PROPERTY OWNERSHIP KEY

MAP LO.	OWNER NAME
1	H&K Group, Inc.
2	H&K Group, Inc.
3	Birdsboro Municipal Water Authority
4	Birdsboro Municipal Water Authority
5	Robeson Township
6	Birdsboro Municipal Authority
7	Sandra A. Stetty
8	Seon Bowen
9	Lawrence W. Berger
10	Thomas J. & Beverly E. Riegel
11	Ronald L. Young, Jr.
12	Lisa A. Morris
13	Christopher S., Sr. & Judith R. Lumis
14	James S. & Sandra K. Marison
15	Samuel J. Watts
16	Charles & Robin Clemson
17	H&K Group, Inc.
18	Catriona & Kevin Mason
19	Kelly L. & Brad A. Delbasa
20	James C. & Diane M. McGettigan
21	John M. Detweiler
22	Debra W. Knoblesh
23	Gerald J. & Joyce E. Detweiler
24	Kevin Hartmann
25	Robert C. & Susan M. Brogner
26	Jeffrey J. & Kim L. Dalzalio
27	Kenneth J. Cowan
28	George S., Jr. & Gina R. Mitchell
29	Thomas C. & Darlene P. Pfeiffer
30	Robert M. & Lauri Ann Grossman
31	John B. & Amy Bonhofen
32	William M. Helm
33	Robert A. Krickel
34	Diane Edson
35	Billie Jo Cooper
36	Matthew J. Polzin
37	Timothy L. & Melissa A. Shirey
38	William & Kathleen P. Manning
39	David A. Blank, Sr. & David A. Blank, Jr.
40	Thomas & Jolene Doyle
41	David Rokita
42	David J. & Dawn M. Gentile
43	Bradley S. Somica
44	Julia D. Portah
45	Noe & Melanie A. Moreno
46	Eric J. & Kaila A. Ehrensberger
47	David A. Blank, Sr.
48	Walker Auto Care, Inc.
49	Francine I. Pfeiffer
50	Jeffrey K. Heckman
51	Larry A. Pender
52	Timothy McCabe
53	Jared M. Hoffman
54	Alyssa Gazzi
55	Stacey Singleton
56	Barry A., Sr. & Judy L. Lucas
57	Brent A. Moyer & Kasey A. Neubauer
58	David D. & Bernadette L. Brounsberg
59	Margaret L. & Kris Timins
60	Edwin C. & Ann M. Schroeder
61	Irene M. Mortensen & Irene M. Hughes
62	Christ United Methodist Church
63	Robert G. Berry & Jennifer A. Dalzalio
64	Jaclyn N. Relah & Eric M. Weiler
65	Henry Wahoske, III
66	Robert M. Rothhurst, Jr.
67	Nathaniel Hampton
68	Kenneth J. Hamilton
69	Jeremiah D. Green
70	Kevin C. Eiche
71	Matthew R. Crowe
72	Julie A., William H., & Mary A. Price
73	Kevin R. Fisher & Robert Edinger
74	Anthony J. & Lisa A. Pisarek
75	Kenneth J. Long
76	Robert W. & Marguerite M. Westley
77	Ramon Perez
78	Brian S. Bill
79	Lee A. Whitmoyer
80	Jeffrey B. & Amara J. Mohn
81	Dana T. Parrish
82	Ronald D. & Janice R. Marsh
83	Richard D. Crowton
84	Jason G. Withers
85	Joseph & Megan Koren
86	Christopher E. & Karen A. Wolff
87	Robert E. & Anna Mae Weon
88	Marlon E. Romig
89	David L. & Deborah L. Smith
90	Robert K. Mohn & Dawn M. McCombs
91	Chad A. & Rachel L. Heffner
92	David H. Marburger
93	Steven & Marion White
94	James S. & Margaret M. Weibel
95	George A. & Diane L. Lott
96	Epright Family Irrevocable Trust
97	Marc R. Schlottman
98	Danielle A. Lenhart
99	Christopher P. & Heidi S. Davidheiser
100	William Watson Allen, IV
101	Robert J., Jr. & Theresa M. Reiner
102	Christopher S. Keller
103	Trinity Evangelical Church
104	Alexis L. Buzzard
105	Derek C. Weaver
106	Joseph M. Morris & Sharon R. Neri
107	Karen L. Arms
108	Joseph S. & Christine A. Frantz
109	Wesley H., Jr. & Jeffrey K. Prince
110	John W. Klein & Christopher Weaver
111	Erika R. Bourath
112	Joel D. Tolley
113	Clark L. & Mildred M. Mintzer
114	Brooke J. Bover
115	Jacklyn & Leo Davis
116	William, Jr & Crystalyn Gambone
117	Jacqueline C. McCall & John David Mary Beth
118	Hunter C. & Carley A. Alion
119	Eric J. & Kristen E. Bachman
120	Deborah A. Rothhorpt
121	Charles R. & Virginia C. Benson
122	Charlene Grater
123	David W. Riegner
124	Daniel A. & Shelly Kralt
125	Michael T. & Mary E. Kilarski
126	James A. & Carol A. McGrath
127	Franklin L. & Doris G. Clouser
128	Susan Unser
129	Mark D. & Nicole L. Reightenour
130	Melissa J. Seidel & Peter J. Korpovich
131	Thomas C. Durnan
132	Birdsboro Municipal Authority
133	Thomas C. Durnan
134	Kathryn Jensen & Elroy Nihart
135	Margaret B. Moyer Est. & Ethel Marco Est.
136	Thomas M. Monogue, Jr.
137	John A. & Tasha M. Amole
138	Eric J. Kline
139	Daniel L. & Donna B. Zuber
140	Kurt D. & Lisa A. Myers
141	Ronald L. & Renee D. Bailey
142	Charlotte V. Swiger
143	Christopher B. Dusko
144	Loverta M. Reppert
145	John Dob
146	Candice A. Daniels
147	Neil & Joann Y. Fausnacht
148	Yusuf S. Saleem
149	Wanda Lachman & Brian Michael Kurtz
150	Edwardo & Maria Satiro
151	Benjamin F. & Jessica R. Cartwright
152	Jeffrey & Rachel Kennedy
153	Shawn & Jessica Dragovich
154	William H. & Tara L. Myers
155	Kenneth B. & Anna C. Oster
156	Genevieve M. Weaver & Richard P. Buck
157	Richard T. Skoczen
158	Ronald R. & Christina M. Levan
159	Ronald V. & Kathleen E. Kerper
160	Edward J. & Carole A. Zawora
161	Michael S. & Joy L. Spigel
162	Michael S. & Maria B. Marino
163	Jason & Vani Shutt
164	Edward A. & Wendy A. Miller
165	Bobby J. Defrangesco
166	Supportive Concepts For Families Inc.
167	Borough of Birdsboro
168	Lloyd C. & Betty F. Day
169	Melissa A. Miller
170	Patsy Kreamer
171	Sandra L. Plumley
172	Bruce Lee., IV & Ashell Godfrey
173	Donna J. Fisher
174	Carolyn C. Jones
175	Kevin A. & Carrie E. Peroni
176	Tara Lapent & Daniel Karst
177	Katherine L. Saylor
178	James T. & Jennifer Schonely
179	Christopher J. & Lisa M. Hyer
180	Brandon A. White & Rachael L. Augustine
181	Susan J. Brucato
182	Gayle M. Hildebrand
183	Zackary H. Davis
184	Toni L. Chamberlain Rhoades
185	Keith A. & Carole A. Cyktor
186	Robert J. & Diane L. Marsden
187	Constance L. Beltzner
188	William M. & Laura DeFalco
189	John J. & Diane M. Lehr
190	Peter J. Korpovich & Melissa J. Seidel
191	Dennis J. & Beverly Killian
192	William D. Benner
193	Brittanie Rushing
194	Richard P. & Cynthia A. Deem
195	Ronald T. & Margaret Schaeffer
196	Shirel & Betty H. Little
197	Steven L. & Susan M. Soller
198	Donna L. Shaner & Donna L. Morello
199	Matthew Pinkos & Diana L. Wheeler
200	Sandra L. Forino
201	David Ryan Miller
202	Lynn H. Adams
203	Todd E. Depretontaine
204	Wells Fargo Bank
205	Robert J. & Teri L. Yarmush
206	Joshua T. Seltzer
207	Willis L. & Rebecca H. Smith
208	Cynthia L. & Christopher Swinski
209	James VanDyck, Jr. & Dawn Fay Bentley
210	Erin E. Carey
211	Theodore P. & Lois A. Endrik
212	David S. & Diane M. Johnson & Douglas A. Gilmore
213	David S. & Diane M. Johnson
214	Margaret L. Myers
215	Darren A. & Kelly A. Price
216	Jonathan Derrick & Jennifer Schutz

LOT 1 LINE TABLE

LINE NO.	BEARING	LENGTH
L1	S71°17'00"E	113.78'
L2	S44°35'00"E	74.47'
L3	S53°09'30"E	151.87'
L4	N48°50'30"E	93.00'
L5	S43°04'30"E	689.05'
L6	N48°55'30"E	160.00'
L7	S43°04'30"E	229.89'
L8	S43°08'00"E	602.85'
L9	S48°52'00"W	205.83'
L10	S48°51'46"W	238.92'
L11	S34°31'41"E	269.54'
L12	S62°00'00"E	222.94'
L13	S61°57'54"E	444.91'
L14	S69°21'00"E	400.42'
L15	S00°50'24"E	1401.15'
L16	S38°28'55"E	1449.99'
L17	N56°28'50"W	560.00'
L18	N79°47'50"W	818.58'
L19	N63°56'50"W	991.51'
L20	N63°56'50"W	403.22'
L21	S71°32'10"W	508.80'
L22	N08°03'50"W	1435.82'
L23	N43°26'10"E	400.00'
L24	N70°08'52"E	236.38'
L25	N03°41'30"W	595.37'
L26	N61°08'10"E	477.83'
L27	N79°21'10"E	128.00'
L28	N71°27'50"E	189.60'
L29	S74°09'50"E	245.80'
L30	S87°04'30"E	154.40'
L31	S81°15'10"E	205.53'
L32	N74°17'50"E	175.40'
L33	N77°21'30"E	61.84'
L34	N60°23'10"E	106.78'
L35	N48°58'30"E	99.40'
L36	N41°06'30"E	107.38'
L37	N29°05'10"E	298.10'
L38	N08°19'40"E	299.49'
L39	N02°19'10"W	839.24'
L40	N14°37'28"E	27.16'

LOT 1 CURVE TABLE

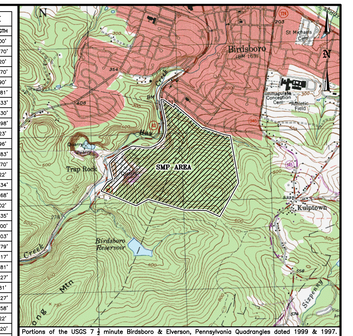
CURVE NO.	RADIUS	ARC LENGTH	DELTA	CHORD LENGTH	CHORD BEARING
C1	671.38'	262.85'	22°25'55"	261.18'	N49°55'12"E
C2	686.78'	106.79'	8°54'34"	106.69'	S88°53'50"E
C3	746.78'	136.29'	10°27'24"	136.10'	N70°23'50"E

LOT 2 CURVE TABLE

CURVE NO.	RADIUS	ARC LENGTH	DELTA	CHORD LENGTH	CHORD BEARING
C4	20.00'	33.85'	96°57'42"	29.95'	S82°10'09"W
C5	117.00'	121.89'	59°41'18"	116.45'	S18°09'21"E
C6	183.00'	153.45'	48°02'36"	148.99'	S21°56'42"E
C7	180.00'	155.59'	49°31'28"	150.79'	N13°11'24"W
C8	20.00'	31.05'	88°57'24"	28.03'	N32°54'22"W
C11	205.00'	149.06'	41°39'40"	145.80'	S34°10'10"E
C12	183.00'	132.70'	41°32'42"	129.86'	N03°27'04"W
C13	20.00'	30.26'	86°40'47"	27.45'	N26°00'36"W

LOT 2 LINE TABLE

LINE NO.	BEARING	LENGTH
L41	S40°00'00"E	75.00'
L42	S69°21'00"E	589.70'
L43	S75°30'00"E	35.20'
L44	N88°34'45"E	177.70'
L45	N11°34'20"E	50.90'
L46	S77°54'22"E	100.81'
L47	S34°14'30"E	285.33'
L48	N32°54'00"E	290.30'
L50	S57°06'00"E	205.98'
L51	S82°52'20"E	46.23'
L52	N00°32'30"E	27.90'
L53	S49°22'20"E	253.83'
L54	S18°40'30"W	149.70'
L55	S52°12'10"E	29.22'
L56	S18°40'30"W	787.34'
L57	S58°19'10"E	503.68'
L58	S33°38'20"W	72.00'
L59	S24°40'20"W	399.30'
L60	S18°07'20"W	125.00'
L61	S87°27'20"W	277.03'
L62	S61°06'50"E	477.79'
L63	S58°06'16"W	434.17'
L64	S32°13'40"E	289.81'
L65	S31°55'10"E	210.27'
L66	S58°09'52"W	98.81'
L67	N32°10'24"W	210.27'
L68	S58°09'45"W	299.58'
L69	S31°31'45"W	85.22'
L70	S10°50'35"E	173.20'
L71	S10°50'35"E	122.83'
L72	S58°40'25"W	32.45'
L73	N10°50'35"W	115.25'
L74	S45°31'35"W	28.17'
L75	N10°50'35"W	150.15'
L76	S31°31'45"W	77.99'
L77	S58°53'00"W	76.37'
L78	S85°01'45"W	1018.56'
L79	N58°28'50"W	914.07'
L80	N38°28'55"E	1449.99'
L81	N75°24'W	1401.15'
L82	N69°21'30"W	400.42'
L83	N61°57'54"W	444.91'
L84	N62°00'00"W	222.94'
L85	N34°31'41"W	269.54'
L86	N48°51'46"E	238.92'
L87	S62°00'00"E	385.15'
L88	N89°45'00"E	177.55'
L89	S69°21'00"E	106.57'



Portions of the USGS 7 ½ minute Birdsboro & Elverson, Pennsylvania Quadrangles dated 1999 & 1997.

