



Public Service Commission

State of North Dakota

COMMISSIONERS

Tony Clark
Brian P. Kalk
Kevin Cramer

Executive Secretary
Darrell Nitschke

600 East Boulevard, Dept. 408
Bismarck, North Dakota 58505-0480
Web: www.psc.nd.gov
E-mail: ndpsc@nd.gov
Phone: 701-328-2400
ND Toll Free: 1-877-245-6685
Fax: 701-328-2410
TDD: 800-366-6888 or 711

June 10, 2011

Mr. D. Randall Crooke
Environmental Manager
Falkirk Mining Company
P.O. Box 1087
Underwood, ND 58576-1087

Dear Mr. Crooke:

The Reclamation Division reviewed Falkirk's response to the Reclamation Division's technical deficiency letter and changes to the application for Revision No. 20 to Permit NAFK-9503 for the Falkirk Mine. The following items were noted in that review must be addressed or corrected before the Reclamation Division will recommend Commission approval:

General

1. The red strike-through and underlining of text in the various submittals has remained the same between the submittals of the revision application. Due to the amount of revised and updated information being added to the revision application in response to deficiency items with each review, it is now resulting in additional review time by staff. Revision No. 20 is somewhat different than previous revisions due to the substantial amount of changes and new narrative added to the permit. For example, a total of 15 of the 16 pages in the permit ground water PHC contain underline and strike-through pages from the original application. The Reclamation Division requests that further changes to the revision application in response to this letter be highlighted in yellow or light blue, or by using some other method to differentiate newly added text and data from the other previous revision changes. The next version of the e-permit that is submitted (response to this 2nd technical deficiency letter) should clearly display the most recent information that is added or changed in response to this review. It is difficult and time-consuming to track down specific narrative changes that were requested from the technical review information requests with the changes that were already made with the original application submittal and follow-up completeness and technical items, particularly when one new sentence is added to many pages of narrative in a section that is already mostly red font and underlined text. Please address these editing issues, as they pertain to all

sections of the permit, particularly where a substantial re-write of the section has occurred, similar to Section 2.2.5. (BEB)

Section 1.3.6 – Relationship to Areas Designated Unsuitable

2. **Follow up to original item no. 165:** The farmsteads descriptions in Section 1.3.6 do not explicitly identify the current use of the buildings in the farmsteads as required by NDAC 69-05.2-08-02 (e). Therefore, we will assume that all of the buildings listed are being used unless otherwise noted. (GAW)
3. **Follow up to original item no. 165:** The legal description for the Holznagel Trust Farmstead is listed as being in R84W rather than R83W. Please make the necessary corrections. (GAW)

Section 2.2 – Description of Ground Water Hydrology

4. The second paragraph of Potential Impacts of Mining in Section 2.2.5, Probable Ground Water Hydrologic Consequences, states that “continued backfilling on the spoil side of the mining pits tends to inhibit ground water inflow and the hydraulic head recovers as cones of depression shift away from mined areas . . .” Similar narrative has been in Falkirk permits for years; however, ground water inflow with hydraulic gradients toward, or in the direction of the highwall and endwall sides of an active pit are unlikely to be substantially affected by backfilling of spoils above the mined coal seam(s) if the spoiled overburden is located down-gradient of the direction of ground water flow. Additional narrative should be provided in this paragraph to further describe the relationship that hydraulic gradient plays in the described ground water scenario. (BEB)
5. The third paragraph under Potential Impacts of Mining states that “No water significant quality changes or head losses . . .” Please correct the typographical error associated with this sentence. In addition, narrative following the above sentence could give the reader the impression that the Center Mine is in final reclamation phase and the sentence should be re-worded clarifying that active mining operations are continuing to take place at the Center Mine. (BEB)
6. Paragraphs 5 and 6 of Potential Impacts of Mining of the PHC are duplicates of paragraphs 3 and 4 in the same section. Please eliminate the duplicate paragraphs. (BEB)
7. **Follow up to original item no. 23:** Closing sentences regarding both the Tavis Creek Bed and Coal Lake Coulee Bed in Overburden and Spoil, Section 2.2.5, still state that “re-establishment or permanent loss of spring or seep flows in their pre-mining locations cannot be predicted”. These sentences need to be revised or eliminated, particularly considering that the PHC predictive requirements for springs and seeps have been addressed and that information is now available in the permit in Section 2.6.4a. (BEB)

