment to and from the Collom Pit.

The haul roads are located on stable terrain to minimize erosion. As shown on the Existing Structures - North Map (Map 21), the haul road A crosses Taylor Creek, and has been maintained according to the requirements of 4.03.1(4). The grade and pitch requirements specified in 4.03.1(3), Design and Construction, are met for both haul roads.

Colowyo will maintain haul roads A and B throughout the life of the mine with repairs including blading, filling of potholes, and replacement of road surface as necessary. Likewise, watering for dust control will be implemented as necessary.

Section 2.05.5 discusses the changes to be made to the main haul road, a portion of which will be left in place after completion of mining to retain access into the area to compliment the post mining land use.

A number of light use roads (See Maps 21 and 22) consist of pre-existing ranch roads which existed prior to mining activities and will be left in place after mining activities have ceased and, as such, they will not be reclaimed. Colowyo intends to infrequently travel or use such roads, with the main usage being pond monitoring and maintenance, sediment control ditch monitoring and maintenance, groundwater monitor well access, meteorological/air monitoring station access, etc. Examples of such light use roads include, but are not limited to, roads to the West Pit, East Taylor, and Prospect Ponds, access to the south collection ditch, etc.

A light-use road will be used to facilitate shorter equipment movements to additional areas of the northern end of the mine. This light-use road begins south of the fuel storage tanks and continues in a northwest direction towards the main coal haulage road with an approximate width of 30 feet and a length of approximately 1200 feet. It enters the main coal haulage road just below the traffic pattern crossover. Topsoil was stripped in accordance with Rule 4.06.2 and placed on topsoil pile 15A directly to the west of the road. Maintenance will include maintaining natural drainage across the roadway and maintenance of a swale on the northern portion of the road which will transfer runoff to the existing ditch. Reclamation of this light-use road will be completed immediately after the road is no longer needed for operations and will be reclaimed in accordance with Rule 4.03.3(7). The road was field designed in accordance with Rule 4.03.3.

A light use road will be reestablished over an existing two track road that was originally used to construct the 69 kV powerline on the west side of Taylor Creek back in the 1980's. The road will depart the Taylor Creek Access Road just below the West Pit Pond and traverse along the toe of the slope down to the west side of the Taylor Pump Holding Pond. The existing road will be reestablished by brushing to allow vehicles to access and conduct maintenance activities of the 69 kV power line, and eventually removal of the power line during reclamation.

4.04 SUPPORT FACILITIES

The support facilities used at the mining operation, including the office, shop and warehouse complex, the coal handling and loadout facilities are shown on the Existing Structures Maps 21, 22, and 22A.The complete discussion on all the support facilities is found under Section 2.05.3. Detailed drainage and sediment control has been developed for the mining operation as discussed in Section 2.05.3. All sediment control measures have been designed to prevent damage to wildlife and other related environmental values; also, sediment control structures have been designed to prevent contributions of suspended solids to runoff outside the permit area in excess of the limitations of both federal and state law.

There are no operating oil or gas wells at or around the planned mine; likewise, there is no coal slurry pipeline planned or around the mining area. The only operating railroad in the vicinity of the mine is the Colowyo spur line that serves the operation. All White River Electric power lines are located out of the actual mining area. Colorado-Ute Electric Association has a power line in the path of future mining. Portions of this line will be relocated as required. The Mountain Bell telephone lines are located at a distance from the actual mining areas. All water and sewer lines located in the permit area serve the Colowyo structures and are located away from the actual mining areas.

4.05.5 Sediment Control Measures

Sediment control measures to be implemented are shown Map 12. These facilities, consisting primarily of diversion ditches and sedimentation ponds, will be located, constructed and maintained to avoid erosion and increased contribution of sediment load to runoff. Discussion on the sediment and drainage control is presented under Section. 2.05.6. The design parameters of the various sedimentation control measures are found in Exhibit 7, Hydrology Information.

As necessary, facilities to control sediment will be installed in areas above or below the planned sites of disturbance. “Upstream” facilities, such as temporary diversion ditches and- check dams up slope from the mining activities, will divert runoff away from the disturbed areas. Temporary diversion ditches below the disturbed area will divert runoff into sediment ponds. The actual mining areas will aid in retaining sediment within the disturbed areas by catching water in pits, small depressions and dozer basins, etc. in active, unreclaimed mine workings. Water leaving the reclaimed areas will drain into contour furrows or other sediment traps, as necessary, before entering the sedimentation pond.