SITE LOCATION MAP
Scale: 1" = 2,000'

BOROUGH OF BIRDSBORO
ROBESON TOWNSHIP

BOROUGH OF BIRDSBORO
UNION TOWNSHIP

ROBESON TOWNSHIP
UNION TOWNSHIP

1000' PERIMETER

BIRDSBORO MUNICIPAL PARK

J.T. DYER QUARRY RESERVOIR
W.E. 579.1

INDIAN RUN DAM
(BIRDSBORO RESERVOIR)
W.E. 368.9

W.E. 251.7
W.E. 260.4
W.E. 260.4
W.E. 183.1

HAY CREEK

BATTERSBY DRIVE
HAMPTON COURT
HAMPTON DRIVE
HEREFORD DRIVE
UNION STREET
HOPEWELL STREET
EAST 9th STREET
PARK COURT
CRESTVIEW STREET
COCALICO ROAD
ABANDONED ROAD
ACCESS ROAD
CAITLIN DRIVE
MOSES ROAD

MON. FOUND
I. PIN FOUND
R.R. MON. FOUND

LEGEND

- Property Line
- Adjacent Lot Lines
- Right-of-Way Line
- Municipal Boundary Line
- (5) Property Ownership Key
- Perimeter Radius (1000')
- Surface Mining Permit Boundary
- Existing Electric Line
- Existing Electric and Telephone Line
- Existing Water Main/Line
- Existing Utility Pole
- Existing Fence
- Existing Guide Rail
- Occupied Structure/Outbuilding (Garage, Barn, Shed, Etc.)
- Surface Water
- Spring
- Existing Unpaved Road/Trail
- Existing Paved Road
- Existing Rail Road

SOURCE NOTES:

1. Mine permit information (i.e. permit boundary, phasing, limit of mining, etc.) derived from plan entitled "Exhibit B: Operations Map," prepared by Ross Consulting Engineers, dated 7/11/1997, last revised 8/26/1998.
2. Photogrammetric digital mapping within Phase 1 Area compiled by L. Robert Kimball & Associates, Inc., Ebensburg, PA, using aerial photography obtained 3/13/2008 . Vertical control is based on NAVD 88 datum provided by Haines & Kibblehouse, Inc.
3. Photogrammetric digital mapping beyond Phase 1 Area compiled by L. Robert Kimball & Associates, Inc., Ebensburg, PA, using aerial photography obtained April 5, 1995.
4. Property boundary derived from plan entitled "Haines & Kibblehouse, Inc., Minor Subdivision Plan," prepared by the H&K Group Engineering & Environmental Services Division, dated 11/12/2002, last revised 7/07/2004 and recorded in Berks County Plan Book 274, Page 90.
5. Adjacent property lines derived from Berks County Tax Map(s).

PROPERTY INTERESTS MAP NOTE:

1. This map replaces the map entitled: "Exhibit 4.1: Property Ownership Map," prepared by the H&K Group Engineering & Environmental Services Division, dated 6/30/1998, last revised 5/20/1999.

BOX ACRES AND ALL INTERESTS SHOWN BY BOREHOLES OMITTED

COMMONWEALTH OF PENNSYLVANIA
REGISTERED PROFESSIONAL
EVAN DANIEL SOWERS
ENGINEER
NO. PE082363

EVAN DANIEL SOWERS
PENNSYLVANIA LICENSE No. PE-082363

Scale: 1" = 200'
200 0 200 400

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DATE	REVISIONS	BY	CHK.	REV.
1/08/21	REVISED PER PADEP & PFBC COMMENTS	E.D.S.	E.D.S.	1

BIRDSBORO MATERIALS
A Division of H&K Group, Inc.

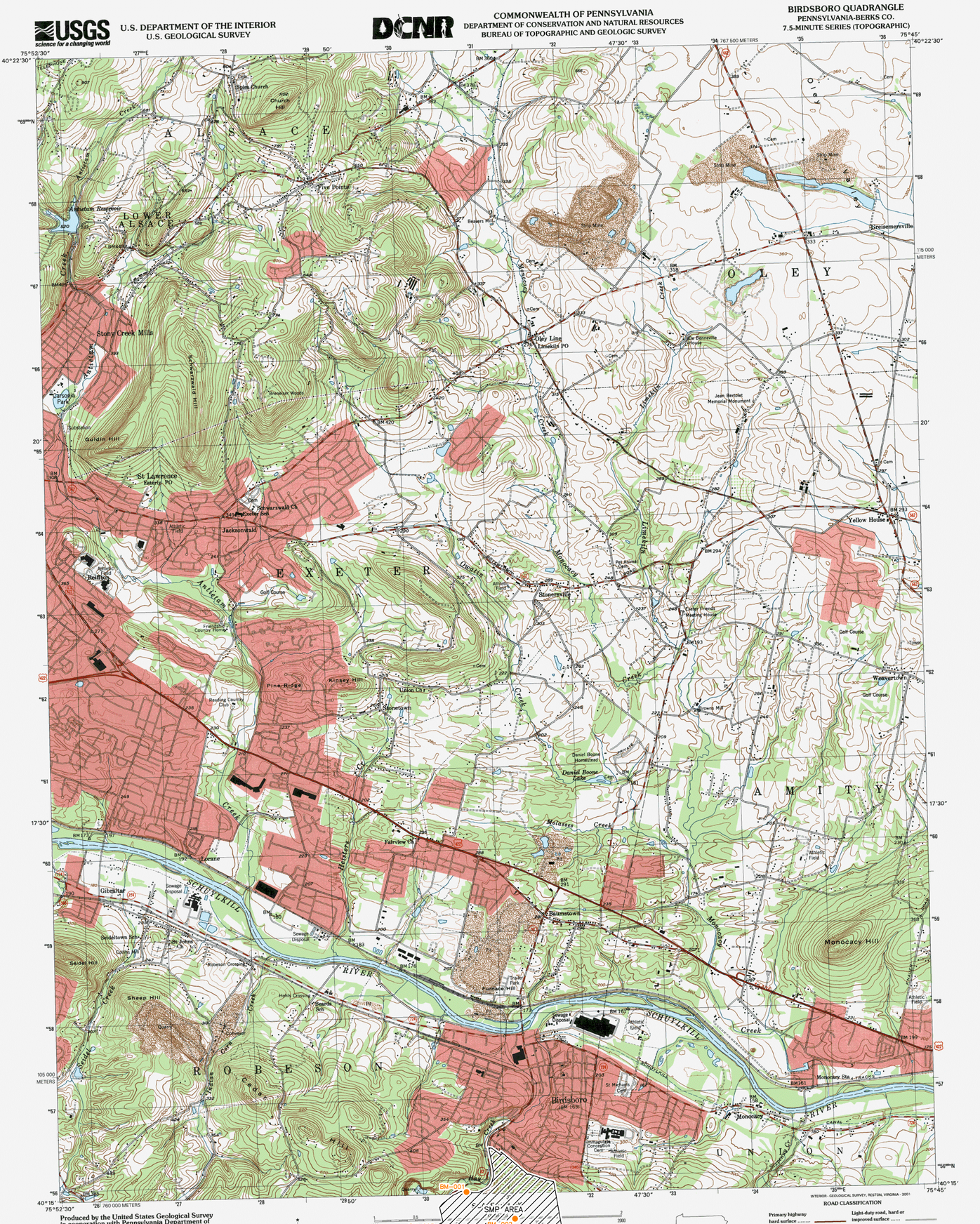
EXHIBIT 5
PROPERTY INTERESTS MAP

ROBESON & UNION TOWNSHIP — BERKS COUNTY

DRAWN	E.D.S.
DESIGN	E.D.S.
CHECKED	E.D.S.
DATE	4/09/2020

THE H&K GROUP
ENGINEERING & ENVIRONMENTAL Services Division
2052 Lucon Road • P.O. Box 138 • Skippack, PA 19474 • (610) 584-8500

SCALE: 1" = 200'
DRAWING NO. © B011E-PTY-1B
SHEET 1 of 16



LEGEND

S.M.P. #06970302

BM-003 NPDES Discharge Point

U.S.G.S. TOPOGRAPHIC MAP NOTE:

1. This map replaces the map entitled: "Exhibit 5.1: Site Location Map," prepared by Ross Consulting Engineers, dated 7/11/1997.

DATE	REVISIONS	BY	CHK.	REV.
1/08/21	REVISED PER PADEP & PFBC COMMENTS	E.D.S.	E.D.S.	1

BIRDSBORO MATERIALS
A Division of H&K Group, Inc.

EXHIBIT 6.1
U.S.G.S. TOPOGRAPHIC MAP
1 OF 2

ROBESON & UNION TOWNSHIP — BERKS COUNTY

COMMONWEALTH OF PENNSYLVANIA — REGISTERED PROFESSIONAL — EVAN DANIEL SOWERS — ENGINEER NO. PE082363

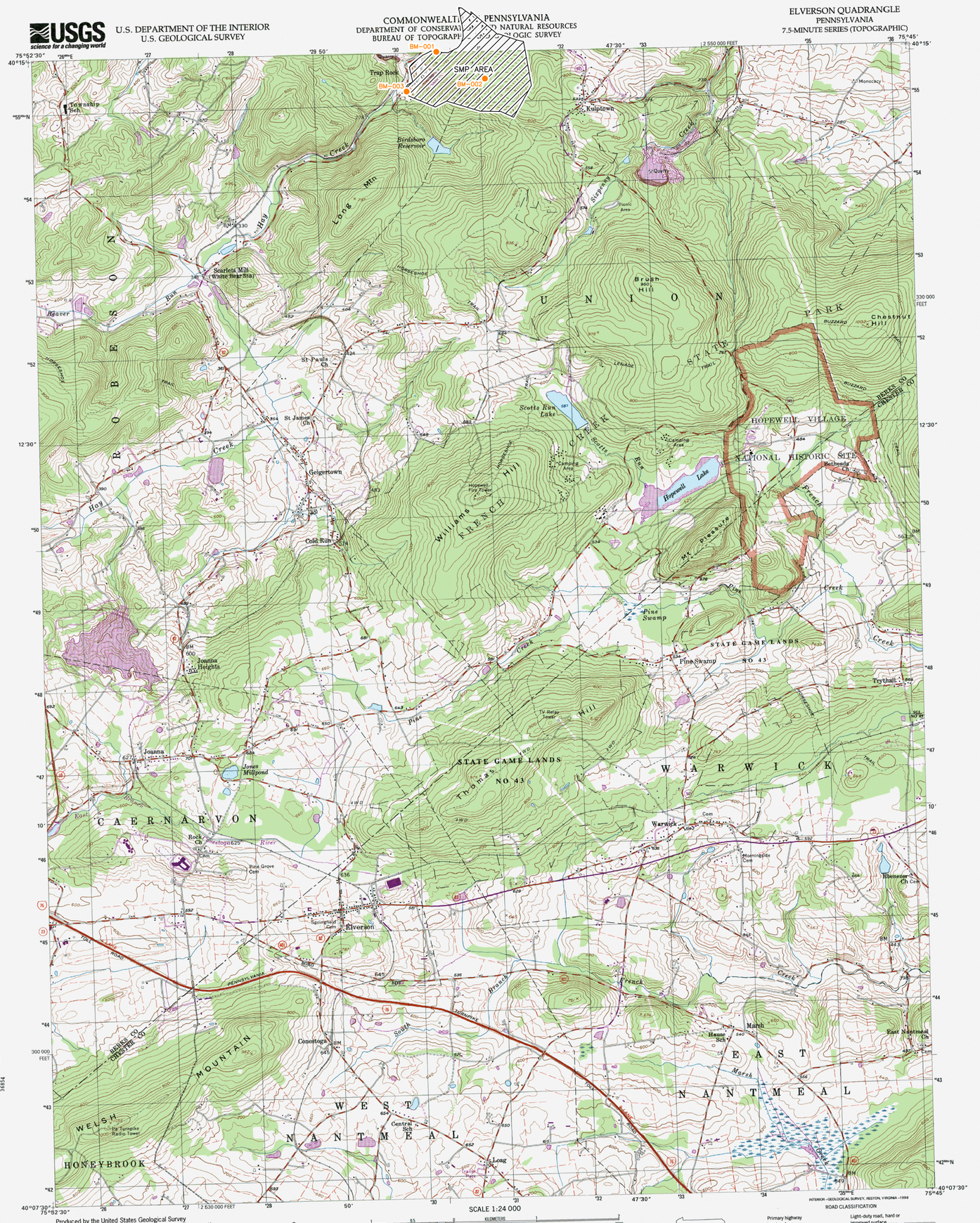
EVAN DANIEL SOWERS
PENNSYLVANIA LICENSE No. PE-082363

Scale: 1" = 2000'
2000 0 2000 4000

DRAWN	E.D.S.
DESIGN	E.D.S.
CHECKED	E.D.S.
DATE	4/09/2020
SCALE	1" = 2,000'
DRAWING NO.	B011E-USGS-1B
SHEET	2 of 16

THE H&K GROUP — ENGINEERING & ENVIRONMENTAL Services Division
2052 Lucon Road ◦ P.O. Box 196 ◦ Skippack, PA 19474 ◦ (610) 584-8500

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LEGEND

S.M.P. #06970302

BM-003 NPDES Discharge Point

U.S.G.S. TOPOGRAPHIC MAP NOTE:

1. This map replaces the map entitled: "Exhibit 5.1: Site Location Map," prepared by Ross Consulting Engineers, dated 7/11/1997.

DATE	REVISIONS	BY	CHK.	REV.
1/08/21	REVISED PER PADEP & PFBC COMMENTS	E.D.S.	E.D.S.	1

BIRDSBORO MATERIALS
A Division of H&K Group, Inc.

