August 2011
113672

Foundation Mine Refuse Disposal Area site Selection Study Alternatives Analysis Report

Volume 2

Revised:
November 2008
March 2009
August 2009
March 2010
October 2010
August 2011

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APPENDIX C

Site Selection Study for Supplemental Coarse/Combined Coal Refuse Disposal Area

Appendix C

SITE SELECTION STUDY FOR SUPPLEMENTAL COARSE/COMBINED COAL REFUSE DISPOSAL AREA

Table of Contents

Section **Page**

C.1 1st Assessment Site Elimination – Search Area Screening and Initial Site Selection C-2

C.2 2st Assessment Site Elimination C-3
C.2.1 2nd Assessment – Phase 1 ..... C-4
C.2.1.1 Storage Volume Efficiency C-4
C.2.1.2 Length of Conveyor Corridor C-4
C.2.1.3 Stream Impacts C-6
C.2.1.3.1 Disposal Area Impacts C-6
C.2.1.3.2 Conveyor Stream Crossings C-9
C.2.1.4 Wetland Impacts C-9
C.2.1.5 Public Water Supplies C-10
C.2.1.6 Residences Impacted by the Disposal Area C-10
C.2.1.7 Adjacent Potential Prime Farmland Area C-10
C.2.1.8 Wildlife Impacts/Present Land Use C-10
C.2.1.9 Exceptional Value Watershed Impact C-11
C.2.1.10 Road Impacts C-11
C.2.1.11 Utility Impacts C-12
C.2.1.12 Dust and Noise from Refuse Transport C-12
C.2.1.13 Aesthetics C-13
C.2.2 Results of Phase 1 ..... C-13
C.2.3 2nd Assessment – Phase 2 ..... C-14
C.2.3.1 Historic and Archaeological Sites C-14
C.2.3.2 Threatened or Endangered Species C-14
C.2.4 Results of Phase 2 ..... C-16

C.3 3rd Assessment Site Elimination C-16

C.4 Conclusions C-17

Attachment C-1: Stream Characterization Data
Stream 40636 (Site CR-1B)

Attachment C-2: Stream Quality Assessment Report by WPI
(for potential coarse/combined coal refuse disposal sites)

Attachment C-3: Agency Correspondence
(Coarse/Combined Coal Refuse Disposal Area)

Appendix C

SITE SELECTION STUDY FOR SUPPLEMENTAL COARSE/COMBINED COAL REFUSE DISPOSAL AREA

FMLLC is seeking approval to develop a separate coarse/combined coal refuse (CCR) disposal area so that the life of the proposed slurry impoundment can be extended. Without this CCR disposal area, CCR will be disposed within the slurry impoundment pool area, area more suitable for disposal of fine coal refuse slurry to be produced by Foundation Mine's preparation plant.

Summarized in the following subsections are results of the site selection study that was performed to identify the most feasible site for development as a CCR disposal area. Estimated environmental impacts, as well as technical/engineering factors and costs, were considered.

The site selection process generally followed the methodology outlined for the Foundation Mine slurry impoundment site selection study. The same search area was investigated and characterized using readily available information. Based on the alternatives analysis presented for the proposed slurry impoundment, preferred sites are not available for disposal, and underground disposal is not feasible.

FMLLC has considered the feasibility of transporting coarse coal refuse by rail to one of the remote disposal areas situated within the Non-HQ watershed. Areas CR-Area #3 and -Area #4 are situated near the existing rail line (see Exhibit C-1), therefore, they were selected for this evaluation. Implementation of the refuse rail transport option would require purchasing and installing loading and unloading facilities as well as dedicated rail spurs. A summary of the facilities that would be required is presented on Table C-1 along with approximate costs. As indicated on Table C-1, coal refuse rail transport costs (capital costs only) would be on the order of $38 million, making this option not feasible.

Thirty-one possible disposal sites were identified for evaluation: 24 sites located within the circular search area and the HQ watershed; and 7 additional sites located within the non-HQ watershed. Refer to Exhibit C-1 for the locations of these sites. All of the sites were initially screened for an obvious lack of easy accessibility/desired storage capacity and/or fatal flaws. Three sites having insufficient capacity, Sites CR-11B, CR-17, and CR-19A were eliminated from further consideration as a result of this 1st site assessment.

The remaining 28 sites were subjected to a 2nd assessment and comparison based primarily on environmental criteria. The 2nd assessment eliminated all but eight candidate disposal sites from further consideration. These remaining sites were subjected to a 3rd and final site assessment based on cost. Results of the 3rd assessment indicated one site, Site CR-1B as most favorable; therefore, FMLLC proposes Site CR-1B for development as a coarse coal refuse disposal area.

The following subsections summarize each of the three site assessments and the conclusions made as a result of the assessments.

Table C-1. Estimate of Coal Refuse Rail Transport Costs

FACILITY	COST
LOADING	
Rail Spur: two 90-car rail lines, one for empty cars and one for loaded cars @ ~ 10,000 LF/line	
Track	$2,500,000
Earthwork	$4,000,000
Loadout Facility	$1,000,000
48" Refuse Belt to Loadout: say 3,000 LF @ $1,800/LF	$5,400,000
Property Purchase	$2,000,000
UNLOADING	
Rail Spur: two 90-car rail lines, one for empty cars and one for loaded cars @ ~ 10,000 LF/line	
Track	$2,500,000
Earthwork	$4,000,000
Rotary Dump Unloading Facility	$3,000,000
Conveyor and Bins: say 2,000 LF @ $1,800/LF	$3,600,000
Property Purchase	$10,000,000
TOTAL	$38,000,000

C.1 1ST ASSESSMENT SITE ELIMINATION – SEARCH AREA SCREENING AND INITIAL SITE SELECTION

The 25-square-mile search area and surrounding non-HQ watershed area that were screened for the slurry impoundment siting study were screened to identify potential disposal sites for coarse/combined coal refuse disposal.

State Game Land Areas and watersheds identified as Exceptional Value (EV) were excluded from consideration. Exhibit C-1 is a plan showing these exclusion areas. Potential prime farmland areas presented on Exhibit C-1 also were considered exclusion areas. They were identified following the same procedure described for the slurry impoundment siting study.

Search area not excluded from the siting study was screened to identify potential disposal sites. A disposal capacity of 12.9 million cubic yards was targeted. This disposal capacity corresponds roughly to a disposal life of 6 years. At that time, the slurry impoundment is expected to be ready for receipt of fine coal refuse. The additional coarse coal refuse disposal capacity provided by this additional combined/coarse refuse disposal area will allow fine coal refuse disposal within the slurry impoundment to be maximized.

Refer to Exhibit C-1 for locations and conceptual layouts of the 31 potential CCR disposal sites that were identified for further assessment. Available disposal capacities and disposal acreages associated with each are tabulated on that exhibit.

Each of the site layouts represents valley-fill type development. Side-hill fills that avoided stream impacts were considered but eliminated from further consideration because none of the potential valley sites could provide sufficient capacity when developed in that manner. The valleys are relatively narrow and have steep side slopes that generally are steeper than 2.5H:1V. Beginning deposition of coal refuse from an alignment offset 50 feet from the stream would result in little working room for material placement/compaction equipment and encroachment on contributing tributaries could not be avoided practically. Also, development of a pile out-slope of 3H:1V would result in a narrow band of coal refuse and likely would intercept existing ground well below the ridgeline.