Small Area Exemptions from time to time, it may be necessary to have small areas that do not drain to a sediment pond. Alternative sediment control measures will be used for these areas. These will be designed to meet the requirements of Rule 4.05.2.3 and Rule 4.05.5. Exhibit 7, Item 14-P (Volume 2C) provides a specific design for a small borrow pit needed to construct the embankment for the Section 28 Sediment pond.

4.05.6 Sedimentation Ponds

The location of all existing and planned sedimentation ponds are presented Map 12 and 12A. The design plans and specifications for the sedimentation ponds are described in this section. The design parameters and detailed sedimentation calculations for the sedimentation ponds are shown in Exhibit 7, Hydrology Information. The sedimentation pond embankment and emergency spillway design are also shown in Exhibit 7, Hydrology Information. All sedimentation ponds will be located as close as practical to the areas to be disturbed. Other methods of sediment control will be located on the reclaimed areas; these methods include the use of contour furrowing, contour drainage ditches, chisel plowing and revegetation etc.

This application contains calculations used to determine runoff volumes and flow rates for a theoretical 10-year, 24-hour precipitation event and subsequent sediment volumes. The precipitation data were obtained from the NOA Atlas 2, Volume 3 for Colorado; soil types were obtained from the Soil Conservation Service, and are shown Maps 5A through 5D.

The ongoing mining activities within each watershed of the permit area will create constantly changing hydrologic conditions. The design models are generally based on a static, theoretical scenario, utilizing SEDCAD^{TM} which considers a final reclamation and pit closure scenario in each watershed. Please see Map 12 for watershed boundaries used for hydrologic modeling.

Table 2.04.11-14 Threatened and Endangered Wildlife Species List

Common Name / Scientific Name	Federal Status	State Status	Habitat	Potential for Occurrence within Colowyo Permit Areas
Amphibians				
Boreal Toad (*Anaxyrus boreas)*		Endangered	Typically occur within spruce-fir and aspen forests. Within these areas breeding is restricted to beaver ponds, lakes, streams, marshes, wet meadows, and bogs with sunny exposure and shallow water.	Low due to lack of suitable habitat.
Birds				
Burrowing Owl (*Athene cunicularia)*		Threatened	Open areas with short vegetation and bare ground in desert, grassland, and shrub-steppe environments	Possible, based on vegetation communities, but are dependent on prairie dog colonies. No prairie dogs have been observed to date in the mining areas.
Mexican Spotted Owl (*Strix occidentalis lucida)*	Threatened		Mixed coniferous forest types dominated by Douglas fir, pine, true fir, and pine-oak communities. Also steep, narrow canyons with cliffs and perennial water.	Low due to lack of suitable habitat. Very rare in Colorado, highest number ever counted in the state was only 20 birds.
Willow Flycatcher (*Empidonax traillii)*	Partial Status		Lowland riparian woodlands dominated by willows and Cottonwoods	Very low, due to lack of suitable habitat.
Yellow-billed Cuckoo (*Coccyzus americans)*	Threatened		Extensive tracts of lowland riparian characterized by mature cottonwood-willow stands with a dense sub-canopy.	Low due to lack of suitable habitat. Known to nest along the Yampa River.
Fish				
Bonytail Chub (*Gila elegans)*	Endangered	Endangered	Large, warm rivers, usually turbid and swift moving; prefers pools and eddies within these rivers.	Very low due to lack of suitable habitat. No known, sustaining populations in Colorado, but has recently been restocked into Green and Yampa Rivers. There is designated critical habitat approximately 11 miles to the north along the Yampa River.
Colorado Pikeminnow (*Ptychocheilus lucius)*	Endangered	Threatened	Large, swift flowing, turbid rivers with quiet, warm backwaters	Very low due to lack of suitable habitat. There is designated critical habitat approximately 11 miles to the north along the Yampa River.
Humpback Chub (*Gila cypha)*	Endangered	Threatened	Deep, fast moving, whitewater, usually turbid, and often associated with large boulders or canyons with steep cliffs. Within these areas, usually found in slower eddies and pools.	Very low due to lack of suitable habitat. There is designated critical habitat approximately 11 miles to the north along the Yampa River.
Razorback Sucker (*Xyrauchen texanus)*	Endangered	Endangered	Large rivers four to ten feet deep with strong current and backwaters; also off-stream impoundments and reservoirs.	Very low due to lack of suitable habitat. There is designated critical habitat approximately 11 miles to the north along the Yampa River.
Insects				
Suckley's Cuckoo Bumble Bee *(Bombus suckleyi)*	Proposed Endangered		Inhabits western meadows at a wide range of elevations typically at higher elevation meadows within forest or subalpine zones.	Low due to a lack of suitable habitat.
Monarch Butterfly (*Danaus plexippus)*	Proposed Threatened		During the breeding season, monarchs lay their eggs on their obligate milkweed host plant (primarily Asclepias spp.).	There are not any known large patches of milkweed in the permit area.
Mammals				
Black-footed Ferret (*Mustela nigripes)*	Endangered	Endangered	Historically occupied short and midgrass prairies and semidesert shrublands. Associated with prairie dogs and their burrows, which are their principal source of food and shelter, respectively.	Low based on lack of suitable habitat, and extirpated from Colorado. Reintroduced experimental population in western Moffat and Rio Blanco Co's.
Gray Wolf (*Canis lupus)*		Experimental	Wide range of habitats including temperate forests, mountains, tundras, taiga, and grasslands.	Possible based on local habitat and large prey base populations in the vicinity of the permit area.
Canada Lynx (*Lynx canadensis)*	Threatened	Endangered	Subalpine spruce-fir forests, particularly uneven-aged stands with relatively open canopies and well-developed understories.	Low based on lack of suitable habitat, and is extirpated from Moffat and Rio Blanco Co.'s. Reintroduced experimental population in southeast Colorado, San Juan mountains.
Wolverine (*Gulo gulo*)		Endangered	High elevation, heavily timbered forests.	Very low due to lack of suitable habitat. Extirpated from Colorado.