8. Narrative in Developed Springs and Off-Site Impacts of Section 2.2.5 and perhaps within other areas of the PHC narrative describe a significant spring located in the NW1/4 of Section 2, T145N, R84W; however, the Spring and Seep Information table of Section 2.6.4a and the Surface Water Features and Monitoring Sites Map, Section 2.6.4, both describe and depict the location of this spring (SPR-NE-2-1) as being in the NE1/4 of Section 2. Please review and correct as necessary. (BEB)
9. With revised narrative and updating to significant portions of the permit PHC, the bookmarks associated with Section 2.2.5 need to be updated as well. Currently, the bookmarks take the reader to pages other than where the bookmark indicates because of the substantial amount of new narrative placed in the section. Please update the bookmarks to take the reader to the correct location in the section narrative. Also, please add a bookmark for the Geohydrologic Modeling narrative that was added to the permit with the most recent submittal. (BEB)
10. It appears that no data from any of the 6 new Tavis Creek Bed ground water monitoring wells that were incorporated into the permit with the 4th Addition application were utilized in development of the Tavis Creek Bed potentiometric surface map, Section 2.2.25d, and the locations of the new monitoring wells are not acknowledged on the map. The last static water level readings from the new monitoring wells show similar elevations to pre-existing Tavis Creek Bed monitoring wells at the north end of the permit area for new wells 351-1 and 352-2 (within 5 feet or so); however, ground water elevations of new monitoring wells 353-2, 356-2, 354-2, and 357-1 differ significantly from the potentiometric contour elevations provided on the potentiometric surface map, by up to 40 feet. Please update the map to include the most recent water level data from the new Tavis Creek Bed monitoring wells that were added to the ground water monitoring plan with Revision No. 20. (BEB)

Section 2.4 – Fish and Wildlife Resources

11. **Follow up to original item nos. 46 and 51**: Please depict the boundary of the wildlife study areas on the Pre-Mining Wildlife Habitat and Study Area Location Map, Section 2.4.1a. NDAC 69-05.2-08-15 requires fish and wildlife resource information for the permit and adjacent area. The study area location map must clearly identify the study area(s) and the associated habitats. In addition, please clarify on page 2 of Section 2.4.1, if the size of the 4th addition study area was reduced or altered from that which was originally planned. A sentence on page 35 of Section 2.4.1 indicates that access to areas within the buffer zone around the proposed permit area was limited to county roads in most cases in order to collect habitat and wildlife information. This sentence indicates that access was limited to complete a detailed survey of the wildlife study area but other sentences, such as the first sentence of the third paragraph on Page 34, states that high intensity ground reconnaissance was completed over multiple years on the study area. Please clarify and edit for consistency. (GAW)

12. **Follow up to original item no. 52:** The fourth paragraph on page 35 of Section 2.4.1 indicates that the ND Parks and Recreation Department has records of 11 significant ecological communities within and adjacent to the wildlife study area, and Appendix I, Section 2.4.2 is listed in parenthesis following this sentence. Please list and characterize these communities and include a map that shows the location of these communities in relation to the wildlife study area and the proposed permit boundary. The third paragraph on page 3 of Section 2.4.2 also indicates that ND Natural Heritage Inventory information is included in Appendix I of Section 2.4.1 but this information was not found. Please review and clarify as necessary. (GAW)
13. **Follow up to original item no. 53:** The conclusion narrative of the GAP Analysis information (Page 40) states that the Bluestem-Needlegrass-Western Wheatgrass prairie may have the highest conservation concern because of its uniqueness at the national scale. The following paragraph then states that this prairie type does not occur within or adjacent to the permit area. Since many of these species are climax community dominants for many of the ecological sites within the study area (e.g., loamy, loamy overflow, shallow loamy, limy subirrigated, thin loamy, etc), please clarify this statement for consistency. (GAW)
14. **Follow up to original item no. 57:** Please include a discussion about the presence of intermittent or perennial streams in the permit or wildlife study areas; discuss these streams wildlife habitat value and whether or not portions of these streams will be affected by mining activities. The single reference to Section 2.6.4 in the fourth paragraph on page 6 of Section 2.4.2 is inadequate. (GAW)