A review of the tabulated disposal capacities indicates that three sites, CR-11B, CR-18, and CR-19A fail to provide the targeted disposal capacity. As a result, these three sites were eliminated from further consideration.

C.2 2ND ASSESSMENT SITE ELIMINATION

The remaining 28 potential disposal sites were evaluated and compared relative to their potential environmental impacts, public benefits, and other relevant parameters. The parameters/factors chosen for evaluation basically are those evaluated for the slurry impoundment site analysis. As indicated in the summary of that analysis, they were derived from the Subchapter E, Site Selection in 25 Pa. Code § 90.202 and from the PADEP TGD for coal refuse disposal site selection. They are:

Technical Factors

- Storage Volume Efficiency
- Length of Conveyor Corridor
- Presence of Mining

Environmental Factors

- Stream Impacts
  - Disposal Area Impacts
  - Conveyor Stream Crossings
- Wetland Impacts
- Residences Impacted
- Area Previously Disturbed/Present Land Use
- Historic & Archaeological Sites
- Adjacent Potential Prime Farmland
- Threatened or Endangered Species
- Wildlife

Social Factors

- Public Road Impacts
  - Disposal Area Impacts
  - Impacts from Coal Refuse Transport
- Utilities and Gas Wells
- Aesthetics
- Dust and Noise from Coal Refuse Transport

Because of the relatively large number of sites requiring evaluation, the 2nd assessment was completed in two phases. As a first step, the 28 potential disposal sites were evaluated and compared based on all the factors identified above except “Historic & Archaeological Sites” and

"Threatened or Endangered Species". Sites identified as most favorable after the first phase of assessment were subjected to a second phase of environmental assessment relative to these two parameters.

C.2.1 2nd Assessment – Phase 1

Table C-2 summarizes and compares impacts associated with each potential disposal site relative to the Phase 1 parameters described above. For each parameter/factor, the site(s) having the most favorable result (i.e., least impact) are shaded green. More than one site was shaded green for a given parameter when the impacts were considered to be roughly equal. When identification of the second most favorable site or sites for a given category was appropriate, green hatching was used. More detailed discussion of site impacts relative to each parameter are presented in the following subsections.

C.2.1.1 Storage Volume Efficiency

Conceptual grading plans for each of the remaining 28 sites were developed using available site topographic mapping as well as results of the prime farmland investigation. These grading plans then were evaluated to estimate available capacity for coal refuse storage. Calculated storage volumes are presented with first assessment screening results on Table C-2.

Since disposal on prime farmland area is prohibited, the site layouts avoided encroachment on areas having potential to be considered prime farmland. Grading plans assumed a simplified embankment configuration with 3H:1V out-slopes constructed between ridge tops and on the downstream embankment face. Each incorporated a flat/gently sloping top surface at approximately, but not beyond, elevations of surrounding ridge tops. As indicated for the slurry impoundment analysis, the areas shown are disposal areas only. Actual facility areas will be larger to accommodate other features such as access roads, drainage channels, soil stockpiles, sedimentation ponds, and conveyors, etc. Conceptual site layouts are shown on Exhibit C-1.

Comparison of the potential C/CCR disposal sites relative to disposal volume and site area was accomplished by evaluating and comparing the disposal volume provided per acre of disposal area – similar to the evaluation performed for the slurry impoundment site evaluation. The highest value of disposal volume per acre indicates optimal use of the proposed facility development and thus would be rated the highest for disposal efficiency. The estimated volume per acre for each site is shown on Table C-2.

Disposal Site CR-25 is considered most favorable relative to this category because it exhibits the highest storage volume efficiency – a value of 254,703 CY per acre.

C.2.1.2 Length of Conveyor Corridor

Coarse/combined coal refuse will be transported to the disposal site by belt conveyor. Construction and operation of coal refuse transport facilities will cause significant earth disturbance and the potential for uncontrolled release of coal refuse to the environment. Environmental impacts