Sources: Colorado Natural Heritage Program County Tracking Lists (downloaded May 2025); and US Fish and Wildlife Service Information for Planning and Consultation (IPaC) Query (completed May

Table 2.05-1 Topsoil Balance as Of December 2024

1	Disturbed Lands	5,239 acres
2	Land with Redistributed Topsoil	2,000 acres
3	Lands Yet to be Retopsoiled (Line 1 Minus Line 2)	3,239 acres
4	Lands Yet to be Retopsoiled	141,108,000 square feet
5	Volume of Topsoil in Stockpile	5,488,912 cubic yards
6	Line 5 Times 27	148,201,000 cubic feet
7	Average Replacement Depth Available (Line 6 Divided by Line 4)	1.1 Feet
8	Average Replacement Depth Available	12.6 inches

Notes: For an annual topsoil balance please refer to the annual reclamation report.
All acres presented above do not include Phase III released acres.

Table 2.05-2 Historical Coal Shipped (Sold) and Anticipated Annual Shipped (Sold)

Year	Million Tons
1977-1979	3.1
1980-1989	33.0
1990-1999	49.3
2000-2009	53.7
2010	2.5
2011	2.3
2012	2.3
2013	2.2
2014	2.4
2015	2.4
2016	2.2
2017	2.2
2018	1.2
2019	1.7
2020	1.8
2021	2.4
2022-2027	6.4

or revoked in the last five years; or (b) forfeited a mining bond or similar security deposited in lieu of bond.

Colowyo (Permit No. C-1981-008) received notice of violation CV202201 in 2022.

The Dry Fork Mine (Wyoming DEQ Permit 599-T) has not received any notices of violation in the last three years.

The New Horizon Mine (C-1981-008) has not received any notices of violation in the last three years.

The New Horizon Mine North (C-2010-089) has not received any notices of violation in the last three years.

The Trapper Mine (C-1981-010) received notice of violations CO2023001 and CV2023001 in 2023.