Section 2.6 – Surface Water Information and Monitoring Plan

15. Please expand the Surface Water Features and Monitoring Sites Map, Section 2.6.4, a couple of miles or so to the west and south so that the location of the Missouri River and/or the Missouri River trench is included on the map. (BEB)
16. **Follow up to original item no. 63:** Falkirk's response to the original item is inadequate. Please expand the response to justify or defend the interpreted ephemeral stream flow designations made by Falkirk and defined in NDAC 69-05.2-01-02 (29). Please provide additional narrative in the application describing the number and timing of observations recorded in designating flow classification for those streams and drainages that were not instrumented with surface water monitoring equipment. (BEB)
17. **Follow up to original item no. 66:** The name of the section was changed within the document, but not in the main heading of Section 2.6.3. Please change the heading name as well. (BEB)
18. **Follow up to original item no. 88:** Please provide two sets of water quality and flow data (spring snowmelt runoff and early summer runoff events) for new surface water monitoring sites MS-19R through MS-24R. Previous observations in the fall at or near

these sites by Falkirk's consultant must also be discussed in the application to provide information on seasonal variation as required by NDAC 69-05.2-08-07(2) & (3). (BEB)

19. The Reclamation Division requests that water quality and quantity information regarding stream flow from areas adjacent to, or the headwater reach areas within or near the permit boundary be described in the permit. Stream flow within ephemeral channels through or originating within the highly erosive upland soils associated with the Fort Mandan Badlands should be further described in the permit. The April 14, 2011 PSC inspection report describes streams of relatively low flow, and highly stained and turbid flow during spring snowmelt runoff in drainages within the NE1/4 of Section 14, T144N, R84W. The permit narrative should more precisely describe any observed and documented quality and quantity of flows through the Missouri River break drainages, particularly outflows from Missouri River Watershed C, if the information is available. Please supplement the application with this information to the extent it is available and please add geologic narrative to the permit describing the Fort Mandan Badlands and its role in contributions of sediment load to the local drainages. (BEB)
20. **Follow up to original item no. 178:** Please update Table 2.4.4a, Spring and Seep Information, to indicate that all affected springs/seeps located within premine native grassland that will be reclaimed to native grassland or tame pastureland will be replaced with a well or stockpond as indicated in the narrative in the second paragraph of page 7 of Section 4.1.1. The probable hydrological reclamation action should be changed accordingly in Table 2.6.4a. Please also clarify how Uses and Usage Status in the table can be considered "none" or "not in use" if the tract where the spring is located is being grazed by livestock. In addition, please update this discussion to clarify that the replacement wells being used to replace SPR-SW-7-2 (145-83) and SPR-NE18-2 (145-83) will also be used to replace affected springs SPR SW-7-1 and SPR-NE-18-1. (GAW)
21. **Follow up to original item no. 178:** Please update Table 2.4.4a, Spring and Seep Information, and Section 2.6.4, Surface Water Features and Monitoring Sites Map, to include all springs and seeps located outside of the proposed permit boundary that may be affected by mining activities. (GAW)

Section 2.6.3a – Stockpond Water Quality Data

22. **Follow up to original item no. 70:** Please remove the "click to see photo" remark from the Designation column on both pages of the table of pre-mining stockpond assessments in Section 2.6.3 - Surface Water Quality and Flow Data. (WTG)

Section 2.6.4 – Surface Water Features and Monitoring Map

23. Please add the western boundary to Subwatershed L1d (54 acres) in Missouri River Watershed F between Sections 8 and 9 of T 145N, R 83W. The boundary was shown on the 9/01/10 version, but was apparently omitted from the 3/30/11 version. (WTG)