Table C-2. Summary of 2nd Assessment Phase 1 Site Elimination

	PARAMETERS	CR-1B	CR-4	CR-6	CR-8	CR-9	CR-11A	CR-12	CR-15	CR-16	CR-17	CR-19B	CR-20	CR-21	CR-22	CR-23	CR-24	CR-25	CR-26	CR-27	CR-28	CR-29	CR-30	CR-Area #1	CR-Area #3	CR-Area #4	CR-Area #9	CR-Area #10A	CR-Area #10B
TECHNICAL FACTORS	**Total Storage Volume (Million CY)**	12.90	13.07	13.03	12.96	13.07	12.90	13.13	13.00	13.07	13.01	13.50	13.36	12.98	13.07	13.34	12.94	13.44	13.39	12.99	13.30	12.92	12.90	13.28	12.98	12.96	13.07	13.12	13.02
	Disposal Life (Years)	5.99	6.0	6.0	6.0	6.0	6.0	6.1	6.0	6.0	6.0	6.2	6.1	6.0	6.0	6.1	6.0	6.1	6.1	6.0	6.1	6.0	6.0	6.1	6.0	6.0	6.0	6.1	6.0
	Disposal Surface Area (Acre)	58.4	76.0	73.7	70.3	65.8	62.7	65.9	60.1	63.5	64.7	61.7	58.8	71.5	64.0	71.7	60.6	52.8	64.2	60.4	82.2	62.3	61.3	63.1	63.5	60.7	61.6	71.4	78.0
	Storage Vol. Efficiency (Volume/Acre)	220,819	172,093	176,818	184,365	198,802	205,696	199,129	216,353	205,824	201,056	218,686	227,374	181,622	204,359	186,093	213,401	254,703	208,513	214,896	161,834	207,258	210,602	210,569	204,461	213,539	212,132	183,846	166,957
	Length of Conveyor Corridor, LF (conveyor length is directly proportional to cost, disturbed area, and potential for env impacts)	1,632	9,254	6,347	13,931	12,005	9,997	10,265	10,036	9,154	7,636	17,450	8,223	6,769	9,978	13,338	11,321	16,344	14,268	9,765	13,398	14,251	18,139	20,955	27,901	25,733	16,344	13,574	15,157
ENVIRONMENTAL FACTORS	**Estimated Stream Impacts**																												
	Estimated Stream Length Impacted (LF)	2,864	4,436	3,901	5,028	3,043	2,587	3,152	2,589	2,765	3,302	3,027	4,248	3,559	3,563	3,683	2,805	2,457	2,574	3,213	4,047	3,028	3,493	2,774	3,791	3,540	3,179	3,293	3,289
	Disposal Volume/LF of Stream (CY/LF)	4,503	2,947	3,341	2,578	4,296	4,986	4,166	5,023	4,727	3,940	4,460	3,146	3,647	3,670	3,621	4,612	5,469	5,202	4,042	3,287	4,266	3,693	4,788	3,423	3,662	4,112	3,983	3,959
	Refuse Transport - Stream Crossings (Nos.)	0	1	1	4	3	2	2	1	1	1	4	1	1	1	1	1	3	3	1	1	2	3	4	4	4	3	3	3
	Wetland Area Impacted (Hydric Soil Acres)	6.98	7.44	2.67	4.12	2.74	4.81	3.19	6.31	3.97	6.21	0.53	1.02	2.88	2.05	3.53	1.33	0.97	12.91	0.55	1.72	0.72	2.27	9.77	1.26	2.84	0.01	3.50	3.01
	Residences Impacted [3]																												
	Residences Within Site Boundary (Nos.)	0	0	0	0	0	0	0	0	0	0	1	0	3	3	0	0	1	0	1	3	0	4	1	4	2	3	2	1
	Residences Within 1000' & Not Owned by Mine (Nos.)	1	3	2	0	1	1	0	0	1	0	3	3	4	4	3	2	4	1	2	2	1	2	5	1	2	5	3	2
	Potential Prime Farmland Soils Area Impacted by Support Facilities (acres)	None	None	1.22	3.60	None	None	None	1.13	None	None	None	0.69	0.48	None	None	None	None	None	1.51	None	None	None	None	0.52	0.72	2.85	None	1.41
	Wildlife Impacts [4]	99% F 1% A 0% U	79% F 16% A 5% U	67% F 33% A 0% U	87% F 11% A 2% U	87% F 13% A 0% U	85% F 15% A 0% U	100% F 0% A 0% U	78% F 22% A 0% U	73% F 12% A 15% U	98% F 1% A 1% U	89% F 11% A 0% U	100% F 0% A 0% U	92% F 0% A 8% U	77% F 19% A 4% U	97% F 3% A 0% U	97% F 0% A 3% U	95% F 4% A 1% U	100% F 0% A 0% U	94% F 5% A 1% U	93% F 5% A 2% U	98% F 0% A 2% U	74% F 2% A 24% U	59% F 38% A 3% U	72% F 24% A 4% U	99% F 1% A 0% U	63% F 34% A 3% U	54% F 44% A 2% U	94% F 5% A 1% U
	Conveyor Corridor crosses EV Watershed (Y/N)	N	N	N	Y	N	Y	Y	N	N	N	N	N	N	N	N	N	Y	N	N	N	N	N	Y	N	N	Y	Y	Y
SOCIAL FACTORS	**Road Impacts**																												
	Disposal Area Footprint - Twp Roads Impacted (LF)	None	5,014	2,355	2,629	2,422	None	None	None	None	None	2,847	345	None	2,104	None	4,663	890	1,296	2,862	2,285	2,283	4,164	1,862	1,974	2,985	1,178	2,685	1,818
	Disposal Area Footprint - State Roads Impacted (LF)	None	None	None	None	None	None	None	None	None	None	None	None	None	None	None	None	None	None	None	None	None	None	None	None	None	1,313	None	None
	Rock Truck Haul on Public Roads (LF of road)	0	7,721	0	21,428	29,430	10,833	9,071	6,756	7,294	5,447	14,410	29,132	22,134	17,766	13,894	10,907	11,566	12,214	26,211	29,970	22,781	20,702	17,871	44,396	40,473	6,703	14,601	15,085
	Refuse Transport - Road Crossings (Nos.)	0	2	1	4	3	2	1	1	1	1	2	3	2	2	3	2	2	2	4	4	4	4	4	13	12	2	3	3
	Utilities Impacted Within Site Boundaries																												
	Gas Transmission Lines Impacted (LF)	243 (5)	None	834	None	299	None	None	1,939	1,075	None	None	2,330	1,349	3,322	None	None	None	3,584	491	None	779	5,200	1597 (5)	1,800	1,486	None	None	None
	Power Transmission Line Impacted (LF)	None	None	None	None	None	None	None	None	None	None	None	None	None	None	None	None	None	None	None	None	None	None	None	None	None	None	None	None
	Electric & Telephone Lines Impacted (LF)	None	5,014	2,355	2,629	2,422	None	None	None	None	None	2,847	345	None	2,104	None	4,663	890	1,296	2,862	2,285	2,283	4,164	1,862	1,974	2,985	2,491	2,685	1,818
	Gas Wells to be Impacted (Nos.)	1	0	2	0	0	0	1	1	3	0	0	0	2	3	1	0	1	2	1	2	0	0	3	1	4	0	3	2
	Dust & Noise from Refuse Transport [3]																												
	Dwellings within 1000' conveyor rte. & not owned by mine	0	1	1	10	7	1	0	0	0	0	9	5	4	7	2	1	7	7	4	5	7	12	14	17	15	4	2	2
	Dwellings within 1000' truck route & not owned by mine	0	1	0	24	37	1	5	5	5	4	8	29	22	17	3	1	7	8	30	36	21	21	11	45	40	11	20	20
	Aesthetics (Visibility of disposal area)																												
	Relative to Roads (# roads w/visibility)	1	3	1	1	1	1	1	1	1	1	2	1	1	1	1	3	1	1	1	2	3	1	3	1	2	2	1	1
	Rel. to Dwellings (# non-mine dwellings w/visibility)	1	3	3	1	0	0	0	0	0	1	3	3	8	5	3	2	7	2	2	5	1	4	6	3	7	4	3	2

[1] Pipeline is Dead - Abandoned in place
[2] Pipeline length obtained from USGS mapping - asssumed to have a 16" diameter based on other lines in the area.
[3] Residences owned by Foundation not included
[4] F = Forested; A = Agriculture; U = Unclassified
[5] 16" Ø - Abandoned - Dead in Place Gas Lines not included

Note:
Highlighted entry indicates "most favorable" for given category.

Hatched entry indicates "second most favorable" for given category.

associated with coal refuse transport by these facilities, like transport costs and energy usage, are directly proportional to the length of the transport route. That is, more energy will be required, more cost will be incurred, and more environmental impacts will be sustained to transport coal refuse to remote sites as compared to sites nearer the preparation plant.

Comparison of the conveyance distance associated with each of the sites was accomplished by estimating, for each disposal facility, the location and length of conveyor corridor necessary to deliver coal refuse from the preparation plant. Refer to Exhibit C-2 for the horizontal conveyor alignments conceptualized for each disposal facility. Conveyance lengths are presented on Table C-2.

The site with the shortest conveyor length and therefore the most favorable with respect to this parameter is Site CR-1B which has an estimated length of approximately 1,632 LF.

C.2.1.3 Stream Impacts

C.2.1.3.1 Disposal Area Impacts

Stream Length. Stream impacts were assessed by first determining the lengths of stream encroachment that would result from disposal within each of the 28 potential sites. For each of the sites, the individual site footprints shown on Exhibit C-1 were assumed to be impacted. Stream lengths at each site were established using a combination of USGS topographic mapping and mapping prepared by the USDA Soil Survey. Site stream lengths determined in this manner are presented on Table C-2 and depicted on Exhibit C-2.

Based on information presented on Figures 2 and 3 of Appendix WPI, streams within only 9 of the 28 potential disposal sites have been completely delineated in the field. Because sites with fully delineated stream lengths are such an overwhelming minority, estimation of stream length impacts for all of the sites using published information will produce a fairer, more reasonable, site comparison than using delineated lengths for 9 sites and estimates for the remaining 19 sites whereby USGS stream lengths are increased uniformly using a factor determined from USGS/delineated length comparisons (as was done for the slurry impoundment investigation). Also, stream data developed from rigorous field investigation provides a level of detail and accuracy greater than that required by the TGD and often are not available for site alternatives analyses.