EXHIBIT 6.1
U.S.G.S. TOPOGRAPHIC MAP
2 OF 2

ROBESON & UNION TOWNSHIP — BERKS COUNTY

COMMONWEALTH OF PENNSYLVANIA
REGISTERED PROFESSIONAL
EVAN DANIEL SOWERS
ENGINEER
NO. PE082363

EVAN DANIEL SOWERS
PENNSYLVANIA LICENSE No. PE-082363

Scale: 1" = 2000'
2000 0 2000 4000

DRAWN	E.D.S.
DESIGN	E.D.S.
CHECKED	E.D.S.
DATE	4/09/2020

THE H&K GROUP
ENGINEERING & ENVIRONMENTAL Services Division
2052 Lucon Road • P.O. Box 196 • Skippack, PA 19474 • (610) 584-8500

SCALE 1" = 2,000'
DRAWING NO. B011E-USGS-2B
SHEET 3 of 16

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WETLANDS LEGEND

- Wetlands & Waters of the U.S. Delineated By Others*
- Wetlands Delineated By EES Consultants, Inc.** (Inclusive of the Waters of the U.S. Where Stream Channel Exists)
- Waters Of The U.S. Delineated By EES Consultants, Inc.** (Approximate Bank to Bank Width)
- Wetlands Delineated By DelVal Soil & Environmental Consultants, Inc.***
- Waters Delineated By DelVal Soil & Environmental Consultants, Inc.***
- Permanent Wetland Mitigation Area
- National Wetlands Inventory Classified Wetlands

NATIONAL WETLANDS INVENTORY CLASSIFIED WETLANDS

PF01A	Palustrine, Forested, Broad-Leaved Deciduous, Temporary Flooded
PEM5A	Palustrine, Emergent, Phragmited australis, Temporary Flooded
PUBHx	Palustrine, Unconsolidated Bottom, Permanently Flooded, Excavated
PUBHh	Palustrine, Unconsolidated Bottom, Permanently Flooded, Diked/Impounded

* Work by others in reference to plans by A.D. Marble & Company, Inc., Larson Design Group, and Hunt Engineering Company, revision date 11/8/96, entitled "WETLANDS", sheet 1 through 6 of 6, and U.S. Army Corps of Engineers field confirmation, reference subject CENAP-OP-R-199501195-11(JD).

** Field confirmation acknowledged by U.S. Army Corps of Engineers May 5, 1998, reference subject: CENAP-OP-R-199701801-23 (JD). Field confirmation on Haines & Kibblehouse, Inc. lands acknowledged by U.S. Army Corps of Engineers May 5, 1998, reference subject: CENAP-OP-R-199701800-22 (JD).

*** Field confirmation acknowledged by U.S. Army Corps of Engineers August 12, 2015, reference subject: CENAP-OP-R-2007-11320-46 (JD).

GEOLOGY LEGEND

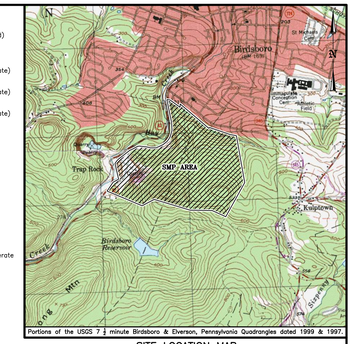
- Geologic Contact (Dashed Where Approx., ? Where Inferred)
- Geologic Fault (Dashed = Where Approximate)
- Fracture Trace (Dashed Where Approximate) (Peffer Geotechnical Corp., 1991)
- Fracture Trace (Dashed Where Approximate) (C.R. Wood, 1980)
- Fracture Trace (Dashed Where Approximate) (Ross Consulting Engineers, 1998)
- Strike and Dip of Inclined Beds
- Strike and Dip of Joint
- Fault, Showing Dip

BEDROCK GEOLOGY

- Jdyh — Jurassic Diabase (York Haven Type)
- Trhc — Triassic Hammer Creek Formation (D.B. MacLachlan, 1983–Revised 1992)
- Trhqc — Triassic Hammer Creek Quartz Conglomerate (C.R. Wood, 1980)
- Trhss — Triassic Hammer Creek Sandstone (C.R. Wood, 1980)
- Trp — Triassic Passaic Formation (D.B. MacLachlan, 1983–Revised 1992)
- Bedrock Geology Altered to Hornfels Through Contact with Diabase Intrusion.

SURFICIAL GEOLOGY

- Quaternary Colluvium (Dashed Where Approximate)
- Quaternary Boulder Colluvium (Dashed Where Approximate)



SITE LOCATION MAP
Scale: 1" = 2,000'

LEGEND

- Property Line
- Adjacent Lot Lines
- Right-of-Way Line
- Municipal Boundary Line
- (5) Property Ownership Key
- Perimeter Radius (1000')
- Surface Mining Permit Boundary
- Existing Limit of Mining
- Existing Limit of Affected Area
- Proposed Limit of Phase 1 Mining
- Proposed Limit of Phase 1 Affected Area
- Future Limit of Phase 2 Mining
- Future Limit of Phase 2 Affected Area
- PADEP Setbacks
- PADEP Setback Variance
- Existing Electric Line
- Existing Electric and Telephone Line
- Existing Water Main/Line
- Existing Utility Pole
- Existing Fence
- Existing Guide Rail
- Existing Major Contour Line
- Existing Minor Contour Line
- Existing Tree/Wood Line
- Occupied Structure/Outbuilding (Garage, Barn, Shed, Etc.)
- Surface Water
- (S) Spring
- Existing Unpaved Road/Trail
- Existing Paved Road
- Existing Rail Road
- A — A' Cross Section Line and Designation
- BMMW-"#" Monitoring Well
- T3 (W2) Transect Wells
- BM-14 Stream Point
- BM-003 NPDES Discharge Point
- Historical Monitoring Point
- ■14' Exploratory Test Pit with Depth to Rock (Completed by Others)
- BMBH-6a● Exploratory Bore Hole with Designation (Ross Consulting Engineers)
- ●BI-3 Core Boring with Designation (Completed by Others)
- BM-01-2010 Core Hole
- Regional Groundwater Flow
- Local Groundwater Flow

SOURCE NOTES:

1. Mine permit information (i.e. permit boundary, phasing, limit of mining, etc.) derived from plan entitled "Exhibit 6: Operations Map," prepared by Ross Consulting Engineers, dated 7/11/1997, last revised 8/26/1998.
2. Topography within active mining area derived from H&K field survey dated 5/31/2016.
3. Topography beyond active mining area derived from LiDAR Arc/Info coverage files published 2006 through 2008, downloaded from *Pennsylvania Spatial Data Access (PASDA)*. (http://www.pasda.psu.edu).
4. Photogrammetric digital mapping within Phase 1 Area compiled by L. Robert Kimball & Associates, Inc., Ebensburg, PA, using aerial photography obtained 3/13/2008 . Vertical control is based on NAVD 88 datum provided by Haines & Kibblehouse, Inc.
5. Photogrammetric digital mapping beyond Phase 1 Area compiled by L. Robert Kimball & Associates, Inc., Ebensburg, PA, using aerial photography obtained April 5, 1995.
6. Property boundary derived from plan entitled "Haines & Kibblehouse, Inc., Minor Subdivision Plan," prepared by the H&K Group Engineering & Environmental Services Division, dated 11/12/2002, last revised 7/07/2004 and recorded in Berks County Plan Book 274, Page 90.
7. Adjacent property lines derived from Berks County Tax Map(s).
8. Refer to "Wetlands Legend" for wetlands sources.

VARIANCE NOTES:

1. Refer to SMP #06970302, Part B, Special Condition #7 for approval to affect areas within 100 feet of Hay Creek and unnamed tributaries of Hay Creek.
2. Refer to SMP #06970302, Part B, Special Condition #9 for approval to affect areas within 100 feet of the outside right-of-way of the former S.R. 0082 (Hay Creek Road) as well as the southern terminus of Clover Alley.
3. Refer to SMP #06970302, Part B, Special Condition #10 for approval to affect areas within 300 feet of the buildings located on properties 7–9, 20–23, and 34–39 (formerly properties 9–16 and 20–24) and the Birdsboro Municipal Park.

ENVIRONMENTAL RESOURCES MAP NOTES:

1. This map replaces the map entitled: "Exhibit 5.2: Environmental Resources Map," prepared by Ross Consulting Engineers, Sheet 1 of 10, dated 7/11/1997, last revised 6/22/1998.
2. Refer to Exhibit 7.1: Cross Sections, Sheets 1 of 5 through 5 of 5 for a detailed depiction of sub surface geology and depth to groundwater table.

MARK WILLIAM ESHBACHER
PENNSYLVANIA LICENSE No. PG-002979-G

EVAN DANIEL SOWERS
PENNSYLVANIA LICENSE No. PE-082363

Scale: 1" = 200'
200 0 200 400

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2/19/21	REVISED PER PADEP COMMENTS DATED 2/03/21	E.D.S.	E.D.S.	2
1/08/21	REVISED PER PADEP & PFBC COMMENTS	E.D.S.	E.D.S.	1

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EXHIBIT 6.2
ENVIRONMENTAL RESOURCES MAP

ROBESON & UNION TOWNSHIP — BERKS COUNTY

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DESIGN	E.D.S.
CHECKED	E.D.S.
DATE	4/09/2020

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2052 Lucon Road • P.O. Box 196 • Skippack, PA 19474 • (610) 584-8500

SCALE	1" = 200'
DRAWING NO.	© B011E-ENV-1C
SHEET	4 of 16

LEGEND

- Existing Grade
- Proposed Final Highwall Face
- Approximate Final Grade
- Approximate Original Grade
- Existing Groundwater Level
- Post-Mining Groundwater Level
- Geologic Contact (Dashed Where Approximate)
- Geologic Fault (Dashed Where Approximate)

BEDROCK GEOLOGY

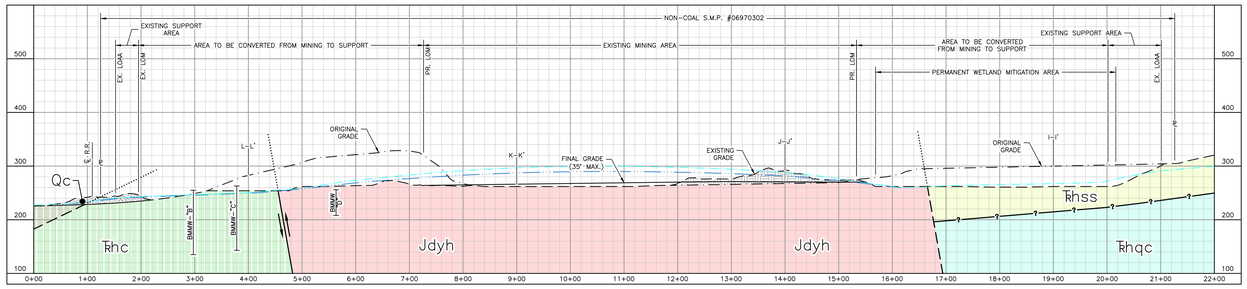
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- Trhc — Triassic Hammer Creek Formation (D.B. MacLachlan, 1983–Revised 1992)
- Trhqc — Triassic Hammer Creek Quartz Conglomerate (C.R. Wood, 1980)
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- Bedrock Geology Altered to Hornfels Through Contact with Diabase Intrusion.

SURFICIAL GEOLOGY

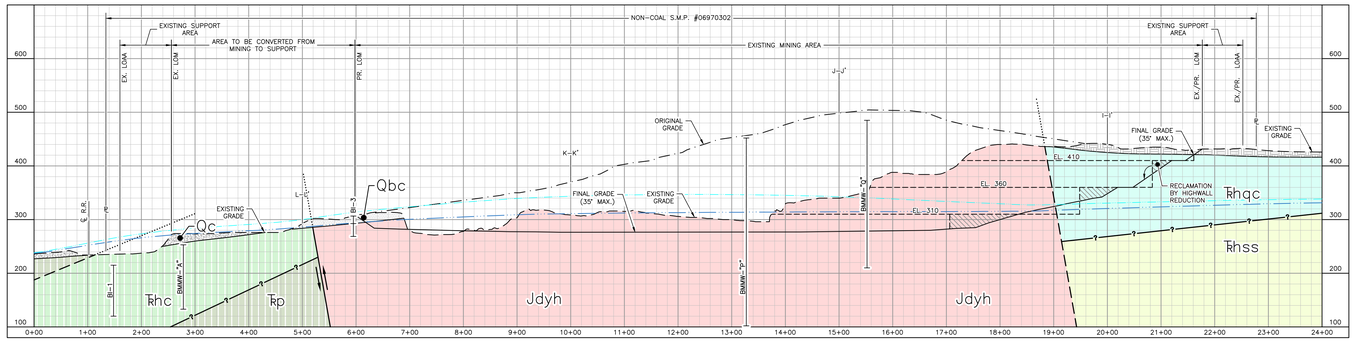
- Qc — Quaternary Colluvium (Dashed Where Approximate)
- Qbc — Quaternary Boulder Colluvium (Dashed Where Approximate)
- Overburden / Stockpiled Material

ABBREVIATIONS

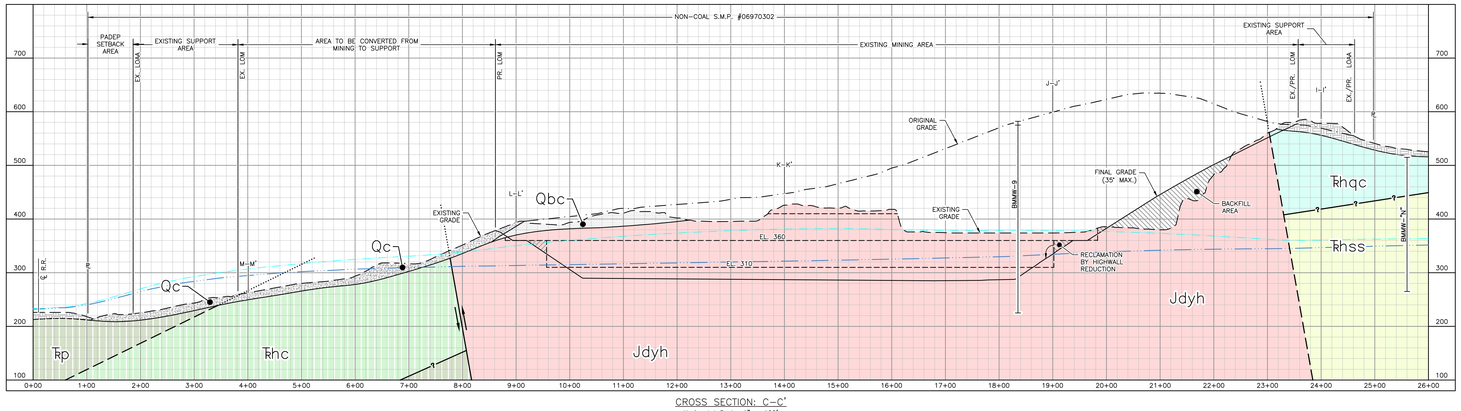
PADEP	Pennsylvania Department of Environmental Protection
SMP	Surface Mining Permit
EL.	Elevation
TYP.	Typical
MSL	Mean Sea Level
℄	Property Line
℄	Center Line