Section 2.7 – Pre-Mining Land Use and Vegetation

24. **Follow up to original item no. 94:** Page 135 of Table 1 within Appendix II of Section 2.7.3t lists Dean Swanson, Life Estate as surface owner of Tract 98 which differs from Section 1.5.1 which lists the surface owner as Dean Swanson. Please review and correct as appropriate. (SAS)
25. **Follow up to original item no.99:** The last sentence of the last paragraph indicates that similarity index information from one tract can be used across multiple tracts if similar conditions exist, and it is indicated that the similarity index obtained from the idle areas in the NW1/4 of Section 32, T145N, R83W and the SW1/4 of Section 12, T144N, R84W could be used for interpretation of all miscellaneous scattered islands of native grassland in the permit addition area where sampling was not conducted. What is suggested in this sentence is difficult to apply. Please reference where in the permit where the reader can determine if a tract of native grassland is idle, fall grazed or managed with prescribed grazing during the growing season. There is nothing provided on the similarity index sheets for the above listed tracts suggesting that the two referenced tracts are idle, nor is there information discussing if a tract is fenced. Please revise to clarify this issue. (GAW)
26. **Follow up to original item no. 140:** Please identify the soil mapping units on the native grassland reference area sites, Sections 2.7.2d, 2.7.2e, 2.7.2f and 2.7.2g, as required by NDAC 69-05.2-08-08(2)(c) and Section II-D-6 of the Guidelines Document. We realize that the soils for these reference areas are listed in Appendix V of Section 2.7.3 but this information needs to be shown a map and our guidelines require that reference areas be mapped by a professional soil classifier. Soils information is provided in Section 2.8.2a that covers only one of the four proposed reference areas and ecological site mapping units is insufficient as the ecological site may consist of more than one soil mapping unit. This information should also be provided for Sections 2.7.2a and 2.7.2b, which are existing approved native grassland reference areas. (GAW)
27. **Follow up to original item no. 178:** Please update the land management narrative for Dwight Gradin (page 33 of Section 2.7.3) to clarify how the native grassland in the E½ of the SE¼ of Section 33 is typically grazed with 30 head of cattle since the tract has no functional watering source as indicated in Section 2.6.4a, Spring and Seep Information, and Section 2.7, Pre-Mining Land Use and Vegetation. (GAW)
28. **Follow up to original item no. 178:** Please update the land management narrative for Jim and Dave LeRoy, page 36 of Section 2.7.3, to indicate the livestock watering source for the native grassland located in Section 20 of T145N, R83W. There are no developed water resources, springs or seeps or functional wells on this tract according to the information provided in the permit. It is possible that the wetlands on this tract may be more permanent than indicated. (GAW)

Section 2.7.2 – Pre-Mining Land Use Maps

29. **Follow up to original item no. 133:** Please depict and label all roads including the roads/section line trails that are on the permit boundary, e.g., those common to Sections 35 and 2, 33 and 4, and 6 and 7. (MSK)

Section 2.8.1 – Soils and Prime Farmland Narrative

30. Page 5 near the bottom of the first paragraph indicates that there will now be 10,502.12 acres of prime farmland in the permit area. However, prior to the 4th addition there were 5,521.62 and there is 4,966.9 additional acres of prime farmland in the 4th addition area according to Table 4b in Section 2.8.2, which would total 10,488.52 acres of prime farmland. Please verify the total acres of prime farmland and make the necessary corrections. (SAS)

Section 3.1.2 – Mining Method Narrative

31. The second full paragraph on page 4 of Section 3.1.2 states as follows “*Due to a mining method whereby the 8750 dragline may remove both overburden and interburden, interburden and overburden mixing of the spoil material is expected. Interburden may also be removed by 195M draglines, scraper fleet, or a truck/shovel fleet. Projected respread depths were determined based upon overburden and interburden characteristics as shown in Section 2.8.3.*” The preceding description of projecting SPGM respread depths appears to contradict a note in the legend of Section 2.8.3 - Drill Hole Location, Overburden Characteristics and Projected Respread Depth Map that states as follows: “*Projected respread depths are based on overburden characteristics only. Interburden will be removed with (the) 195M dragline and will be placed in the pit. It will likely not be surface evident.*” The Reclamation Division’s review of overburden analysis from drill holes in the area of Revision 20 was based solely on overburden characteristics consistent with the note on Section 2.8.3. Please clarify and revise as necessary the aforementioned inconsistencies between mining methods and projecting SPGM respread depths in Sections 3.1.2 and 2.8.3. (WTG)

Section 3.3.2 – Blasting Map

32. **Follow up to original item no. 167:** On the Blasting Map, Section 3.3.2, please indicate if the farm buildings in Sections 11, 16, 21, 28, 32 & 33 are occupied/currently used or unoccupied/not currently used. (MSK)