Table C-2 includes the total impacted stream length estimated for each potential disposal site as discussed above, along with the disposal volume provided per linear foot of stream impacted. Comparison of the sites relative to stream length impacts was accomplished by evaluating and comparing the disposal volume provided per foot of stream impacted – similar to the comparison performed for the slurry impoundment investigation.

The highest value of disposal volume per linear foot indicates optimal use of the stream length that will be taken and thus is considered most favorable for this evaluation criterion. Generally, this is a site or sites exhibiting values that approximate a single value. However, for this analysis selection of sites exhibiting values within a range is more appropriate considering the accuracy of the data used to make the determination. Results of the stream length study performed for the slurry

impoundment show that field delineated stream lengths can be as much as 66.5% higher than lengths indicated by published data. During this study performed for the coarse/combined coal refuse disposal area, it was noted that, except for Site CR-11A, USDA stream lengths were 65 to 169 percent higher than lengths determined from USGS mapping for sites exhibiting the highest "disposal volume/linear foot of stream" values. For CR-11A, USDA and USGS stream lengths were the same. As a result of the variations noted, it is not reasonable to assume one highest ranked site as the most favorable. Sites exhibiting values within 10% of the largest storage volume per linear foot efficiency were considered most favorable, while sites between the 10% to 20% range were considered second most favorable. Using these criteria, values within 10% of the highest efficiency value were exhibited by sites CR-11A, CR-15, CR-25, and CR-26. Second most favorable sites include CR-1B, CR-16, CR-19B, CR-24, and CR- Area #1.

Water Quality. Stream data presented and analyzed for the slurry impoundment investigation indicate a general, relative equality among water quality parameters and macroinvertebrate communities across the entire study area. No single site presents itself as a preferable watershed. None of the water quality parameters support the distinction between HQ and non-HQ watersheds; and none of the HQ watersheds exhibited appreciably better water quality than the non-HQ watersheds.

Data representing the water quality within watershed sites being evaluated as part of this coarse/combined coal refuse site investigation confirm conditions established by the analysis performed for the slurry impoundment study. Stream/water quality data that were collected as part of Foundation Mine permitting within the study sites are summarized in Table C-3. The data presented on this table were obtained from the following sources:

- Attachment C-1; A report of stream characterization data collected by Wallace and Pancher, Inc. (WPI) for Sites CR-1B

- Attachment C-2; A stream quality report prepared by Wallace and Pancher, Inc. (WPI) for sites evaluated for the coarse/combined coal refuse disposal area.

- Appendix 'WPI; Stream Quality and Wetland Assessment Report prepared by WPI for the slurry impoundment alternatives analysis.

As indicated in the Attachment C-2 report, several of the site alternatives could not be sampled due to lack of permission from land owners. Where possible, sampling was conducted at the nearest available stream downstream of the site. However, several sites did not have suitable areas downstream that would characterize conditions found within them and therefore do not have data available.

Stream water quality data presented above in Table C-3 are comparable to data presented in Table 5-2 of the slurry impoundment site analysis. They do not indicate the presence of a preferred site due to water quality degradation and they confirm there is virtually no distinction in water quality within the HQ watershed compared to the non-HQ watershed. Stream flows within the sites exhibit neutral pH and conductivity values that generally are less than 293 µmho/cm. One site, CR-Area #3 exhibited a greater conductivity value of 400 µmho/cm. Habitat scores indicate sub-optimal stream habitat (score of 75% to 51%) within most sites. Scores indicating marginal habitat were obtained for seven sites, CR-4, CR-6, CR-8, CR-19B, CR-Area #1, CR-Area #9, CR-Area #10A. Biological

Table C-3. Results of Stream/Water Quality Analyses

Site/Sampling Event	Ph	Temp. (°C)	Dissolved Oxygen (ppm)	Spec. Cond. (µmho/cm)	Alka. (mg/l)	Hot Acidity (mg/l)	Iron (mg/l)	Mn (mg/l)	Al (mg/l)	Sulfate (mg/l)	Suspend. Solids (mg/l)	Habitat Score (%)	Total Biological Score	Average Pollution Tolerance
CR-1B														
Appendix A Sampling [1]	7.51	8.8	8.93	150								62		
April 30, 2008														2.24
Water Quality (1-21-10)	7.30						0.262		0.231					
Water Quality (7-28-11)	7.64	17.9	8.21	185	62.8	-38.1	0.460	0.06	0.36	50.5	7.5	58		
CR-4														
10/7/2010	7.55	10.0	10.0	280								39		
CR-6														
Appendix A Sampling [1]	7.40	9.9	5.85	279								48		
RA 6 B1 [2]	7.42	11.1	0.35	240								52	17.1	6.00
CR-8														
Appendix A Sampling [1]	7.17	6.9	11.58	252								48		
RA 8 B2 [2]	7.55	9.9	12.90	219								73	39.5	5.18
CR-9														
Appendix A Sampling [1]	7.16	6.4	10.32	289								52		
CR-11A														
Appendix A Sampling [1]	7.44	6.8	10.70	169								69		
HOU 14 [2]	7.55	9.74	13	151								60		
HOU 15 [2]	7.69	10.63	10.22	173								66	76.4	3.96
CR-15														
Appendix A Sampling [1]	7.75	11.9	10.10	159								71		
CR-16														
Appendix A Sampling [1]	8.29	12.5	9.62	162								66		
CR-17														
Appendix A Sampling [1]	7.71	9.1	9.60	151								62		
CR-19B														
Appendix A Sampling [1]	7.2	8.2	11.91	0								64		
RA 19 B1 [2]	7.13	7.8	12.15	0								43	38.1	4.45
CR-20														
Appendix A Sampling [1]	7.65	6.0	9.1	190								59		
CR-21														
10/7/2010	7.23	12.0	7.6	293								58		
CR-22														
Appendix A Sampling [1]	7.36	10.3	9.1	196								71		
CR-25														
Appendix A Sampling [1]	7.72	7.1	9.25	215								62		
CR-27														
Appendix A Sampling [1]	7.41	6.6	8.07	183								60		
CR-28														
Appendix A Sampling [1]	7.32	11.8	9.25	190								66		
CR-29														
HAR T14b [2]	7.68	6.8	13.71	187								67		
CR-Area #1														
Appendix A Sampling [1]	7.64	11.0	9.86	194								65		
FTR 6 [2]	8.0	12.9	13.66	209								48	23.6	5.46
FTR 7 [2]	7.4	14.4	7.33	155								47	10.4	6.70
CR-Area #3														
Water Quality (1-21-10)	7.74			400	100.80	-63.68	0.96	1.27	0.87	27.0	1.0			
CR-Area #4														
Water Quality (1-21-10)	7.05			163	56.58	-26.47	0.34	0.04	0.45	62.0	4.0			
CR-Area #9														
Appendix A Sampling [1]	7.61	9.0	7.08	159								33		
CR-Area #10A														
Appendix A Sampling [1]	7.74	6.9	9.97	184								61		
WR 6 [2]	7.74	11.8	10.7	192								45		
CR-Area #10B1														
Appendix A Sampling [1]	7.62	6.2	10.70	191								68		
WR 8 [2]	7.84	9.21	11.46	186								61		
CR-Area #10B2														
Appendix A Sampling [1]	7.78	10.5	9.65	171								67		

[1] Average of Appendix A results of sampling points for potential Foundation Mine Refuse Areas. 11/8/2006 through 2010.