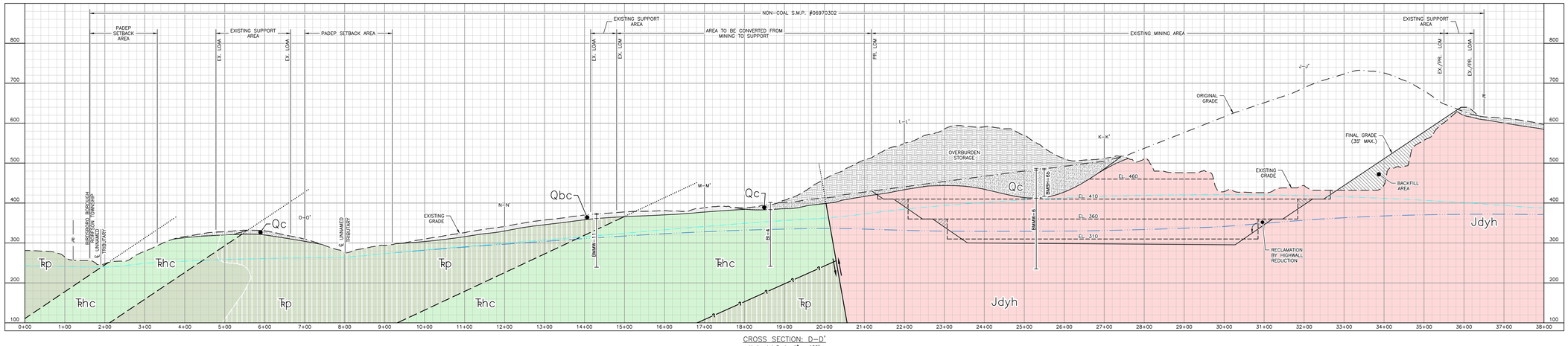
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Vertical Scale: 1" = 100'



CROSS SECTION: B–B'
Horizontal Scale: 1" = 100'
Vertical Scale: 1" = 100'



CROSS SECTION: C–C'
Horizontal Scale: 1" = 100'
Vertical Scale: 1" = 100'



CROSS SECTION: D–D'
Horizontal Scale: 1" = 100'
Vertical Scale: 1" = 100'

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COMMONWEALTH OF PENNSYLVANIA — REGISTERED PROFESSIONAL GEOLOGIST — MARK W. ESHBACHER

MARK WILLIAM ESHBACHER
PENNSYLVANIA LICENSE No. PG-002979-G

BEN KLEED AND ALL INFORMATION SHOULD BE CONSIDERED VALID

COMMONWEALTH OF PENNSYLVANIA — REGISTERED PROFESSIONAL ENGINEER — EVAN DANIEL SOWERS — ENGINEER NO. PE082363

EVAN DANIEL SOWERS
PENNSYLVANIA LICENSE No. PE-082363

CROSS SECTION NOTES:

1. This sheet replaces the sheet entitled: "Cross Sections," prepared by the H&K Group Engineering & Environmental Services Division, Sheet 1 of 5, dated 8/07/2008.
2. Existing groundwater level derived from "Figure #10 – Simulated Groundwater Elevation Contours Existing Site Conditions" obtained from a report entitled: "Groundwater Model Evaluation Report Proposed Expansion Birdsboro Materials Quarry" for H&K Group, Inc., prepared by Val. F. Britton, P.G., dated 5/29/2020.
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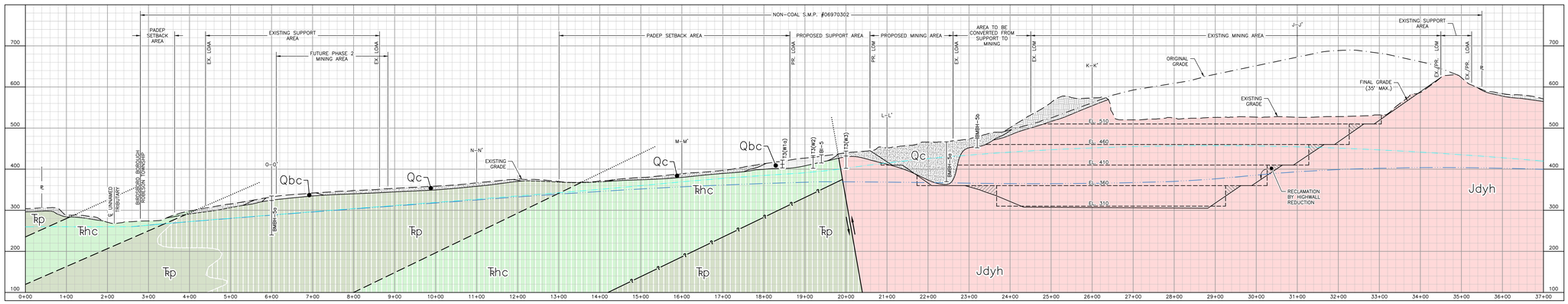
EXHIBIT 7.1
CROSS SECTIONS
1 OF 5

ROBESON & UNION TOWNSHIP — BERKS COUNTY

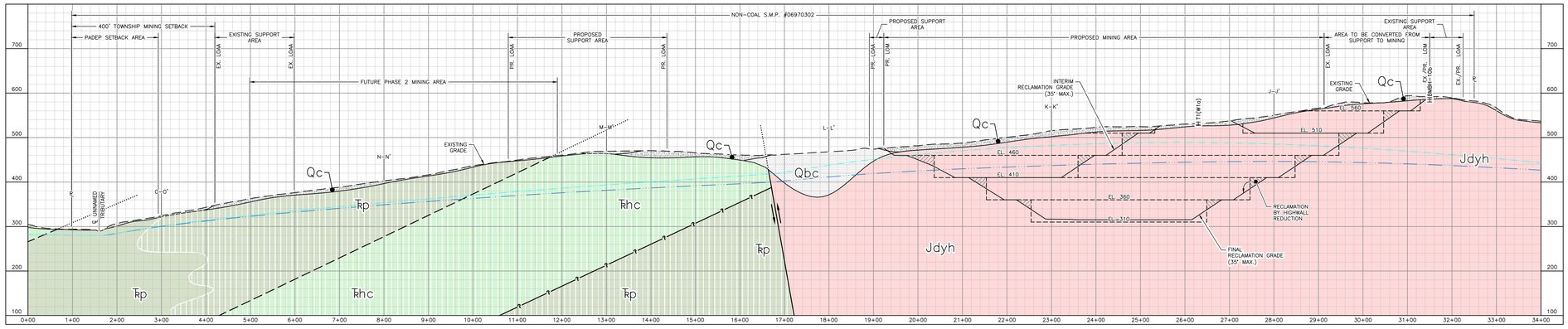
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DATE	4/09/2020
SCALE	AS SHOWN
DRAWING NO.	B011E-SCT-1C
SHEET	5 of 16

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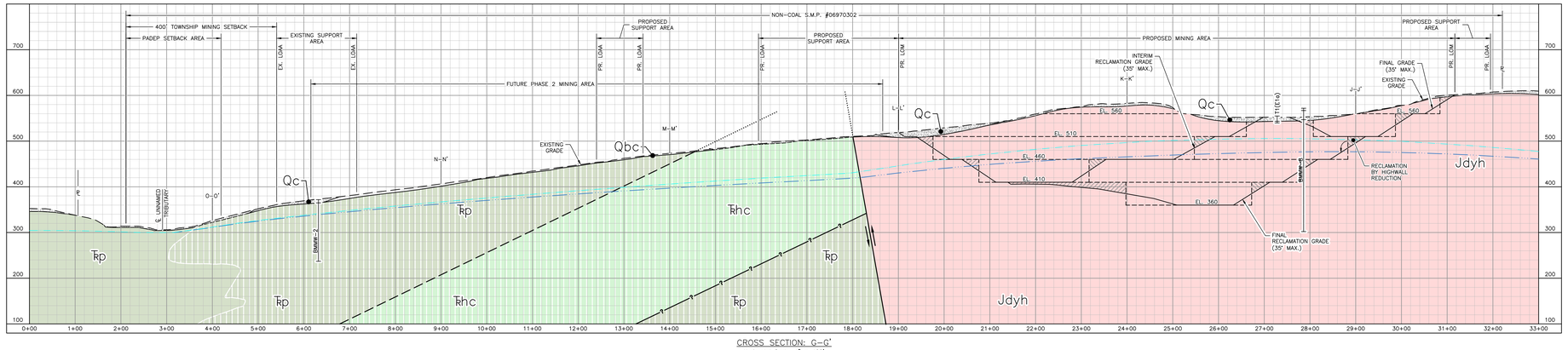
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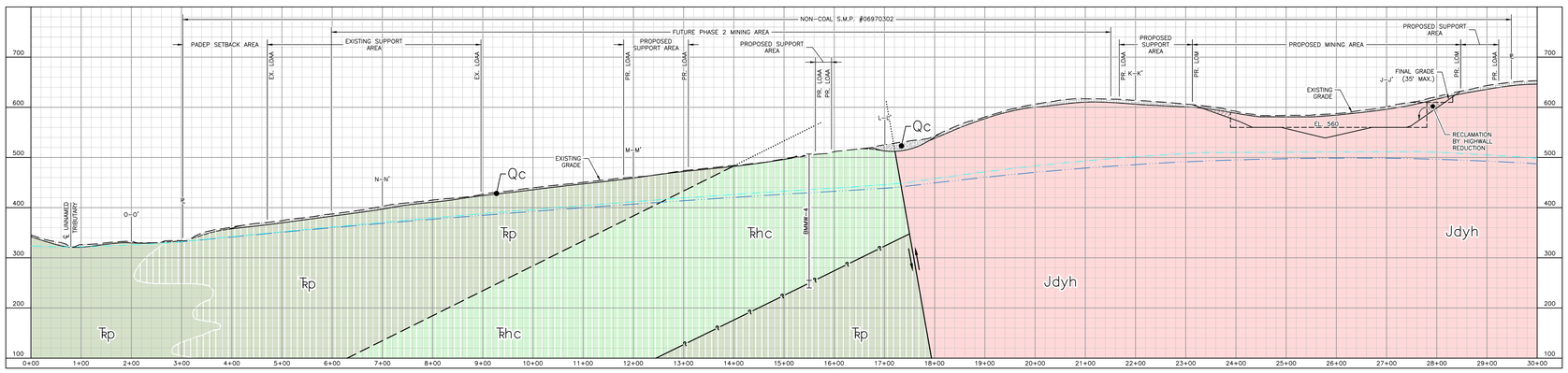
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Vertical Scale: 1" = 100'



CROSS SECTION: F-F'
Horizontal Scale: 1" = 100'
Vertical Scale: 1" = 100'



CROSS SECTION: G-G'
Horizontal Scale: 1" = 100'
Vertical Scale: 1" = 100'



CROSS SECTION: H-H'
Horizontal Scale: 1" = 100'
Vertical Scale: 1" = 100'

LEGEND

- Existing Grade
- Proposed Final Highwall Face
- Approximate Final Grade
- Approximate Original Grade
- Existing Groundwater Level
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- Geologic Fault (Dashed Where Approximate)

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ABBREVIATIONS

PADEP	Pennsylvania Department of Environmental Protection
SMP	Surface Mining Permit
EL.	Elevation
TYP.	Typical
MSL	Mean Sea Level
℄	Property Line
℄	Center Line

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GEOLOGIST
PENNSYLVANIA

MARK WILLIAM ESHBACHER
PENNSYLVANIA LICENSE No. PG-0029791-G

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REGISTERED PROFESSIONAL
EVAN DANIEL SOWERS
ENGINEER
No. PE082363
PENNSYLVANIA

EVAN DANIEL SOWERS
PENNSYLVANIA LICENSE No. PE-082363

CROSS SECTION NOTES:

1. This sheet replaces the sheet entitled: "Cross Sections," prepared by the H&K Group Engineering & Environmental Services Division, Sheet 2 of 5, dated 8/07/2008.
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1/08/21	REVISED PER PADEP & PFBC COMMENTS	E.D.S.	E.D.S.	1

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EXHIBIT 7.1
CROSS SECTIONS
2 OF 5

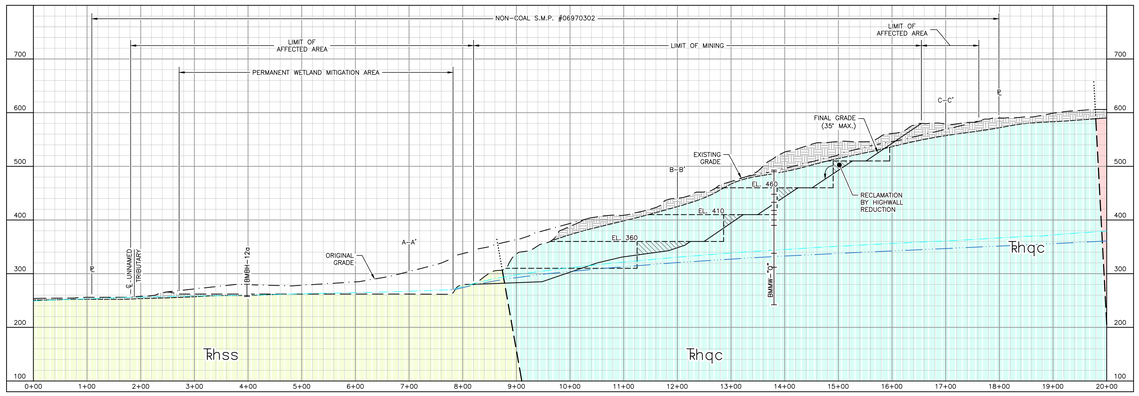
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CHECKED	E.D.S.
DATE	4/09/2020