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Exploration Test Borings

Exploration test borings have been conducted within the South Taylor/Lower Wilson mining areas and have been used for the following purposes:

Identifying Location of Subsurface Water - Since most of the exploration drill holes were dry, the circulation medium for most exploration drill holes drilled within the mine areas was compressed air with water and foam to lift the cuttings to the surface. Drilling mud was used when heavy fracturing or burn areas were encountered. Several drill holes throughout the area encountered minor amounts of groundwater; however, all of the data obtained to date by Colowyo and the USGS have indicated that groundwater occurrences in the Williams Fork Formation in the area are not continuous but rather are a series of perched systems of limited lateral and vertical extent. Information on groundwater occurrence is provided in Section 2.04.7.

Characterizing Physical Properties of the Overburden - The overburden material, which is removed as a part of the mining operation, consists mainly of mudstones, siltstones, and sandstones. Generally, the mudstones will have a relatively high erodibility and compaction factor, while sandstones and siltstones will have low erodibility factors and low to moderate compaction. Because of the variable lithology and lenticular nature of the strata in the permit area and the variations in the mining techniques (dragline, truck/shovel), it is difficult to determine an actual value for the swell of the overburden; therefore, the overall swell of the overburden material was estimated to be approximately twenty (20) percent.

Evaluating Geochemical Properties of Overburden - Chemical analyses of overburden and interburden strata in the areas to be mined are provided in Exhibit 6, Item 6. The ongoing overburden sampling program at Colowyo described in Exhibit 6, Item 4 of the existing permit document has confirmed earlier estimates of the geochemical properties of the overburden identified by exploratory drilling. A summary of overburden geochemistry is presented in Table 2.04.6-3 and the relevant borehole locations are shown on Map 11B.

This section presents the results and interpretations of geochemical tests performed on overburden material samples from the South Taylor/Lower Wilson pit areas. The purpose of these tests is to determine the chemical composition and assess the acid-forming, toxic-forming, or alkalinity-producing potential of overburden material within the South Taylor/Lower Wilson pit areas. This section describes the methods used in collecting overburden samples for testing, the types of tests performed and the tests results. In addition test result were compared with appropriate overburden guidelines to assess the acid-forming, toxic-forming, or alkalinity-producing potential of overburden material within the South Taylor/Lower Wilson pit areas

General Groundwater Resource Information

General Groundwater Characteristics – Colowyo Coal Company's general area of operation lies within an area known as the Danforth Hills. Regionally, the Danforth Hills are bounded on the northeast by the Axial Basin Anticline, and on the southwest by the northeastern flank of the Piceance Structural Basin. The intensely folded strata of the Mesa Verde Group characterize the Danforth Hills. The groundwater in the general area occurs principally in alluvial material associated with the major stream valleys and to a lesser extent in the permeable and semi-permeable bedrock strata (CDM, 1985a). (The term 'alluvial' used in this permit application does not necessarily mean that all the materials in the valley bottom have been water deposited. In fact, the majority of these deposits are colluvial in nature).

The principal geologic units in the area are the Williams Fork Formation, the Iles Formation, and the Mancos Shale. At the top of the Iles Formation is the Trout Creek Sandstone Member. The Williams Fork Formation consists of interbedded sandstone, siltstone, and shale with coal beds, and ranges up to 1,200 feet thick in the mine area. The Williams Fork Formation is not considered to be a major aquifer in the region (CDM, 1985a). The Twenty Mile Sandstone Member, which is considered an important aquifer within the Williams Fork Formation in northern Colorado, is not present in the Danforth Hills area (CDM, 1985a). A detailed description of the hydrogeologic units in the area is provided in Section 2.04.6.

Groundwater in the bedrock is largely controlled by the existence of fractures instead of primary permeability within the rock strata itself. The low permeability and discontinuous and lenticular nature of the strata restricts the ability of the bedrock to store and transmit water. In addition to fracturing, structural features in the area influence the limited movement and occurrence of groundwater. Groundwater tends to occur in the synclinal axis of the folds in the area as a result of the increased fracturing in these areas and the general movement of groundwater in the down-dip and down-fracture direction (CDM, 1985a).