[2] Average of Appendix B Sampling Results for potential Foundation Mine Refuse Areas. 11/2007 to 1/2008.

scores for the sites analyzed varied from a low of 10.4 within CR-Area #1 to a high of 76.4 within CR-11A. A low pollution tolerance score of 4.16 also was obtained within CR-11A indicating favorable water quality. A pollution tolerance score of 2.24 was obtained for Site CR-1B, but as noted in Attachment C-2, a Shannon-Wiener Diversity Index value of 1.969 was obtained for this site suggesting there might be some impairment to the stream. The highest pollution tolerance score, 6.7, was obtained within CR-Area #1 where the lowest biological score was measured. The lower pollution tolerance score, by comparison, indicates poorer water quality.

C.2.1.3.2 Conveyor Stream Crossings

As indicated previously, coarse coal refuse will be transported to the disposal site by belt conveyor. Often, the most logical corridor between the preparation plant and disposal site for conveyor construction involves stream crossings. Associated with each crossing is a potential for adverse stream impacts during construction when the area is disturbed, as well as during operation if an uncontrolled release of coal refuse occurs. The greater the number of crossings, the greater the potential for stream impacts to occur.

The conceptual conveyor alignment to Site CR-1B is not expected to require a stream crossing therefore Site CR-1B is considered most favorable relative to this parameter.

C.2.1.4 Wetland Impacts

Site field delineated wetland data are available for only 14 of the 28 sites being evaluated, and partial data is available for two additional sites. Of the sixteen sites that were visited, wetlands were found in only two sites. Due to the lack of field data available in many of the sites, available public information was utilized to allow fair comparison among all sites in considering wetland impacts.

Sources of wetland impact information typically used for disposal site alternatives analyses (e.g., soils data from the Natural Resource Conservation Service (NRCS), National Wetlands Inventory Maps (NWI), and available aerial and USGS 7.5 Minute Series Topographic mapping), were used for this analysis. NWI mapping identified small wetland areas within only two of the 28 possible sites: Site CR-26 (0.12 acre) and CR-Area #10B (0.02 acre). Because so few of the sites were represented by this data source, wetland impact potential for each site was assessed based on the quantity of hydric soils present at the site. Hydric soil acreages for the site alternatives were determined from a review of hydric soil data presented on the NRCS website and subsequently recorded on Table C-2.

Based on available hydric soil information, development at any of the sites has the potential to impact wetlands. Site CR-Area #9 reportedly has the smallest area of hydric soils, 0.01 acre; therefore, it was identified as most favorable with respect to potential wetland impacts. Sites CR-19B, CR-25, CR-27, and CR-29 each have less than an acre of hydric soils and are identified on Table C-2 as second most favorable.

C.2.1.5 Public Water Supplies

PADEP Bureau of Water Standards and Facility Regulation have no record of any public water systems that have a surface water intake within ten (10) miles downstream of the search area or subsurface ground water sources (springs or wells) within one half mile of the search area. It is therefore concluded that none of the sites will impact community drinking water supplies. All potential disposal sites have been ranked 'most favorable' relative to public water supplies. See Appendix B for correspondence from the PADEP Bureau of Water Standards and Facility Regulation.

C.2.1.6 Residences Impacted by the Disposal Area

Information obtained from USGS Quadrangles and available aerial photography were used to estimate the number of residences located within or in the immediate vicinity (within 1,000 feet) of each potential disposal site. Estimated numbers of residences in each category, at each disposal site, are shown on Table C-2. Note that residences owned by Foundation Coal were not included in the totals presented on the table.

Sites with no residences located within or within 1,000 feet of the disposal area boundary are considered most favorable with respect to this criterion. Four sites meeting this criterion, CR-8, CR-12, CR-15, and CR-17, have been identified as most favorable on Table C-2. Sites CR-1B, CR-9, CR-11A, CR-16, CR-26, and CR-29 have been identified as second most favorable because they have no residence within the site and only one residence within 1,000 feet.

C.2.1.7 Adjacent Potential Prime Farmland Area

Development and operation of the disposal site will require support facilities (i.e., roads, channels, ponds, stockpiles, etc.) downstream of the disposal area and on the ridges bordering the site. At many of the sites, potential prime farmland areas identified during the 1st assessment are adjacent to the disposal area and would be affected by the support facilities. The total acreage surrounding each site that could be affected by support facilities was determined and tabulated on Table C-2. As indicated on the table, most of the sites have no surrounding potential prime farmland areas that could be affected, therefore, these sites were considered most favorable for this site evaluation parameter. For support facilities, however, prime farmland soil areas must be greater than or equal to 5 acres to be considered prime farmland. Since the potential prime farmland soil acreages presented on Table C-2 for the remaining sites are less than 5 acres, these sites are highlighted on the table with green hatching as second most favorable with respect to this category.

C.2.1.8 Wildlife Impacts/Present Land Use

There are no national or state parks, national wildlife refuges, wild or scenic rivers, national or state forests, or state game land within the potential disposal sites. The sites are rural areas that are sparsely populated. They include primarily forested areas and pasturelands. There are relatively minor disturbances at each of the sites consisting of those associated with houses, roadways, gas

transmission lines and/or gas wells. One site, CR-Area #3, overlies the Blacksville No. 2 Mine workings.

Land cover for all the potential disposal sites (i.e., percentage of forest, agricultural, and unclassified area) was determined using aerial mapping and the PAMAP Landcover 2005 dataset obtained from Penn State University. See Table C-2 for land use types and percentages associated within each potential coal refuse area.

The potential wildlife impact associated with development of a coal refuse disposal area is a function of the type and amount of habitat that would be lost and the number and type of wild life species that potentially use each habitat type. Forested areas contain species of trees that provide resting, nesting, and feeding sites for non-migratory birds and resting and feeding sties for neo-tropical migrant birds. The trees also provide habitat and food source for small mammals such as squirrels, chipmunks, foxes and raccoons and larger animals as well. As a result, development of sites having the least amount of forested area would result in the least impact on area wildlife.

Site CR-Area #1 contains has the smallest area of forested land, 59% of the total area which corresponds to 37.2 acres, that would be disturbed. Therefore, CR-Area #10A is identified on Table C-2 as most favorable relative to potential wildlife impacts.

C.2.1.9 Exceptional Value Watershed Impact

Transport of coal refuse to seven sites (CR-11A, -12, - 25, -Area #1, Area #9, Area #10A, and -Area #10B) will require construction and operation of a refuse belt conveyor within an exceptional value (EV) watershed. See Exhibit C-2. Because the remaining twenty sites have no potential for impacting an EV watershed, they are considered most favorable relative to this criterion as indicated on Table C-2.

C.2.1.10 Road Impacts

Public roads will be impacted by disposal operations if the road crosses the proposed disposal site and must be abandoned or replaced as part of the facility development. Transport facilities used to deliver coal refuse to the disposal site also will have an impact on public roads. Trucks used to haul breaker rock to the disposal site may have to use public roads and belt conveyors may have to cross roads. Evaluation and comparison of each potential disposal site relative to these impact parameters are discussed below.