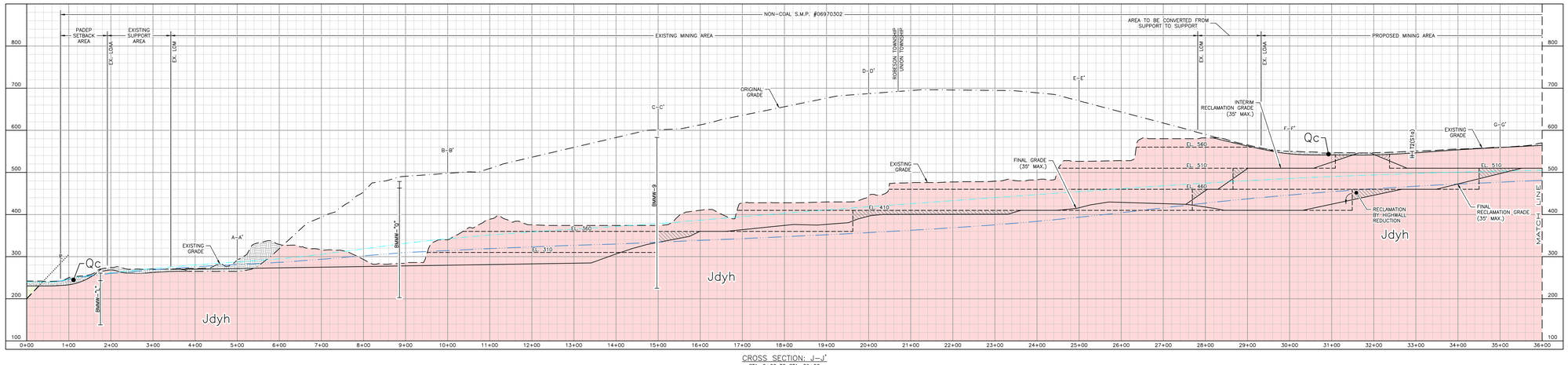
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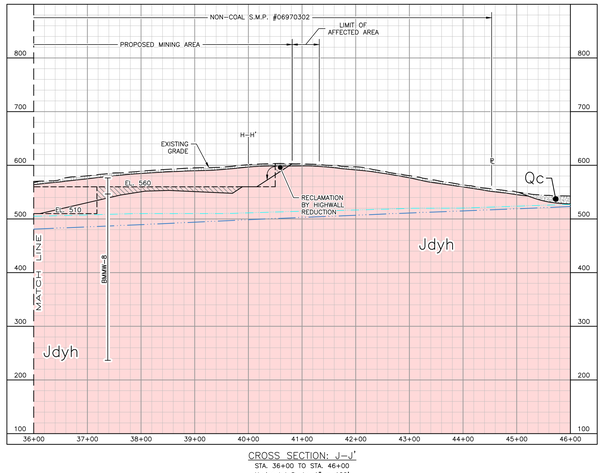
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CROSS SECTION: I–I'
Horizontal Scale: 1" = 100'
Vertical Scale: 1" = 100'



CROSS SECTION: J–J'
STA. 0+00 TO STA. 36+00
Horizontal Scale: 1" = 100'
Vertical Scale: 1" = 100'



CROSS SECTION: J–J'
STA. 36+00 TO STA. 46+00
Horizontal Scale: 1" = 100'
Vertical Scale: 1" = 100'

LEGEND

- Existing Grade
- Proposed Final Highwall Face
- Approximate Final Grade
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ABBREVIATIONS

PADEP	Pennsylvania Department of Environmental Protection
SMP	Surface Mining Permit
EL.	Elevation
TYP.	Typical
MSL	Mean Sea Level
℄	Property Line
℄	Center Line

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COMMONWEALTH OF PENNSYLVANIA
REGISTERED PROFESSIONAL
MARK W. ESHBACHER
GEOLOGIST

MARK WILLIAM ESHBACHER
PENNSYLVANIA LICENSE No. PG-002979-G

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COMMONWEALTH OF PENNSYLVANIA
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EVAN DANIEL SOWERS
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NO. PE082363

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CROSS SECTION NOTES:

1. This sheet replaces the sheet entitled: "Cross Sections," prepared by the H&K Group Engineering & Environmental Services Division, Sheet 3 of 5, dated 8/07/2008.
2. Existing groundwater level derived from "Figure #10 – Simulated Groundwater Elevation Contours Existing Site Conditions" obtained from a report entitled: "Groundwater Model Evaluation Report Proposed Expansion Birdsboro Materials Quarry" for H&K Group, Inc., prepared by Val. F. Britton, P.G., dated 5/29/2020.
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EXHIBIT 7.1
CROSS SECTIONS
3 OF 5

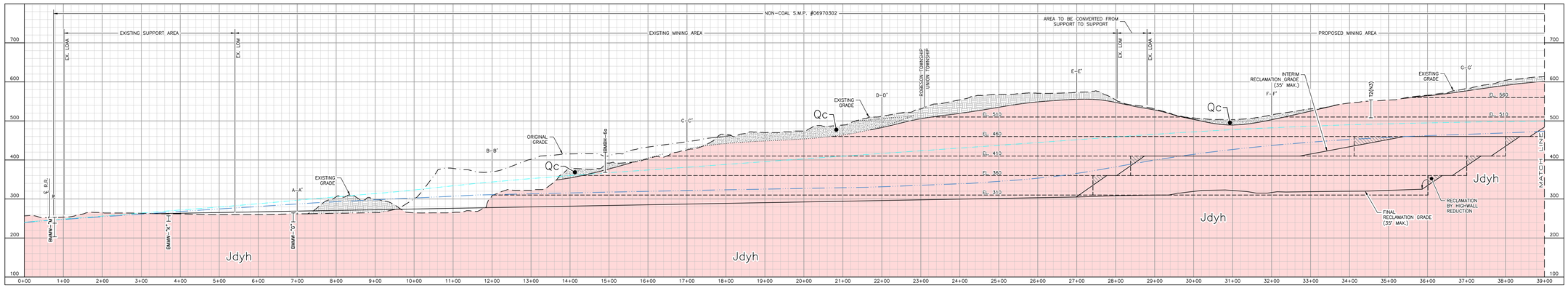
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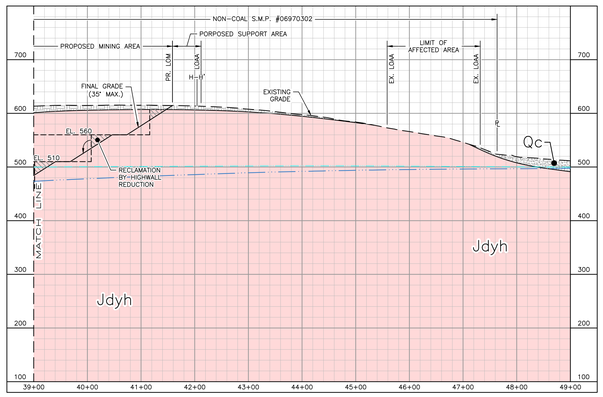
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SHEET 7 of 16

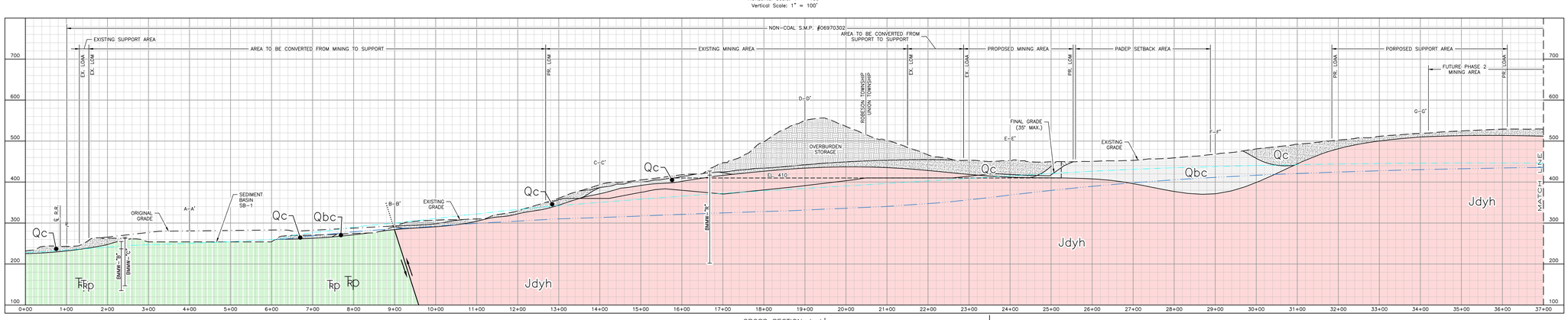
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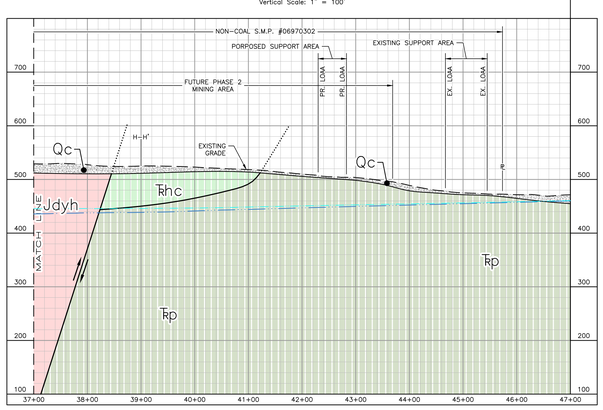
CROSS SECTION: K-K'
STA. 0+00 TO STA. 39+00
Horizontal Scale: 1" = 100'
Vertical Scale: 1" = 100'



CROSS SECTION: K-K'
STA. 39+00 TO STA. 49+00
Horizontal Scale: 1" = 100'
Vertical Scale: 1" = 100'



CROSS SECTION: L-L'
STA. 0+00 TO STA. 39+00
Horizontal Scale: 1" = 100'
Vertical Scale: 1" = 100'



CROSS SECTION: L-L'
STA. 37+00 TO STA. 47+00
Horizontal Scale: 1" = 100'
Vertical Scale: 1" = 100'

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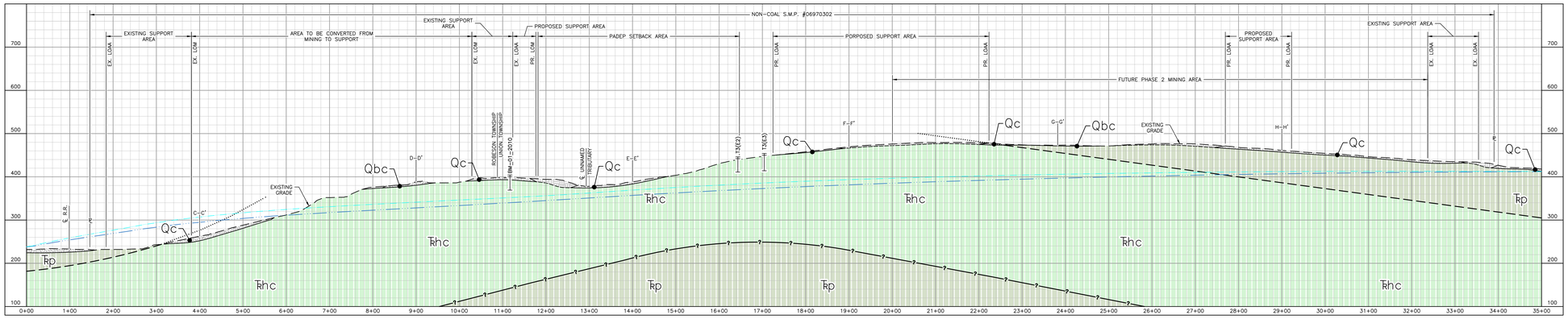
EXHIBIT 7.1
CROSS SECTIONS
4 OF 5

ROBESON & UNION TOWNSHIP — BERKS COUNTY

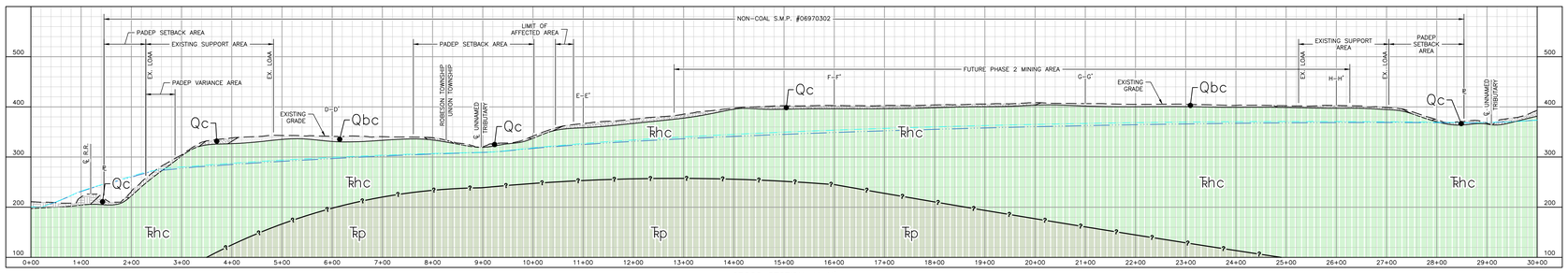
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DESIGN	E.D.S.
CHECKED	E.D.S.
DATE	4/09/2020
SCALE	AS SHOWN
DRAWING NO.	B011E-SCT-4C
SHEET	8 of 16