Section 3.6.20 – 3.6.25 Design of Sediment Ponds

33. Please depict the pool areas for Ponds R21-01, R21-02, R05-01, and RR05-02 on Sections 3.6.25a, 3.6.26a, 3.6.27a, and 3.6.28a, respectively. The location of the spillway for pond R21-02, indicates that only half of the emergency spillway inlet will be utilized. Please correct as necessary. (MSK)

34. Please provide separate designs for Ponds R04-03 and R04-04. The narrative can explain that these ponds are in series. (MSK)
35. In Section 3.6.22a, Details of Sedimentation Pond R-01-03, please extend the emergency spillway into the plunge pool due to concerns of the steepness of the outfall slope of the emergency spillway. (MSK)
36. In Sections 3.6.20-3.6.29 – Design of Sedimentation Ponds, please be consistent in the manner which exit channel slopes are depicted on the Emergency Spillway Stage Discharge Data Sheets associated with all ponds. Currently some are shown as “+” slopes and some are shown as “-“ slopes. Presumably all should be “-“ slopes. (MSK)

Section 4.1.1 – Post-Mining Land Use Narrative

37. **Follow up to original item no. 178:** Please update the narrative on page 7 of Section 4.1.1 to indicate the postmine water source for the native grassland that will be reclaimed in Sections 20 and 33 of T145N, R83W. The existing narrative appears to indicate that Falkirk will replace or provide an alternate water source only in instances where a developed or undeveloped water source existed prior to mining. However, NDAC 69-05.2-09-13(1)(a) also requires a description of the necessary support facilities needed to implement the post mine land use. (GAW)
38. **Follow up to original item no. 178:** The premining land management information in the appendix in Section 2.7.3 indicates that there is a pond and a spring in the native grassland area in Section 18, T145N, R83W. Please show the pond on the Premine Land Use Map, Section 2.7.2, and a replacement pond on the Post Mine Land Use Map, Section 4.1.2. The associated land use tables in Sections 2.7 and 4.1 will also need to be updated. (GAW)

Section 4.1.2 – Post-Mining Land Use Map

39. Please revise the Post Mining Land Use Map to include the temporary wetland acreage for each quarter section of land in the Revision 20 addition area in the same manner as that done for the existing permit area. (GAW)

Section 4.2.4 – Reclamation Costs (Worst Case)

40. **Follow up to original item no. 197:** Under item 12d of Assumptions for Associated Disturbance the reconstruction cost was previously estimated at \$350,000, but it was lowered in the latest submittal. Please retain the \$350,000 value which includes \$50,000 for demolition and \$300,000 for reconstruction of the roadway, along with the construction and removal of a temporary bypass. This value seems more appropriate. (MSK)

41. All hourly calculations for truck/loader fleets should be calculated using whole number truck fleets, and based on the machine that controls the amount of material being moved. Please make the necessary corrections. (MSK)
42. **Follow up to original item no. 201:** The pit length of the Riverdale Pits is stated on page 12 in the Mining Disturbance Tables as being 8500 feet, but the worst case map depicts these pits as being approximately 9500 feet long. Please correct the table and associated calculations. All other adjusted pit lengths appear acceptable. (MSK)

Section 4.2.6A – Pre-Mine Contour Map

43. **Follow up to original item no. 206:** The wetlands in Section 21 are not identified on the Pre Mine Contour Map. Please update the map accordingly. (MSK)

Section 5.1 – Pre-Mining Wetlands

44. The field comments column for wetland SE21-01 (Section 21, T145N, R83W) in Table 2 of Section 5.1.1, Summary of Information Used to Verify Wetlands, indicates that 7.3 acres of this wetland are located outside of the permit boundary. This was the case prior to Revision 20; however, now this entire wetland is within the permit area. Please revise to clarify. (GAW)

As previously indicated, the application review period has been extended for an additional 120 days due to the large number of deficiencies noted in our March 3rd letter. The second 120 day review period began April 21st and 70 days now remain in the second review period. The review period is suspended until we receive Falkirk's response to all of the items listed above.

If you have any questions, please contact this office.

Sincerely,



James R. Deutsch
Director, Reclamation Division

cc: McLean County Auditor