> Disposal Site Impacts to Public Roads. As indicated on Table C-2, public road impacts will not occur with development of eight sites, CR-1B, -11A, -12, -15, -16, -17, -21, and -23. Therefore, these eight sites have been identified as most favorable relative to this criterion.
>
> Rock Truck Haul on Public Roads. Breaker rock will be hauled to the disposal site by truck. Considering that breaker rock typically is 4 to 5 percent of the total coal refuse volume, approximately 650 tons per day of breaker rock is expected to require transport during daytime hours from the Foundation Mine preparation plant to the disposal site when the mine is producing at full capacity. Generally transport is accomplished on mine access

roads using off road vehicles. Twenty-seven of the twenty-eight potential disposal sites are located a significant distance from the preparation plant and would require construction of long costly haul roads to areas that are remote relative to the mine site. The feasibility of constructing dedicated haul roads for this limited use requires evaluation beyond the required scope for this alternatives analysis. An alternate transport method, and one that was assumed for this analysis, is that smaller on-road trucks (25-ton weight limit) would be used to carry breaker rock over public roads to the remote sites resulting in 26 such truckloads per day. Environmental impacts associated with hauling on public roads would include increased safety concerns, increased fugitive emissions, increased public nuisance, increase road maintenance requirements and shortened roadway pavement life.

Likely haul routes to the twenty-eight potential disposal sites are shown on Exhibit C-2. The distances refuse would be hauled on public roads to each site are indicated on Table C-2. Each haul route via a public road starts from one of two mine access roads to the preparation plant. Note that township or county roads proposed for hauling could require widening and re-paving to accommodate the increased truck traffic.

Sites CR-1B nor CR-6 will require the use of public roads to haul breaker rock; therefore, CR-1B and CR-6 are considered most favorable relative to this criterion.

Refuse Transport – Road Crossings. Coarse coal refuse conveyor corridors for many of the sites cross state or township roads. Construction of these crossings would be costly and would impact road traffic during the construction period. Design of state road crossings would have to be in accordance with PennDOT requirements and would require PennDOT approval. Belt conveyors would have to be designed to contain the refuse and minimize spillage to the road traffic below.

All of the sites, except CR-1B, will require at least one road crossing by the refuse conveyor; therefore, CR-1B is considered most favorable relative to this parameter.

C.2.1.11 Utility Impacts

USGS Rogersville and Holbrook Quadrangle Maps and a map prepared by FMLLC from aerial photography were reviewed, and the PA One Call System was contacted to locate gas and power transmission lines as well as other utilities that may be impacted by the twenty-eight potential disposal sites. Based on this available information it appears that gas wells and transmission lines and/or electric, gas, and telephone service lines may be impacted by one or more of the disposal sites. No site will impact power transmission lines. Refer to Exhibit C-2 for approximate locations of the transmission lines and gas wells that were identified. Electric, gas, and telephone lines for residential use are generally located along all of the public roadways and are not shown on Exhibit C-2. For each type of utility, sites that would not cause an impact upon development are shown on Table C-2 as most favorable.

C.2.1.12 Dust and Noise from Refuse Transport

Construction and operation of the refuse belt conveyor and traffic on the breaker rock/refuse truck route will increase dust and noise for those living in close proximity. Lights on the conveyor also

may be viewed as a nuisance. Information obtained from USGS Quadrangles and available aerial photography were used to estimate the number of residences located within 1,000 feet of each conveyor route for each potential disposal site. Estimated numbers of residences are shown on Table C-2 for each route and each disposal site. Note that residences owned by Foundation Coal were not included in the totals presented on the table.

No dwellings are located within 1,000 feet of the proposed conveyance route or breaker rock/refuse truck route associated with Site CR-1B; therefore, Site CR-1B has been identified as most favorable relative to this parameter.

C.2.1.13 Aesthetics

The visibility of each disposal site to area roads and dwellings was evaluated. This was accomplished by reviewing site locations relative to existing dwellings and roads considering site topography as indicated by the USGS topographic map. Results of the evaluation are presented on Table C-2 for comparison purposes.

All of the sites will be visible from at least one road. Sites visible from only one road have been identified as most favorable relative to this criterion as indicated on Table C-2. All but five potential disposal areas will be visible from at least one residence. Only sites CR-9, CR-11A, CR-12, CR-15, and CR-16 will not be visible by a residence; therefore, these sites have been identified as most favorable with respect to visibility to residences.

Results of Phase 1

Ten of the 28 sites characterized in Table C-2 sites have been selected for further evaluation as potential disposal sites based on the Phase 1 environmental criteria.

Two sites, CR-1B and CR-25 stand out as “favorable” or “most favorable” for the greatest number of criteria. CR-1B is desirable because it is integral with the plant area and, as a result its operation will have little or no impact to the surrounding community. Coal refuse transport to this site will be accomplished on plant roads/property away from residences. No roads will be impacted by CR-1B development and the site has been included in the “second-most favorable” category relative to stream impacts as measured by “disposal volume per linear feet of stream”. This site is highly forested; therefore, it will have a greater impact on areas wildlife compared with some of the other sites evaluated. CR-25 is remote from the plant site, but it has been classified as “most favorable” relative to the stream criterion described above and it provides the best storage volume efficiency among the sites. Area roads will be impacted by both coal refuse disposal and transport operations associated with Site CR-25.

Five additional sites, CR-11A, CR-15, CR-16, CR-24, and CR-26, also were selected as potential disposal sites for further evaluation. These sites were selected primarily because they were identified as “most favorable” or “second-most favorable” relative to disposal volume per linear foot of stream. CR-19B also received a “second-most favorable” rating relative to the stream criterion, but it was not selected for further consideration because this site is located further from

the preparation plant than the other sites and does not exhibit characteristics better than those of the other sites.

Finally, three distant sites located outside the search area, CR- Area #1, CR-Area #3, and CR-Area #4 were selected for additional consideration to evaluate the feasibility of transporting the refuse outside the HQ watershed for disposal.

C.2.2 2nd Assessment – Phase 2

C.2.3.1 Historic and Archaeological Sites

The Pennsylvania Historical and Museum Commission (PHMC) has been contacted regarding the potential for historic or archaeological sites to be present within the eight disposal sites remaining as "potential" after Phase 1 of the 2nd site assessment. Five of the sites were investigated as part of the slurry impoundment site investigation. They are: CR-1B, CR-11A, CR-15, CR-16, and CR-Area #1. Refer to Appendix B for agency correspondence pertaining to those sites. Note that Sites CR-1B, CR-11A, CR-15, and CR-16 initially were referred to as R6, R4, R11, and R10, respectively, during early stages of data collection. Refer to Attachment C-3 for a copy of the letter sent to PHMC, dated February 10, 2010, requesting information pertaining to Sites CR-24, CR-25, and CR-26, as well as their response.

PHMC has not specifically identified archaeological sites within any of the sites. Although their response indicates the presence of historic 19th century farmsteads in valleys of most of the sites evaluated for the slurry impoundment study, only one of the five sites being evaluated as part of this study included a residence within the site boundary. Area #1 contains one residence. According to PHMC all locations could have supported prehistoric sites.