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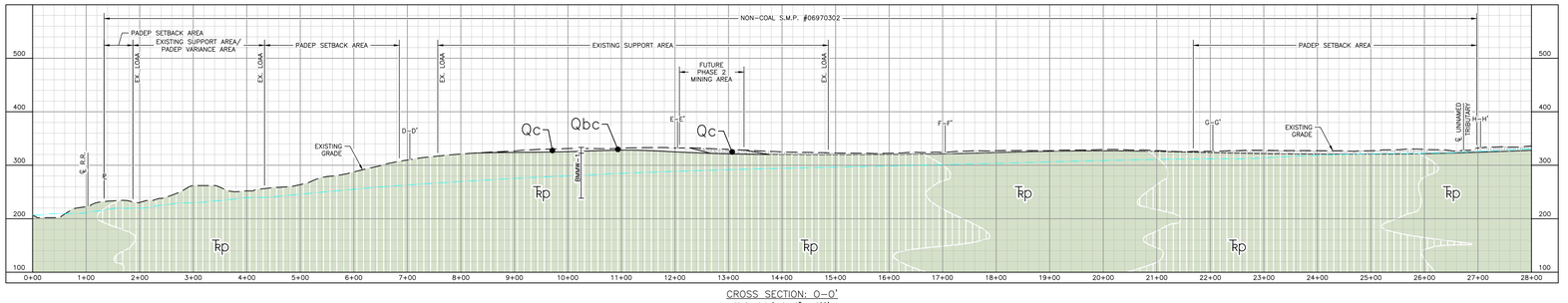
BOX ALTERED AND ALL INFORMATION SHOULD BE DISREGARDED UNLESS IT BEARS THE SEAL OF A REGISTERED PROFESSIONAL
COMMONWEALTH OF PENNSYLVANIA
REGISTERED PROFESSIONAL
GEOLOGIST
MARK W. ESHBACHER
PENNSYLVANIA
MARK WILLIAM ESHBACHER
PENNSYLVANIA LICENSE No. PG-002979-G
COMMONWEALTH OF PENNSYLVANIA
REGISTERED PROFESSIONAL
ENGINEER
EVAN DANIEL SOWERS
PENNSYLVANIA
EVAN DANIEL SOWERS
PENNSYLVANIA LICENSE No. PE-082363



CROSS SECTION: M-M'
Horizontal Scale: 1" = 100'
Vertical Scale: 1" = 100'



CROSS SECTION: N-N'
Horizontal Scale: 1" = 100'
Vertical Scale: 1" = 100'



CROSS SECTION: O-O'
Horizontal Scale: 1" = 100'
Vertical Scale: 1" = 100'

LEGEND

- Existing Grade
- Proposed Final Highwall Face
- Approximate Final Grade
- Approximate Original Grade
- Existing Groundwater Level
- Post-Mining Groundwater Level
- Geologic Contact (Dashed Where Approximate)
- Geologic Fault (Dashed Where Approximate)

BEDROCK GEOLOGY

- Jdyh — Jurassic Diabase (York Haven Type)
- Trhc — Triassic Hammer Creek Formation (D.B. MacLachlan, 1983-Revised 1992)
- Trhqc — Triassic Hammer Creek Quartz Conglomerate (C.R. Wood, 1980)
- Trhss — Triassic Hammer Creek Sandstone (C.R. Wood, 1980)
- Trp — Triassic Passaic Formation (D.B. MacLachlan, 1983-Revised 1992)
- Bedrock Geology Altered to Hornfels Through Contact with Diabase Intrusion.

SURFICAL GEOLOGY

- Qc — Quaternary Colluvium (Dashed Where Approximate)
- Qbc — Quaternary Boulder Colluvium (Dashed Where Approximate)
- Overburden / Stockpiled Material

ABBREVIATIONS

PADEP	Pennsylvania Department of Environmental Protection
SMP	Surface Mining Permit
EL.	Elevation
TYP.	Typical
MSL	Mean Sea Level
℄	Property Line
℄	Center Line

BEN ALTERED AND ALL INFORMATION SHOULD BE CONSIDERED INVALID

COMMONWEALTH OF PENNSYLVANIA REGISTERED PROFESSIONAL GEOLOGIST
MARK W. ESHBACHER
GEOLOGIST
PROFESSIONAL

MARK WILLIAM ESHBACHER
PENNSYLVANIA LICENSE No. PG-002979-G

BEN ALTERED AND ALL INFORMATION SHOULD BE CONSIDERED INVALID

COMMONWEALTH OF PENNSYLVANIA REGISTERED PROFESSIONAL ENGINEER
EVAN DANIEL SOWERS
ENGINEER NO. PE082363
PENNSYLVANIA

EVAN DANIEL SOWERS
PENNSYLVANIA LICENSE No. PE-082363

CROSS SECTION NOTES:

1. This sheet replaces the sheet entitled: "Cross Sections," prepared by the H&K Group Engineering & Environmental Services Division, Sheet 5 of 5, dated 8/07/2008.
2. Existing groundwater level derived from "Figure #10 – Simulated Groundwater Elevation Contours Existing Site Conditions" obtained from a report entitled: "Groundwater Model Evaluation Report Proposed Expansion Birdsboro Materials Quarry" for H&K Group, Inc., prepared by Val. F. Britton, P.G., dated 5/29/2020.
3. Post-Mining groundwater level derived from "Figure #11 – Simulated Groundwater Elevation Contours Proposed Expansion" obtained from a report entitled: "Groundwater Model Evaluation Report Proposed Expansion Birdsboro Materials Quarry" for H&K Group, Inc., prepared by Val. F. Britton, P.G., dated 5/29/2020.

DATE	REVISIONS	BY	CHK.	REV.
2/19/21	REVISED PER PADEP COMMENTS DATED 2/03/21	E.D.S.	E.D.S.	2
1/08/21	REVISED PER PADEP & PFBC COMMENTS	E.D.S.	E.D.S.	1

BIRDSBORO MATERIALS
A Division of H&K Group, Inc.

EXHIBIT 7.1
CROSS SECTIONS
5 OF 5

ROBESON & UNION TOWNSHIP — BERKS COUNTY

DRAWN	E.D.S.
DESIGN	E.D.S.
CHECKED	E.D.S.
DATE	4/09/2020

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SCALE: AS SHOWN
DRAWING NO. B011E-SCT-5C
SHEET 9 of 16

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WETLANDS LEGEND

- Wetlands & Waters of the U.S. Delineated By Others*
- Wetlands Delineated By EES Consultants, Inc.** (Inclusive of the Waters of the U.S. Where Stream Channel Exists)
- Waters Of The U.S. Delineated By EES Consultants, Inc.** (Approximate Bank to Bank Width)
- Wetlands Delineated By DelVal Soil & Environmental Consultants, Inc.***
- Waters Delineated By DelVal Soil & Environmental Consultants, Inc.***
- Permanent Wetland Mitigation Area
- National Wetlands Inventory Classified Wetlands

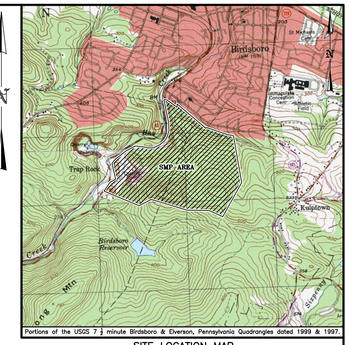
NATIONAL WETLANDS INVENTORY CLASSIFIED WETLANDS

PF01A	Palustrine, Forested, Broad-Leaved Deciduous, Temporary Flooded
PEM5A	Palustrine, Emergent, Phragmited australis, Temporary Flooded
PUBHx	Palustrine, Unconsolidated Bottom, Permanently Flooded, Excavated
PUBHh	Palustrine, Unconsolidated Bottom, Permanently Flooded, Diked/Impounded

* Work by others in reference to plans by A.D. Marble & Company, Inc., Larson Design Group, and Hunt Engineering Company, revision date 11/8/96, entitled "WETLANDS", sheet 1 through 6 of 6, and U.S. Army Corps of Engineers field confirmation, reference subject CENAP-OP-R-199501195-11(JD).

** Field confirmation acknowledged by U.S. Army Corps of Engineers May 5, 1998, reference subject: CENAP-OP-R-199701801-23 (JD). Field confirmation on Haines & Kibblehouse, Inc. lands acknowledged by U.S. Army Corps of Engineers May 5, 1998, reference subject: CENAP-OP-R-199701800-22 (JD).

*** Field confirmation acknowledged by U.S. Army Corps of Engineers August 12, 2015, reference subject: CENAP-OP-R-2007-11120-46 (JD).



SITE LOCATION MAP
Scale: 1" = 2,000'

BOROUGH OF BIRDSBORO
ROBESON TOWNSHIP

BOROUGH OF BIRDSBORO
UNION TOWNSHIP

ROBESON TOWNSHIP
UNION TOWNSHIP

1000' PERIMETER

BIRDSBORO MUNICIPAL PARK

ABANDONED ACCESS ROAD

WETLAND A

WETLAND B

WETLAND C

WETLAND D

WETLAND E

WETLAND 1-1 CLASS: PEM1/FO 4,211 S.F. (0.097 Ac.)

WETLAND 1-2 CLASS: PEM1/FO 2,225 S.F. (0.051 Ac.)

WETLAND 1-3 CLASS: PEM1/FO 1,068 S.F. (0.025 Ac.)

WETLAND 1-4 CLASS: PEM1/FO 688 S.F. (0.016 Ac.)

WETLAND 1-5 CLASS: PEM1/FO 38,834 S.F. (0.892 Ac.)

WETLANDS 5

WETLAND MITIGATION AREA

WETLAND MITIGATION EXPANSION AREA

PF01A

PUBHx — J.T. DYER QUARRY RESERVOIR

PEM5A

PUBHh — INDIAN RUN DAM (BIRDSBORO RESERVOIR)

CHANNEL 1 CLASS: R3UBH 4,423 L.F. 22,869 S.F. (0.525 Ac.)

CHANNEL 2 CLASS: R3UBH 1,211 L.F. 6,260 S.F. (0.144 Ac.)

CHANNEL 3 CLASS: R3UBH 1,211 L.F. 6,260 S.F. (0.144 Ac.)

CHANNEL 4 CLASS: R3UBH 1,211 L.F. 6,260 S.F. (0.144 Ac.)

CHANNEL 5 CLASS: R3UBH 1,211 L.F. 6,260 S.F. (0.144 Ac.)

CHANNEL

WETLANDS LEGEND

- Wetlands & Waters of the U.S. Delineated By Others*
- Wetlands Delineated By EES Consultants, Inc.** (inclusive of the Waters of the U.S. Where Stream Channel Exists)
- Waters Of The U.S. Delineated By EES Consultants, Inc.** (Approximate Bank to Bank Width)
- Wetlands Delineated By DelVal Soil & Environmental Consultants, Inc.***
- Waters Delineated By DelVal Soil & Environmental Consultants, Inc.***
- Permanent Wetland Mitigation Area
- National Wetlands Inventory Classified Wetlands

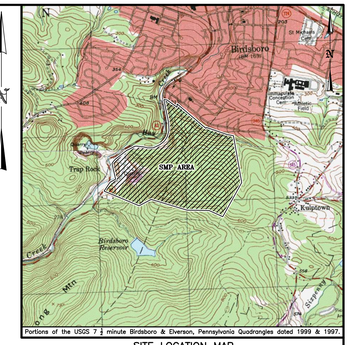
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PUBHh	Palustrine, Unconsolidated Bottom, Permanently Flooded, Diked/Impounded

* Work by others in reference to plans by A.D. Marble & Company, Inc., Larson Design Group, and Hunt Engineering Company, revision date 11/8/96, entitled "WETLANDS", sheet 1 through 6 of 6, and U.S. Army Corps of Engineers field confirmation, reference subject CENAP-OP-R-199501195-11(JD).

** Field confirmation acknowledged by U.S. Army Corps of Engineers May 5, 1998, reference subject: CENAP-OP-R-199701801-23 (JD). Field confirmation on Haines & Kibblehouse, Inc. lands acknowledged by U.S. Army Corps of Engineers May 5, 1998, reference subject: CENAP-OP-R-199701800-22 (JD).

*** Field confirmation acknowledged by U.S. Army Corps of Engineers August 12, 2015, reference subject: CENAP-OP-R-2007-11320-46 (JD).



Portions of the USGS 7 ½ minute Birdsboro & Elverson, Pennsylvania Quadrangles dated 1999 & 1997.

SITE LOCATION MAP
Scale: 1" = 2,000'

LEGEND

- Property Line
- Adjacent Lot Lines
- Right-of-Way Line
- Municipal Boundary Line
- (5) Property Ownership Key
- Perimeter Radius (1000')
- Surface Mining Permit Boundary
- Existing Limit of Mining
- Existing Limit of Affected Area
- Proposed Limit of Phase 1 Mining
- Proposed Limit of Phase 1 Affected Area
- Future Limit of Phase 2 Mining
- Future Limit of Phase 2 Affected Area
- PADEP Setbacks
- PADEP Setback Variance
- Existing Electric Line
- Existing Electric and Telephone Line
- Existing Water Main/Line
- Existing Utility Pole
- Existing Fence
- Existing Guide Rail
- Existing Major Contour Line
- Existing Minor Contour Line
- Existing Tree/Wood Line
- Occupied Structure/Outbuilding (Garage, Barn, Shed, Etc.)
- Surface Water
- Spring
- Existing Unpaved Road/Trail
- Existing Paved Road
- Existing Rail Road
- A A' Cross Section Line and Designation
- Proposed Diversion Ditch
- 400 Groundwater Contour
- BMW-"M" Monitoring Well
- T3 (W2) Transect Wells
- BM-14 Stream Point
- BM-003 NPDES Discharge Point
- Historical Monitoring Point

SOURCE NOTES:

1. Mine permit information (i.e. permit boundary, phasing, limit of mining, etc.) derived from plan entitled "Exhibit B: Operations Map," prepared by Ross Consulting Engineers, dated 7/11/1997, last revised 8/26/1998.
2. Topography within active mining area derived from H&K field survey dated 5/31/2016.
3. Topography beyond active mining area derived from LiDAR Arc/Info coverage files published 2006 through 2008, downloaded from *Pennsylvania Spatial Data Access (PASDA)*, (http://www.pasda.psu.edu).
4. Photogrammetric digital mapping within Phase 1 Area compiled by L. Robert Kimball & Associates, Inc., Ebensburg, PA, using aerial photography obtained 3/13/2008 . Vertical control is based on NAD 88 datum provided by Haines & Kibblehouse, Inc.
5. Photogrammetric digital mapping beyond Phase 1 Area compiled by L. Robert Kimball & Associates, Inc., Ebensburg, PA, using aerial photography obtained April 5, 1995.
6. Property boundary derived from plan entitled "Haines & Kibblehouse, Inc., Minor Subdivision Plan," prepared by the H&K Group Engineering & Environmental Services Division, dated 11/12/2002, last revised 7/07/2004 and recorded in Berks County Plan Book 274, Page 90.
7. Adjacent property lines derived from Berks County Tax Map(s).
8. Refer to "Wetlands Legend" for wetlands sources.
9. Post-Mining groundwater contours derived from "Figure #11 – Simulated Groundwater Elevation Contours Proposed Expansion" obtained from a report entitled: "Groundwater Model Evaluation Report Proposed Expansion Birdsboro Materials Quarry" for H&K Group, Inc., prepared by Val. F. Britton, P.G., dated 5/29/2020.