General Groundwater Quantity – Groundwater monitoring in the general and South Taylor/Lower Wilson permit area has been conducted since 1983. Monitoring wells have been established in the alluvium, the Williams Fork Formation interburden and coal, and the Trout Creek Sandstone. A summary of the bedrock and shallow monitoring wells relevant to the permit revision is presented in tables 2.04.7-25 through 2.04.7-29 and are shown on Maps 10A and 10B. Locations of all known wells and test boreholes within the permit area and adjacent area are illustrated on Map 11B.

Previous studies by CDM (1985a) and Dennis (2001, 2006) determined the hydraulic characteristics of the bedrock aquifers in the Williams Fork Formation and the Trout Creek Sandstone. The results of these studies are presented in Table 2.04.7-26 and discussed in detail below. The Trout Creek Sandstone is a moderately permeable confined aquifer and the Williams Fork Formation is mostly dry with a few, low permeability, discontinuous, and confined aquifers of limited extent.

Alluvial aquifers have moderate to high permeability where encountered, with a wide range of hydraulic values encountered. There is little groundwater in the alluvium along Wilson Creek immediately below the Lower Wilson affected area. There is groundwater in the alluvium along the West Fork and main stems of Good Spring Creek below the South Taylor affected area.

General Groundwater Quality – Bedrock water quality (Williams Fork Formation and Trout Creek Sandstone) in the general area was determined by previous investigations (CDM, 1985a; Dennis, 2001; Colowyo 1992). Data from these investigations indicate that the principal water type in the Williams Fork Formation is a calcium- or sodium-bicarbonate type water, containing only minor concentrations of

FA = Forage Available (oven-dry lbs/acre)
FC = Forage Consumption Requirement (900 lbs for cattle AUM, 150 lbs for sheep AUM)

Results - The vegetation of the Danforth study area is typical of northwestern Colorado. Hillsides are covered with a mixture of mountain shrub and aspen forests at upper elevations while sagebrush dominates the lower elevations. Valley bottoms are dominated by a mixture of grassy meadows and sagebrush. The valley bottoms are used more intensively for grazing than upland areas. Hay is produced in small acreage near several of the ranch houses that occur in the valleys. The land surface of the Danforth study area has a general northeastern exposure and is deeply divided by several intermittent streams that flow from the southwest to the northeast. Exposures are variable but most are north, northeast, and northwest. Slopes vary considerably from 0 to 20 percent along ridgetops whereas sideslopes range from 30 to 50 percent. Elevations range from 8660 ft. in the extreme southwest portion of the permit area to 6620 ft. in the northeast portion.

A diversity of species occur at the Danforth study area. A total of 176 different vascular plant species were observed within the study area (Table 3.1 of Exhibit 10, Item 5). Of these, three were annual grasses, 28 were perennial grasses, five were grasslike, 21 were annual forbs, 94 were perennial forbs, one was a succulent, three were sub-shrubs, 12 were deciduous shrubs, three were broadleaf evergreen shrubs, five were deciduous trees and one was an evergreen tree. The majority of the species have their origin in western floras, however, several have origins in mid-western and northwestern floras. Some weedy species have invaded from Eurasian floras.

Weedy Species - Of the 176 species observed, 33 species are considered weedy (Thorton et al. 1974). Two noxious weed species were observed (quackgrass and Canada thistle). Of the 33 weedy species, two were annual grasses, one was a perennial grass, 10 were perennial forbs, one was a sub-shrub, one was a deciduous shrub and one was a broadleaf evergreen shrub. Many of the weedy species were found along roadsides, around stock ponds, corrals, and other disturbed locations. Both quackgrass and Canada thistle were found primarily in the meadow type.

Threatened and Endangered Species - No threatened or endangered species are known to occur within the vicinity of the Danforth study area (Colorado Natural Heritage Inventory, 1984 personal communication). None were observed during the course of this study.

Reclamation Species - Several of the native species occurring within the project area have commercially available seed for use in reclamation. Of the perennial grasses, western wheatgrass, bluebunch wheatgrass, slender wheatgrass, Indian wheatgrass and big bluegrass have several commercial varieties available. To increase diversity in areas, mountain brome and Great Basin wildrye could be considered. Among the perennial forbs with commercially available seed at a reasonable price is Lewis flax and Rocky Mountain penstemon. More higher priced and not so readily available forb seed includes western yarrow, Louisiana sagewort, asters, arrowleaf balsamroot, Indian paintbrush, northern sweetvetch, aspen peavine and scarlet globemallow. Commercially available shrub seed includes serviceberry, rubber rabbitbrush, chokecherry, current, woods rose and big sagebrush.