Because no specific archaeological sites could be identified in any of the potential refuse disposal sites, and all of the sites have potential to contain significant archaeological resources, all are considered equal with respect to this parameter. That is, no one site is being considered more favorable.

Appropriate archaeological investigations will be conducted on the selected disposal site as part of the facility permitting process.

C.2.3.2 Threatened or Endangered Species

Inquiries into the possible presence of threatened or endangered species have been performed. A PNDI search was performed on February 10, 2010 for the seven potential disposal sites remaining after Phase 1, as well as two sites not selected for further consideration, Sites CR-Area #3 and -Area #4. Result of the search indicated a need for further review by the Pennsylvania Department of Conservation and Natural Resources (DCNR) Bureau of Forestry and US Fish & Wildlife Service (USFWS). Included in Attachment C-3 is agency correspondence regarding PNDI search results. Baker's February 10 letters to DCNR and USFWS include copies of the PNDI results. Results of the investigation are summarized on Table C-4.

As indicated on Table C-4, DCNR has cleared Sites CR-1B, CR-25, and CR-26, and PNDI search results have cleared Site CR-24 for species regulated by DCNR. DCNR has recommended

Table C-4. Result of PNDI/Threatened and Endangered Species Investigation.

Site	PNDI Results	DCNR Follow-up	USFWS Follow-up
CR-1B	Further review by DCNR required; Common Roadside Skipper.	Least likely to impact, site clearance provided.*	
CR-11A	Further review by DCNR required; Common Roadside Skipper and Nuttall's Hedge-nettle.	Botanical survey for one species required.	
CR-15	Further review by DCNR required; Common Roadside Skipper.	Unlikely to impact but development at this site not preferred.	
CR-16	Further review by DCNR required; Common Roadside Skipper.	Unlikely to impact but development at this site not preferred.	
CR-24	Further review by PFBC required		Site within the range of the Indiana Bat
CR-25	Further review by DCNR required; Common Roadside Skipper and Nuttall's Hedge-nettle.	Unlikely to impact, site clearance provided.	
CR-26	Further review by DCNR required; Common Roadside Skipper.	Unlikely to impact, site clearance provided.	
CR-Area #1	Further review by DCNR required; Common Roadside Skipper.	Most likely to result in negative impacts; botanical survey for host plants for an invertebrate required.	
CR-Area #3	Further review by DCNR required; Common Roadside Skipper, Single-headed Pussy-toes, Silvery Checkerspot, Leaf-cup, Carolina Willow, and Wild Senna.	Botanical survey for four species plus host plants for an invertebrate required.	
CR-Area #4	Further review by DCNR required; Common Roadside Skipper, Single-headed Pussy-toes, Silvery Checkerspot, Leaf-cup, and Carolina Willow.	Botanical survey for four species plus host plants for an invertebrate required.	

***** DCNR highly recommends choosing Alternative CR-1B.

selection of Site CR-1B per their February 24, 2010 letter (see Attachment C-3). Despite the favorable ratings provided for four of the sites relative to the remaining four sites, particularly CR-1B, all eight sites are being treated equally relative to this parameter.

PNDI search results indicated a need for Site CR-24 to be reviewed by USFWS. A letter was sent to USFWS on February 10, 2010. The USFWS response indicates the site is within the range of the Indiana Bat.

C.2.3 Results of Phase 2

Phase 2 of the 2nd site assessment focused on evaluating the eight sites remaining after the Phase 1 evaluation based on the potential for site development to impact historic and archaeological sites or threatened or endangered species. Based on results of the evaluation, all eight sites are being treated equally relative to the Phase 2 parameters and will be subjected to the 3rd site assessment that will consider cost.

C.3 3rd ASSESSMENT SITE ELIMINATION

A third and final assessment based on cost has been conducted to further evaluate and compare the eight potential disposal sites remaining after the 2nd site assessment.

A conceptual construction cost was prepared for each of the eight (8) potential disposal areas for comparison. Each estimate only considers significant costs and costs that would vary considerably among the disposal sites. They are land acquisition, disposal facility site preparation, conveyor installation, conveyor operation and maintenance, and gas line relocation. Costs for township road relocation that may be necessary for development of Sites CR-24, CR-25, CR-26, and CR-Area #1 have not been included. Table C-5 presents and compares cost estimates that were developed for each of the eight disposal areas.

Site development for each disposal area will consist of drain and liner installation as part of site preparation and installation of a low permeability vegetated cap when the facility is closed. PADEP has indicated that a synthetic cap will be required during the facility permitting stage. Development of any of the eight alternate disposal facilities will require construction and operation of a belt conveyor for transport of coarse coal refuse from the preparation plant to the disposal site. The conveyor cost would include 1) basic site preparation costs; 2) overland belt conveyor costs; 3) transfer station costs; and 4) conveyor operation and maintenance costs.

Unit costs used in this evaluation are based on Alpha Natural Resources' experience at other mine sites. Land acquisition costs at the project site vary widely. However, the average cost used by Alpha in their planning and budgeting was selected for this evaluation.

As shown on Table C-5, Site CR-1B would be the least costly disposal site to develop. The cost per cubic yard of coal refuse disposal at this site has been estimated to be $1.29/CY compared to the next highest cost of $2.81/CY for Site CR-11A. The primary cost differentials among the eight potential disposal areas are associated with land acquisition that would be needed to construct the proposed facilities, disposal area preparation and construction, and with refuse conveyance system installation and operation.

C.4 CONCLUSIONS

Based on results of this site alternatives analysis, FMLLC proposes Site CR-1B for disposal of coarse/combined coal refuse to be generated by the proposed Foundation Mine Preparation Plant. No other site is considered more favorable. Development of a non-impounding coal refuse disposal facility at Site CR-1B not only will facilitate coal refuse disposal during initial mine operation when the slurry impoundment is being prepared, but it also will extend the life of the slurry impoundment and the mine's fine coal refuse disposal capacity.

Analysis of a search area greater than 25-square miles surrounding the proposed Foundation Mine coal preparation plant initially identified 31 possible disposal sites for coal refuse generated by the plant. No preferred sites were identified and underground disposal was determined to be not feasible. Possible disposal sites were identified within the HQ watershed area surrounding the proposed preparation plant as well as sites within the non-HQ watershed beyond the 25-square mile search area.

The site alternatives analysis demonstrates that no site is better for coarse/combined coal refuse disposal than Site CR-1B when considering environmental impacts, particularly impacts to streams, aquatic resources, and impacts to local residents, as well as cost.

Disposal of coarse coal refuse in a separate disposal area rather than the slurry impoundment pool area will increase the impoundment's available disposal capacity for fine coal refuse slurry. As a result, the life of the slurry impoundment will be extended. Development of Site CR-1B for coal refuse disposal as proposed will provide approximately 12.9 million cubic yards of additional disposal capacity. Site CR-1B will be designed to receive combined coal refuse that will be generated during initial mine operations and coarse coal refuse generated after the slurry impoundment is constructed.