COMMONWEALTH OF PENNSYLVANIA — REGISTERED PROFESSIONAL — EVAN DANIEL SOWERS — ENGINEER — NO. PE082363

EVAN DANIEL SOWERS
PENNSYLVANIA LICENSE No. PE-082363

Scale: 1" = 200'
200 0 200 400

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DATE	REVISIONS	BY	CHK.	REV.
2/19/21	REVISED PER PADEP COMMENTS DATED 2/03/21	E.D.S.	E.D.S.	1

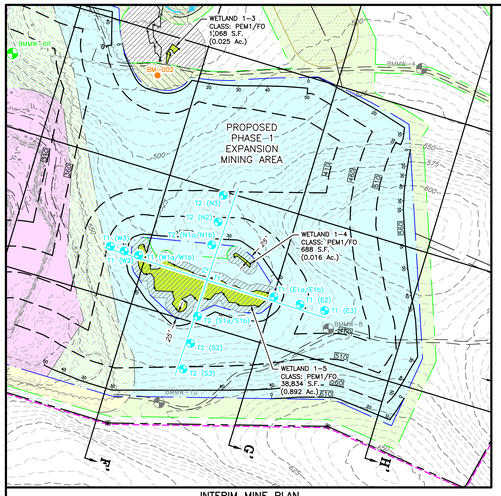
BIRDSBORO MATERIALS
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EXHIBIT 8.6
POST–MINING GROUNDWATER CONTOUR MAP

ROBESON & UNION TOWNSHIP — BERKS COUNTY

DRAWN	E.D.S.
DESIGN	E.D.S.
CHECKED	E.D.S.
DATE	1/08/2021
SCALE	1" = 200'
DRAWING NO.	B011E-GWTR-2B
SHEET	11 of 16

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WETLAND 1-3
CLASS: PEM1/FO
1,068 S.F.
(0.025 Ac.)
BM-002
PROPOSED
PHASE 1
EXPANSION
MINING AREA
WETLAND 1-4
CLASS: PEM1/FO
688 S.F.
(0.016 Ac.)
WETLAND 1-5
CLASS: PEM1/FO
38,834 S.F.
(0.892 Ac.)
T2 (N3)
T2 (N2)
T2 (N1a/N1b)
T1 (W3)
T1 (W2)
T1 (W1a/W1b)
T1 (E1a/E1b)
T1 (E2)
T1 (E3)
T2 (S1a/S1b)
T2 (S2)
T2 (S3)
BMW-5
BMW-6
BMW-7
BMW-8
BMW-9
BMW-10
BMW-11
BMW-12
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BMW-35
BMW-36
BMW-37
BMW-38
BMW-39
BMW-40
BMW-41
BMW-42
BMW-43
BMW-44

WETLANDS LEGEND

- Wetlands & Waters of the U.S. Delineated By DPerm*
- Wetlands Delineated By E2S Consultants, Inc.**
- Waters of the U.S. Delineated By E2S Consultants, Inc.**
- Approximate Bank of Bona Ditch)
- Waters Delineated By DeVoti Soil & Environmental Consultants, Inc.***
- Delineated Boundary Of DeVoti Soil & Environmental Consultants, Inc.*** SB-1 SB-2 In accordance with the following sub-sequence:
- Permanent Wetland Mitigation Area
- Temporary Wetland Mitigation Area

NATIONAL WETLANDS INVENTORY CLASSIFIED WETLANDS

- PFO1A Palustrine, Forested, Broad-leaved Deciduous, Temporary Flooded
- PUBHx Palustrine, Unconsolidated Bottom, Permanently Flooded, Excavated
- PEMEA Palustrine, Emergent, Persistent, Seasonally Flooded, Temporary Flooded
- PUBHh Palustrine, Unconsolidated Bottom, Permanently Flooded, Diked/Impounded

* Wetland delineation conducted by U.S. Army Corps of Engineers May 1, 1998. Reference wetlands delineation, Wetland Data Form, WETMEDIC_Week 1 through 4 of 6, on file with the U.S. Army Corps of Engineers Seattle District.

** Wetland delineation conducted by E2S Consultants, Inc. (Jason Deegan, Doug, and Jane Clymenes) on 10/15/2020 and 11/18/2020 (CENWP-OP-R-1990/01158-1RD).

*** Wetland delineation conducted by U.S. Army Corps of Engineers August 12, 2015. Reference wetlands delineation, Wetland Data Form, WETMEDIC_Week 1 through 4 of 6, on file with the U.S. Army Corps of Engineers Seattle District (CENWP-OP-R-1990/01160-2) and confirmed on behalf of DeVoti Soil & Environmental by U.S. Army Corps of Engineers August 12, 2015 (CENWP-OP-R-1990/01160-2RD).

PROPOSED SCIENCE OF CONSTRUCTION:

1. Upon receipt of the memorandum to mine from DeVoti Soil & Environmental Consultants, Inc. (DSEC) documenting the PA flow collection, the Operator shall at least three (3) business days following prior to the start of any earth disturbance.
2. The Operator shall then install temporary sediment barrier BMPs and all construction entrances as specified in the approved E&S Plan and SCD 4-1.
3. Clear vegetation from the base and area and rough grade (if it exists), setting it aside for final cover.
4. Upon request, the Operator shall provide an as-built (record drawing) detail and bathe wall in accordance with SCD 3-14.
5. Install clean-out stops in accordance with the provided detail and bathe wall in accordance with SCD 3-12.
6. Install sediment control logs (compost filled) in accordance with SCD 3-13.
7. Stabilize interior side slopes.
8. The Operator shall then construct temporary diversion ditches in accordance with SCD 3-1. Ditches shall be directed to SCD 3-4 or SCD 3-5 for conveyance to the temporary sediment basin.
9. The Operator shall then clear and grub vegetation from within the proposed limit of mining, stockpiling, and proposed limit of mining, stockpiling, and processing, and proceed to extract the mineral resource.
10. The Operator shall then clear and grub vegetation from within the proposed limit of mining, stockpiling, and processing, and proceed to extract the mineral resource.
11. As mining progresses to a point in which all mining activities within the excavation are to be completed, the Operator shall remove the temporary sediment basin in accordance with the following sub-sequence:
    - Completely remove or properly dispose of the temporary sediment basin outlet structure.
    - Drain and fill the temporary sediment basin to the elevation of the surrounding ground. Smooth and compact the fill material to conform with the adjacent grade.
    - Stabilize the disturbed area.
11.1. Allow the dry-detaining basin to drain down to the OGE during dry conditions.
11.2. Continue dry-detaining basin into the de-watering activity.
11.3. Completely remove the temporary dispose of the basin outlet structure.
11.4. Commence grading activities to remove the temporary sediment basin.
11.5. Seed and mulch the disturbed area.
12. The Operator shall then proceed to mine through the former basin area.
13. The Operator shall stabilize the disturbed area outside the limit of mining.
14. Commence grading activities to remove the temporary sediment basin.
15. Seed and mulch the disturbed area.
16. The Operator shall then proceed to mine through the former basin area.
17. The Operator shall then proceed to mine through the former basin area.
18. The Operator shall then proceed to mine through the former basin area.

MATCH LINE

1 OF 2
2 OF 2

D.A. SB-1
94.278 AC.

WETLAND A

BIRDSBORO MUNICIPAL PARK

(2) 60" RCP

ARMSTRONG ROAD

HAY CREEK

(EX. MP)

96.6 L.F. 30" RCP @ 8.08%
INV. IN = 246.38
INV. OUT = 238.57

96.7 L.F. 30" RCP @ 8.19%
INV. IN = 246.43
INV. OUT = 238.51

ACCESS ROAD

D.A. ST-1
1.071 AC.

D.A. ST-2
1.083 AC.

D.A. ST-3
2.615 AC.

D.A. ST-4
4.878 AC.

ST-1
(TO BE REMOVED)

ST-2

ST-3

ST-4
(TO BE REMOVED)

D.A. ST-8
SURFACE: 2.037 AC.
TOTAL: 4.735 AC.

D.A. C-21A
SURFACE: 2.698 AC.
TOTAL: 2.698 AC.

ST-5
(TO BE REMOVED)

D.A. ST-9
2.435 AC.

ST-6
(TO BE REMOVED)

D.A. C-22B
SURFACE: 2.887 AC.
TOTAL: 13.056 AC.

CLEAN-OUT STAKE

ST-8
EMBANKMENT/SEDIMENT TRAP

BE = 409.00
COE = 410.75
SCE = 413.00
ETE = 414.00

(SCD #8-1)

ST-9
EMBANKMENT/SEDIMENT TRAP

BE = 440.00
COE = 441.50
SCE = 444.00
ETE = 445.00

(SCD #8-1)

CHANNEL 1A&B
CLASS: RSUB
43,096 S.F.
(0.989 Ac.)
24,891 L.F.

RIPRAP CHANNEL (SCD #6-3)

BAFFLE (SCD #7-14)

DEWATERING FACILITY (SCD #7-18)

SKIMMER (CD #7-1)

STONE BERM (CD #7-3)

CLEAN-OUT STAKE LOCATION

24" OUTLET BARREL W/CONC. CRADLE (SCD #7-17)

CLEAN-OUT STAKE

RIPRAP APRON (SCD #9-1)

ROCK FILTER #5 (SCD #4-14)

WETLAND 1-1
CLASS: PEM1/FO
4,211 S.F.
(0.097 Ac.)

WETLAND 1-2
CLASS: PEM1/FO
2,225 S.F.
(0.051 Ac.)

WETLAND 1-3
CLASS: PEM1/FO
1,068 S.F.
(0.025 Ac.)

ANTI-SEEP COLLARS (SCD #7-16)

ROCK FILTER #4 (SCD #4-14)

D.A. SB-3
SURFACE: 12.067 AC.
TOTAL: 37.813 AC.

TEMPORARY SEDIMENT BASIN SB-3

BE = 470.00
COE = 472.00
TRCE = 477.00
WCE = 478.00
ETE = 480.00

(CD #7-4)

VEGETATED CHANNEL (SCD #6-1)

30" TEMP. RISER (SCD #7-7)

RIPRAP CHANNEL (SCD #6-3)

EMERGENCY SPILLWAY (SCD #7-12)

ST-10
EMBANKMENT/SEDIMENT TRAP

BE = 465.00
COE = 465.50
SCE = 469.00
ETE = 470.00

(SCD #8-1)

D.A. C-25B
SURFACE: 1.104 AC.
TOTAL: 12.077 AC.

D.A. ST-10
SURFACE: 0.675 AC.
TOTAL: 14.923 AC.

D.A. C-25A
SURFACE: 0.973 AC.
TOTAL: 0.973 AC.

PROPOSED OVERBURDEN STORAGE AREA

D.A. C-23B
SURFACE: 1.178 AC.
TOTAL: 13.191 AC.

D.A. C-25C
SURFACE: 0.993 AC.
TOTAL: 0.993 AC.

CLEAN-OUT STAKE

ROCK FILTER #3 (SCD #4-14)

RIPRAP CHANNEL (SCD #6-3)

WETLAND 1-4
CLASS: PEM1/FO
688 S.F.
(0.016 Ac.)

WETLAND 1-5
CLASS: PEM1/FO
38,834 S.F.
(0.892 Ac.)

RIPRAP CHANNEL (SCD #6-3)

D.A. C-22A
SURFACE: 10.169 AC.
TOTAL: 10.169 AC.

D.A. C-240
SURFACE: 3.361 AC.
TOTAL: 7.269 AC.

D.A. C-24C
SURFACE: 0.916 AC.
TOTAL: 3.908 AC.

D.A. C-23A
SURFACE: 5.421 AC.
TOTAL: 5.421 AC.

D.A. C-24B
SURFACE: 1.993 AC.
TOTAL: 2.992 AC.

RIPRAP CHANNEL (SCD #6-3)

D.A. C-24A
SURFACE: 0.999 AC.
TOTAL: 0.999 AC.

SB-3 TC FLOW PATH

D.A. D-6
26.360 AC.

ROCK FILTER #2 (SCD #4-14)

VEGETATED CHANNEL (SCD #6-1)

ROCK FILTER #1 (SCD #4-14)

WETLANDS 5

CHANNEL 1A&B
CLASS: RSUB
43,096 S.F.
(0.989 Ac.)
24,891 L.F.

TULPEHOCKEN

ROBESON

CHESTNUT

STREET

MAIN

LEGEND

- Property Line
- Adjacent Lot Lines
- Right-of-Way Line
- Surface Mining Permit Boundary
- Proposed Limit of Affected Area
- Existing Electric Line
- Existing Electric and Telephone Line
- Existing Water Main/Line
- Existing Utility Pole
- Existing Fence
- Existing Guide Rail
- Existing Major Contour Line
- Existing Minor Contour Line
- Existing Tree/Wood Line
- Occupied Structure/Outbuilding (Garage, Barn, Shed, Etc.)
- Surface Water
- Existing Unpaved Road/Trail
- Existing Paved Road
- Existing Rail Road
- Proposed Major Contour Line
- Proposed Minor Contour Line
- Existing Tree/Wood Line
- E&S Drainage Area Boundary
- Proposed Diversion Ditch
- Proposed Collection Channel
- Proposed 12" Compost Sock
- Proposed Super Silt Fence
- NAG S150 Erosion Control Blanket
- Proposed Rip Rap Lining
- Soil Boundary and Designation

SOURCE NOTES:

1. Mine permit information (i.e. permit boundary, phasing, limit of mining, etc.) derived from plan entitled "Exhibit B: Operations Map," prepared by Ross Consulting Engineers, dated 7/11/1997, last revised 8/26/1998.
2. Topography within active mining area derived from H&K field survey dated 5/31/2016.
3. Topography beyond active mining area derived from LiDAR Arc/Info coverage files published 2006 through 2008, downloaded from *Pennsylvania Spatial Data Access (PASDA)*, (http://www.pasda.psu.edu).
4. Photogrammetric digital mapping within Phase 1 Area compiled by L. Robert Kimball & Associates, Inc., Ebensburg, PA, using aerial photography obtained 3/13/2008 . Vertical control is based on NAVD 88 datum provided by Haines & Kibblehouse, Inc.
5. Photogrammetric digital mapping beyond Phase 1 Area compiled by L. Robert Kimball & Associates, Inc., Ebensburg, PA, using aerial photography obtained April 5, 1995.
6. Property boundary derived from plan entitled "Haines & Kibblehouse, Inc., Minor Subdivision Plan," prepared by the H&K Group Engineering & Environmental Services Division, dated 11/12/2002, last revised 7/07/2004 and recorded in Berks County Plan Book 274, Page 90.
7. Adjacent property lines derived from Berks County Tax Map(s).
8. Refer to "Wetlands Legend" for wetlands sources.