Description of Vegetation Types - Vegetation types within the Danforth study area are divided into two categories, native and agricultural, the most predominant type was the native type which comprised 99 percent of the entire acreage of the study area (Table 3.2 of Exhibit 10, Item 5). Agricultural types comprised 1 percent of the area. Six different native vegetation types were defined within the permit area. Their distribution is presented on the vegetation maps (Maps 4). The most abundant type was mountain shrub, comprising approximately 53 percent of the total study area. Sagebrush - grassland comprised approximately 29 percent. Aspen comprised 13.6 percent of the area. A small area of Douglas

- Assess the seasonal distribution of special-interest wildlife species (i.e., big game, raptors, aquatic life, and special-concern species) in the general area, and specifically in potentially disturbed area.

- Estimate relative numbers of special-interest wildlife species in the area and estimate relative numbers of small mammals and breeding birds in the potentially disturbed areas.

These objectives comply with Rule 2.04.11 of the Divisionregulations, which is the basis for this section.

Information Sources

The sources of wildlife resource information are provided in Section 2.03.3(7).

There is considerable overlap in the geographic extent of resource maps provided by the Consol and Colowyo studies. The extent of Monarch & Associates (i.e. Colowyo) resource studies encompasses an area from the top of the Danforth Hills on the south into the Axial Basin to the north, with Good Springs Creek and Maudlin Gulch forming the east and west boundaries of the study area. The Consol study area is bounded by the Axial Basin and Yampa River to the north and west, the White River Plateau to the east, and White River to the south. Wildlife resource data extends further south into Rio Blanco County than data from Monarch & Associates, whereas, Monarch & Associates resource boundaries extend further to the north and to the west.

Using these data sources, wildlife habitat types and special-interest wildlife habitats within the area have been identified and mapped. Special-interest habitats include critical habitats for threatened or endangered species, unique habitats (e.g., number or density of springs, seeps, cliffs, and snags), and seasonally important habitats (e.g., raptor nest sites and big game year-round range and parturition areas). Identification of special-interest habitat types was based on observed animal distributions during given time periods, indirect evidence of relative use (e.g., browse utilization, tracks, and pellets), quantitative and qualitative surveys, and scientific literature. The distribution of all special-interest habitats identified in the area are delineated on Maps 13B and 15B. Information specific to the South Taylor/Lower Wilson permit area was obtained from previous surveys conducted by others and conversations with representatives from the Colorado Parks and Wildlife (CPW).

General Observations

The previous studies indicate that several wildlife groups of importance occur in the general project area, including big game, small mammals, raptors, upland game birds, and songbirds. These species use all or portions of eight habitat types that occur within the South Taylor/Lower Wilson permit revision area, as described below.

- Mountain shrub

- Sagebrush

- Aspen woodland

- Juniper Scrub

- Riparian woodland – Bottomland/ Erosional Feature

- Cropland

Big Game

Elk - Elk within the general project area are part of the White River herd as defined by the CCPW, which was estimated to include a total herd population of 28,620 animals in 1996, and represents the largest elk herd in Colorado (CCPW 1997). Within the White River herd the CCPW estimated an average cow:calf:bull ratio of 100:47.7:13.1 during the surveys completed from 1994 to 1995, this is somewhat lower than the 100:52.3:25.8 ratio average identified during the survey completed by Monarch & Associates (Monarch and Associates, 1998).

Elk utilize all habitat types within the previously approved permit area during various times of the year, and several elk ranges have been identified as shown on Map 13B Sheet 1 and are described below.

- Winter range
- Calving and summer areas
- Late fall and early spring areas

Winter ranges are typically occupied from December through April. Within the general project area, winter aerial surveys of elk from 1994 through 1997 found that elk populations varied greatly. Populations varied from a high of 1,590 and a low of 259. This represents 5.5 and 0.9 percent of the total White River herd. This variation is based on both snow depths and temperature. In general, most observations of elk during the winter were made within the mountain shrub habitat type in the previously approved permit area.