The CR-1B Disposal Facility will be located in an undeveloped valley close to the preparation plant and will not require coal refuse transport near residences or on public roads. The site will be visible only from S.R. 3020 and from one residence that may eventually be removed by future mine operations. DCNR has cleared Site CR-1B relative to the potential for threatened or endangered species impacts and has recommended selection of Site CR-1B for disposal facility development. Site CR-1B, like other potential sites reviewed by PHMC, has the potential to include archaeological resources. As part of the facility permitting process FMLLC will have the site investigated and cleared by PHMC. FMLLC also will work with the gas company to remove/relocate gas lines that facility operations would encroach on.

Development of a disposal area at CR-1B will impact approximately 2,864 LF of stream defined by USGS and USDA mapping which will be mitigated in accordance with a plan approved by the regulatory agencies. This stream length is only 16.5% higher than the site exhibiting the least stream length impact, Site CR-25. Considering the accuracy of the data used to establish stream length, the difference is not very significant.

Cost analysis indicates Site CR-1B will be the most economic site to develop and operate. A disposal cost of $1.29/CY was estimated for CR-1B. The next lowest cost option, the Site CR-11A option, is more than double the cost at $2.81/CY.

Public benefits associated with development of a disposal site at CR-1B will clearly outweigh the potential environmental impacts outlined in this site alternatives analysis. Development of a separate coarse/combined coal refuse disposal facility at Site CR-1B will be integral to the Foundation Mine's disposal operation. Therefore, the public benefits of job creation and increased tax revenues that were discussed under Section 7.0 for the proposed slurry impoundment also apply for a separate coarse/combined coal refuse disposal facility.

TABLE C-5 THIRD SITE ASSESSMENT COST COMPARISON

PARAMETERS	UNITS	UNIT COST	DISPOSAL SITES															
			CR-1B		CR-11A		CR-15		CR-16		CR-24		CR-25		CR-26		CR-Area #1	
			Qty.	Cost	Qty.	Cost	Qty.	Cost	Qty.	Cost	Qty.	Cost	Qty.	Cost	Qty.	Cost	Qty.	Cost
TECHNICAL																		
Total Storage Volume (Million CY)			12.9		12.9		13.0		13.1		12.9		13.4		13.4		13.3	
Disposal Life (Years)			5.99		6.00		6.00		6.00		6.00		6.10		6.10		6.10	
Disposal Surface Area (Acre)			58.4		62.7		60.1		63.5		60.6		52.8		64.2		63.1	
Efficiency, Vol/Ac (to compare site prep $)			220,819		205,696		216,353		205,824		213,401		254,703		208,513		210,569	
Conveyor Corridor																		
Length at grade (L.F)			939		7,954		5,293		4,621		5,748		8,008		6,332		12,223	
Length on truss (L.F)			693		2,043		4,743		4,533		5,573		8,336		7,936		8,732	
Total			*1,632*		*9,997*		*10,036*		*9,154*		*11,321*		*16,344*		*14,268*		*20,955*	
Stream/Wetland Impacts																		
Stream Length Impacted (LF)			2,864		2,587		2,589		2,765		2,805		2,457		2,574		2,774	
Disposal Volume/LF of Stream (CY/LF)			4,503		4,986		5,023		4,727		4,612		5,469		5,202		4,788	
Wetlands Impacted (Acre) -(Hydric Soil Acres)			6.98		4.81		6.31		3.97		1.33		0.97		12.91		9.77	
COST																		
LAND ACQUISITION																		
Disposal Area	Acre	$12,000	122.9	$1,474,560	210.0	$2,520,360	203.4	$2,440,200	215.4	$2,584,800	261.6	$3,139,080	216.7	$2,599,800	252.4	$3,028,560	164.5	$1,973,400
Conveyor Corridor	Acre	$12,000	0	$0	9.65	$115,800	5.04	$60,480	4.09	$49,080	6.88	$82,560	13.71	$164,520	16.03	$192,360	23.6	$283,200
GAS WELL ABANDONMENT	Ea	$300,000	1	$300,000	0	$0	1	$300,000	3	$900,000	0	$0	1	$300,000	2	$600,000	3	$900,000
DISPOSAL AREA CONSTRUCTION	CY	$0.67	12,900,000	$8,643,000	12,900,000	$8,643,000	13,000,000	$8,710,000	13,100,000	$8,777,000	12,900,000	$8,643,000	13,400,000	$8,978,000	13,400,000	$8,978,000	13,300,000	$8,911,000
CONVEYOR SYSTEM																		
Conveyor Site Development	LF	$256	1,632	$417,376	9,997	$2,556,684	10,036	$2,566,658	9,154	$2,341,091	11,321	$2,895,290	16,344	$4,179,898	14,268	$3,648,971	20,955	$5,359,139
Belt Conveyor Construction*																		
Overland Belt Conveyor	LF	$1,200	939	$1,126,800	7,954	$9,544,800	5,293	$6,351,600	4,621	$5,545,200	5,748	$6,897,600	8,008	$9,609,600	6,332	$7,598,400	12,223	$14,667,600
Belt Conveyor Elevated & Enclosed	LF	$2,700	693	$1,871,100	2,043	$5,516,100	4,743	$12,806,100	4,533	$12,239,100	5,573	$15,047,100	8,336	$22,507,200	7,936	$21,427,200	8,732	$23,576,400
Transfer Station/Bin	EA	$300,000	3	$900,000	6	$1,800,000	6	$1,800,000	6	$1,800,000	9	$2,700,000	10	$3,000,000	7	$2,100,000	12	$3,600,000
Operation & Mainenance																		
Belt Operation @ 5% of Belt Cost annually*	Yr.	5% belt $	5.99	$897,871	6.00	$4,518,270	6.00	$5,747,310	6.00	$5,335,290	6.00	$6,583,410	6.10	$9,795,624	6.10	$8,852,808	6.10	$11,664,420
UTILITY RELOCATION																		
4- to 6-inch High Pressure Gas Line	LF	$400	243	$97,200		$0		$0		$0		$0		$0	3,584	$1,433,600	1,597	$638,800
10-inch High Pressure Gas Line	LF	$560		$0	287	$160,720	1,939	$1,085,840	1,075	$602,000		$0		$0		$0		$0
Power Line	LF			$0		$0		$0		$0		$0		$0		$0		$0
MITIGATION																		
Stream	LF	$300	2,864	$859,200	2,587	$776,100	2,589	$776,700	2,766	$829,800	2,805	$841,500	2,457	$737,100	2,574	$772,200	2,774	$832,200
Wetland	Acre	$10,000	6.98	$69,800	4.81	$48,100	6.31	$63,100	3.97	$39,700	1.33	$13,300	0.97	$9,700	12.91	$129,100	9.77	$97,700
TOTAL COST				$16,656,907		$36,199,934		$42,707,988		$41,043,061		$46,842,840		$61,881,442		$58,761,199		$72,503,859
TOTAL COST PER CUBIC YARD OF STORAGE	$ / CY			$1.29		$2.81		$3.29		$3.14		$3.62		$4.60		$4.39		$5.46

* The belt length shown for each site is the total length of conveyor from the preparation plant to the site. Since no site exhibits a disposal life greater than 15 years, the belt conveyor operating cost does not include belt replacement costs. The yearly cost basis is based on Alpha Natural Resources' experience at other sites.

** A zero value indicates the property already is owned by Alpha