Elk calving and summering areas are typically occupied from May through September and occur within the upper ends of drainages within the mountain shrub and aspen habitat types within both the previously approved and South Taylor/Lower Wilson permit revision areas. During the period of 1994 through 1997 the calf:cow ratio averaged 58:100 in these areas (Monarch and Associates, 1997).

Calving and summering areas are the predominant elk habitat in the vicinity of the South Taylor/Lower Wilson permit area (Monarch and Associates, 1998), which provides cover, forage, and water during the April to July period until early snows cause them to move down country to wintering ranges. As indicated by Jon Wangnild, the CPW District Wildlife Manager for the Meeker North Area, mining activities in the South Taylor/Lower Wilson permit revision area will not be a migratory limiting factor nor will it limit habitat due to the relative small area of impact and the abundance of suitable habitat in surrounding areas.

Mule Deer - Like elk, mule deer within the general project area utilize all habitat types and are part of the White River herd. The buck:doe ratio of the White River herd in 1997 was 11:100. This is somewhat higher than the 8.5:100 ratio noted in the general project area from 1994 through 1997.

Four types of mule deer range occur within the previously approved and the South Taylor/Lower Wilson permit areas, as described below. Locations of the high use wintering areas and late fall to early spring areas are shown on Map 13B Sheet 2.

- Spring/summer range
- Winter range

The sequence and timetable for all topsoil redistribution and revegetation activities is found on the Topsoil Handling Map (Map 28). The overall life-of-mine topsoil balance is estimated in Volume 1, Table 2.05-1.

All yardage and acreage figures have been calculated based upon the assumption that topsoil would be removed in advance of mining activities as shown on Topsoil Handling Map (Map 28).

Mine development into the South Taylor area required an initial boxcut, resulting in additional stockpiling of topsoil. The stockpiling of topsoil will continue until all pit development has progressed to its maximum extent. After mining and regrading operations have ceased, all stockpiled topsoil will be used to reclaim the pit disturbance.

Topsoil will be stored in topsoil stockpiles as shown on Map 28A. Construction specifications for these stockpiles will follow all prudent regulations within this section (2.05.3(5)) and as follows. Stockpiles will be constructed with stable slopes and will be located to avoid erosion from wind and water and additional compaction or contamination. As can be determined from the Topsoil Handling Map (Map 28), all stockpiles are located within stable areas. The piles will be protected from wind erosion by planting a perennial mixture as explained in Section 4.06.3 as soon as conditions allow. Proper seasons of planting will be early spring or late fall. In addition to the planted material, a considerable amount of volunteer growth can be expected to grow on all stockpiled topsoil.

External erosion will be controlled through proper location of the stockpiles. No topsoil stockpiles will be placed in a drainage bottom where external erosion might pose a potential threat.

Unnecessary compaction will be avoided by keeping all but essential traffic off the stockpiled areas. Topsoil signs will identify topsoil stockpiles. Contamination of the stockpiles will be eliminated by the careful selection of sites that are distant from the areas where actual mining activities are occurring. Drainage ways and areas near spoiling and blasting will be avoided where possible.

2.05.3 (6) Overburden

The complete description of the removal, handling and storage of all overburden material within the permit area is described under the Production, Methods and Equipment Section found at the beginning of Section 2.05.3. The spoil handling procedures and spoil monitoring plan parameters for the operation can be found on Section 2.05.3 of Volume 1. The mining sequence for the planned operation is shown on the Mine Plan Map (Map 23). Cross sections showing the mining operation during the "steady-state" operation are found on the Mining Range Diagram (Map 24B). For the spoil disposal locations and volumes for both the East and West Taylor valley fills and the temporary overburden stockpile, please refer to Map 45. Permanent Valley fill construction and design criteria is described in detail in Section 4.09.

A temporary overburden stockpile will be built above the East Taylor valley fill. The spoil suitability and special handling procedures are described in detail in section 2.05.3(1). The initial development of the stockpile began in 2008 and completed in 2013. The temporary overburden stockpilewas constructed in 50 foot lifts by use of trucks, dozers and loaders. The side slope of the temporary overburden stockpile are generally at a1.3H:1Vslope and will be maintained during active times of operation. Maintenance techniques consist of blading of roads and ramps, along with the use of dust control during active times of operation. Sediment control will be implemented to ensure adequate containment of potential runoff throughout the life of the operation. Following the completion of mining, this temporary overburden stockpile will be removed and placed back into the open pit.

RULE 3 – PERFORMANCE BOND

The performance bond calculations for the entire Colowyo mining operation can be found in Exhibit 13A in Volume 13. The cumulative bond schedule for the Collom mining area can be found Exhibit 13C in Volume 20. The Bond Calculation Maps showing the Worst Case Topography and Regraded Topography are included as Map 35A and Map 36A, respectively. Bond Calculation Cross Sections are provided on Map 39.

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As discussed in Section 2.04.11(4), it is unlikely that any threatened or endangered species occur in the Collom permit expansion area disturbance. No designated critical habitat for any species is known to exist in the permit expansion area. Golden eagles are known to nest in the permit expansion area, but the nests are located outside the area to be mined. No bald eagles are known to nest in or near the permit expansion area. Golden eagle nests and nests used by other raptor species are described in Section 2.04.11. There were eight nests used by raptor species other than golden eagles that were located within the permit expansion area. Two of these nests have recently been active (in 2006 or 2007), and were used by the long-eared owl and Cooper's hawk.

As described in Section 2.04.11(1-3), two Greater Sage-Grouse and two Columbian sharp-tailed grouse lek sites would be impacted by mining disturbances. Based on the survey information captured and discussed previously in this submittal, the impact to the overall grouse populations in the area can reasonably be described as minor. Habitat mitigation measures for sage-grouse populations displaced during mining are discussed in Section 2.04.11(4), 2.05.4, 2.05.6(2). The locations of possible raptor nesting sites within the Collom expansion area disturbance boundary have also been included on Map 15B Sheet 1. Based on the language provided within the Environmental Assessment for securing the Collom Lease Tract COC-68590, Coloywo will relocate these structures to a nearby area not targeted for disturbance. Based on the survey work previously referenced in this submittal, the sites targeted for direct impact by mining are not being heavily utilized by raptors at this time. Map 19C also identifies the location of habitat enhancement "stockponds" that will facilitate additional opportunities for all wildlife species.

Section 4.18 in Volume 1 discusses electric power line and transmission facility construction guidelines for retrofitting of existing power poles to protect raptors. Colowyo has implemented these raptor protection measures in the Colowyo existing permit area and will also implement them in the Collom permit expansion area. Because many raptor species are predators of the Greater Sage-Grouse and Colombian shap-tailed grouse, specific restorative and enhancement activities are purposefully not being pursued beyond the protective measures described above with respect to electrical structures. Enhancement of raptor habitat in the Collom expansion area would likely lead to a lower probability of successful resumption of grouse activity post-mining.

As described in Section 2.05.6(2) in Volume 1, all disturbed acreage, including roads, have been kept to a minimum by proper planning to reduce impacts to all environmental resources, including impacts on wildlife.

As part of the plan to return the post-mining land use to a rangeland condition capable of supporting the diverse wildlife populations identified in the permit areas, Colowyo initiated efforts to restore wildlife habitats during pre-mine planning and early mining. This was accomplished by conducting an extensive four year study to assist in determination of the best techniques for revegetating disturbed areas with native species to enhance wildlife habitat. In addition, Colowyo implemented a habitat improvement program in 1975 to offset temporary habitat loss during mining. The reestablishment of herbaceous species, topographic relief, impoundments and limited reestablishment of a shrub component form the integral elements of the reclamation plan.

Sagebrush steppe reclamation areas specifically target sage-grouse habitat is described in Section 2.05.4.(2)(e). These areas will also serve as enhanced habitat for many other species, including mule deer and elk. Grassland reclamation areas specifically target livestock grazing but the seed mix and reclamation plan focus on ensuring plant species beneficial to wildlife will prosper as well. The nutritional value of both plant communities targeted for establishment on reclaimed lands in the Collom expansion area should be enhanced as compared to pre-mining condition based especially on increased forage availability and diversity (for both livestock and wildlife species).

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