COMMONWEALTH OF PENNSYLVANIA
REGISTERED PROFESSIONAL
EVAN DANIEL SOWERS
ENGINEER
NO. PE082363

EVAN DANIEL SOWERS
PENNSYLVANIA LICENSE No. PE-082363

Scale: 1" = 100'
100 0 100 200

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DATE	REVISIONS	BY	CHK.	REV.
2/19/21	REVISED PER PADEP COMMENTS DATED 2/03/21	E.D.S.	E.D.S.	2
1/08/21	REVISED PER PADEP & PFBC COMMENTS	E.D.S.	E.D.S.	1

BIRDSBORO MATERIALS
A Division of H&K Group, Inc.

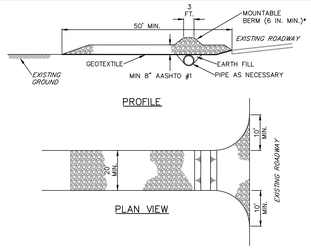
EXHIBIT 12.2A
EROSION & SEDIMENT CONTROL PLAN
(2 OF 2)

UNION & ROBESON TOWNSHIP — BERKS COUNTY

DRAWN	E.D.S.
DESIGN	E.D.S.
CHECKED	E.D.S.
DATE	4/09/2020

THE H&K GROUP
ENGINEERING & ENVIRONMENTAL Services Division
2052 Lucon Road • P.O. Box 196 • Skippack, PA 19474 • (610) 584-8500

SCALE	1" = 100'
DRAWING NO.	B011E-ESPC-2C
SHEET	14 of 16



* MOUNTABLE BERM USED TO PROVIDE PROPER COVER FOR PIPE

NOTES:

REMOVE TOPSOIL PRIOR TO INSTALLATION OF ROCK CONSTRUCTION ENTRANCE. EXTEND ROCK OVER FULL WIDTH OF ENTRANCE.

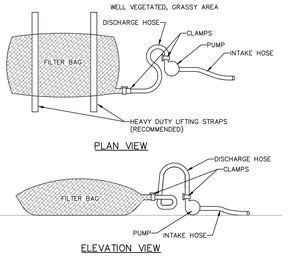
RUNOFF SHALL BE DIVERTED FROM ROADWAY TO A SUITABLE SEDIMENT REMOVAL BMP PRIOR TO ENTERING ROCK CONSTRUCTION ENTRANCE.

MOUNTABLE BERM SHALL BE INSTALLED WHEREVER OPTIONAL CULVERT PIPE IS USED AND PROPER PIPE COVER AS SPECIFIED BY MANUFACTURER IS NOT OTHERWISE PROVIDED. PIPE SHALL BE SIZED APPROPRIATELY FOR SIZE OF DITCH BEING CROSSED.

MAINTENANCE: ROCK CONSTRUCTION ENTRANCE THICKNESS SHALL BE CONSTANTLY MAINTAINED TO THE SPECIFIED DIMENSIONS BY ADDING ROCK. A STOCKPILE SHALL BE MAINTAINED ON SITE FOR THIS PURPOSE. ALL SEDIMENT DEPOSITED ON PAVED ROADWAYS SHALL BE REMOVED AND RETURNED TO THE CONSTRUCTION SITE IMMEDIATELY. IF EXCESSIVE AMOUNTS OF SEDIMENT ARE BEING DEPOSITED ON ROADWAY, EXTEND LENGTH OF ROCK CONSTRUCTION ENTRANCE BY 50 FOOT INCREMENTS UNTIL CONDITION IS ALLEVIATED OR INSTALL WASH RACK. WASHING THE ROADWAY OR SWEEPING THE DEPOSITS INTO ROADWAY DITCHES, SEWERS, CULVERTS, OR OTHER DRAINAGE COURSES IS NOT ACCEPTABLE.

STANDARD CONSTRUCTION DETAIL #3-1
ROCK CONSTRUCTION ENTRANCE

NOT TO SCALE



NOTES:

LOW VOLUME FILTER BAGS SHALL BE MADE FROM NON-WOVEN GEOTEXTILE MATERIAL SEWN WITH HIGH STRENGTH, DOUBLE STITCHED "J" TYPE SEAMS. THEY SHALL BE CAPABLE OF TRAPPING PARTICLES LARGER THAN 150 MICRONS. HIGH VOLUME FILTER BAGS SHALL BE MADE FROM WOVEN GEOTEXTILES THAT MEET THE FOLLOWING STANDARDS:

PROPERTY	TEST METHOD	MINIMUM STANDARD
AVG. WIDE WIDTH STRENGTH	ASTM D-4884	60 LB/IN
GRAB TENSILE	ASTM D-4632	205 LB
PUNCTURE	ASTM D-4833	110 LB
MULLEN BURST	ASTM D-3786	350 PSI
UV RESISTANCE	ASTM D-4355	70%
AOS % RETAINED	ASTM D-4751	80 SIEVE

A SUITABLE MEANS OF ACCESSING THE BAG WITH MACHINERY REQUIRED FOR DISPOSAL PURPOSES SHALL BE PROVIDED. FILTER BAGS SHALL BE REPLACED WHEN THEY BECOME 1/2 FULL OF SEDIMENT. SPARE BAGS SHALL BE KEPT AVAILABLE FOR REPLACEMENT OF THOSE THAT HAVE FAILED OR ARE FILLED. BAGS SHALL BE PLACED ON STRAPS TO FACILITATE REMOVAL UNLESS BAGS COME WITH LIFTING STRAPS ALREADY ATTACHED.

BAGS SHALL BE LOCATED IN WELL-VEGETATED (GRASSY) AREA, AND DISCHARGE ONTO STABLE, EROSION RESISTANT AREAS, WHERE THIS IS NOT POSSIBLE, A GEOTEXTILE UNDERLAYMENT AND FLOW PATH SHALL BE PROVIDED. BAGS MAY BE PLACED ON FILTER STONE TO INCREASE DISCHARGE CAPACITY. BAGS SHALL NOT BE PLACED ON SLOPES GREATER THAN 5% FOR SLOPES EXCEEDING 5%, CLEAN ROCK OR OTHER NON-ERODIBLE AND NON-POLLUTING MATERIAL MAY BE PLACED UNDER THE BAG TO REDUCE SLOPE STEEPNESS.

NO DOWNSLOPE SEDIMENT BARRIER IS REQUIRED FOR MOST INSTALLATIONS. COMPOST BERM OR COMPOST FILTER SOCK SHALL BE INSTALLED BELOW BAGS LOCATED IN HQ OR EV WATERSHEDS, WITHIN 50 FEET OF ANY RECEIVING SURFACE WATER OR WHERE GRASSY AREA IS NOT AVAILABLE.

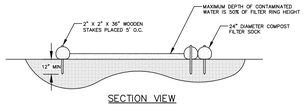
THE PUMP DISCHARGE HOSE SHALL BE INSERTED INTO THE BAGS IN THE MANNER SPECIFIED BY THE MANUFACTURER AND SECURELY CLAMPED. A PIECE OF PVC PIPE IS RECOMMENDED FOR THIS PURPOSE.

THE PUMPING RATE SHALL BE NO GREATER THAN 750 GPM OR 1/2 THE MAXIMUM SPECIFIED BY THE MANUFACTURER, WHICHEVER IS LESS. PUMP INTAKES SHALL BE FLOATING AND SCREENED.

FILTER BAGS SHALL BE INSPECTED DAILY. IF ANY PROBLEM IS DETECTED, PUMPING SHALL CEASE IMMEDIATELY AND NOT RESUME UNTIL THE PROBLEM IS CORRECTED.

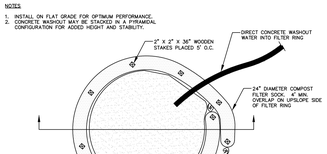
STANDARD CONSTRUCTION DETAIL #3-16
PUMPED WATER FILTER BAG

NOT TO SCALE



NOTES

1. INSTALL ON FLAT GRADE FOR OPTIMUM PERFORMANCE.
2. CONCRETE WASHOUT MAY BE STACKED IN A PYRAMIDAL CONFIGURATION FOR ADDED HEIGHT AND STABILITY.

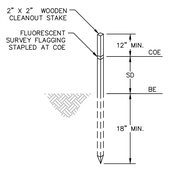


A SUITABLE IMPERVIOUS GEOMEMBRANE SHALL BE PLACED AT THE LOCATION OF THE WASHOUT PRIOR TO INSTALLING THE SOCKS.

ADAPTED FROM FILTREXX

FIGURE 3.18
TYPICAL COMPOST SOCK WASHOUT INSTALLATION

NOT TO SCALE

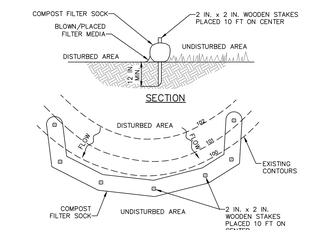


BASIN OR TRAP NO.	BOTTOM ELEV BE (FT)	CLEANOUT ELEV COE (FT)	SEDIMENT DEPTH SD (FT)
ST-8	409.00	410.75	1.75
ST-9	440.00	441.50	1.50
ST-10	465.00	466.50	1.50
SB-3	470.00	472.00	2.00

NOTE: WHEN ACCUMULATED SEDIMENT HAS REACHED THE SEDIMENTCLEAN-OUT ELEVATION, SEDIMENT MUST BE REMOVED AND THE BASIN MUST BE RETURENED TO ITS ORIGINAL DIMENSIONS.

CLEANOUT STAKE DETAIL

NOT TO SCALE



NOTES:

SOCK FABRIC SHALL MEET STANDARDS OF TABLE 4.1 OF THE PA DEP EROSION CONTROL MANUAL. COMPOST SHALL MEET THE STANDARDS OF TABLE 4.2 OF THE PA DEP EROSION CONTROL MANUAL.

COMPOST FILTER SOCK SHALL BE PLACED AT EXISTING LEVEL GRADE. BOTH ENDS OF THE BARRIER SHALL BE EXTENDED AT LEAST 8 FEET UP SLOPE AT 45 DEGREES TO THE MAIN BARRIER ALIGNMENT. MAXIMUM SLOPE LENGTH ABOVE ANY BARRIER SHALL NOT EXCEED THAT SPECIFIED FOR THE SIZE OF THE SOCK AND THE SLOPE OF ITS TRIBUTARY AREA.

TRAFFIC SHALL NOT BE PERMITTED TO CROSS COMPOST FILTER SOCKS.

ACCUMULATED SEDIMENT SHALL BE REMOVED WHEN IT REACHES 1/2 THE ABOVE GROUND HEIGHT OF THE BARRIER AND DISPOSED IN THE MANNER DESCRIBED ELSEWHERE IN THE PLAN.

COMPOST FILTER SOCKS SHALL BE INSPECTED WEEKLY AND AFTER EACH RUNOFF EVENT. DAMAGED SOCKS SHALL BE REPAIRED ACCORDING TO MANUFACTURER'S SPECIFICATIONS OR REPLACED WITHIN 24 HOURS OF INSPECTION.

BIODEGRADABLE COMPOST FILTER SOCKS SHALL BE REPLACED AFTER 6 MONTHS; PHOTODEGRADABLE SOCKS AFTER 1 YEAR. POLYPROPYLENE SOCKS SHALL BE REPLACED ACCORDING TO MANUFACTURER'S RECOMMENDATIONS.

UPON STABILIZATION OF THE AREA TRIBUTARY TO THE SOCK, STAKES SHALL BE REMOVED. THE SOCK MAY BE LEFT IN PLACE AND VEGETATED OR REMOVED. IN THE LATTER CASE, THE MESH SHALL BE CUT OPEN AND THE MULCH SPREAD AS A SOIL SUPPLEMENT.

STANDARD CONSTRUCTION DETAIL #4-1
COMPOST FILTER SOCK

NOT TO SCALE

TABLE 4.1
COMPOST SOCK FABRIC MINIMUM SPECIFICATIONS

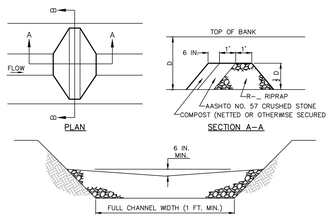
MATERIAL TYPE	3 mil HDPE	5 mil HDPE	5 mil HDPE	Multi-Filament Polypropylene (MPPP)	Heavy Duty Multi-Filament Polypropylene (HDMPPP)
Material Characteristics	Photo-degradable	Photo-degradable	Bio-degradable	Photo-degradable	Photo-degradable
Sock Diameters	12" 18"	12" 18" 24" 32"	12" 18" 24" 32"	12" 18" 24" 32"	12" 18" 24" 32"
Mesh Opening	3/8"	3/8"	3/8"	3/8"	1/8"
Tensile Strength		26 psi	26 psi	44 psi	202 psi
Ultraviolet Stability % Original Strength (ASTM G-155)	23% at 1000 hr.	23% at 1000 hr.		100% at 1000 hr.	100% at 1000 hr.
Minimum Functional Longevity	6 months	9 months	6 months	1 year	2 years

Two-Ply Systems	
Inner Containment Netting	HDPE biaxial net
	Continuously wound
	Fusion-welded junctures
Outer Filtration Mesh	3/4" X 3/4" Max. aperture size
	Composite Polypropylene Fabric (Woven layer and non-woven fleece mechanically fused via needle punch)
	3/16" Max. aperture size

Sock fabrics composed of burlap may be used on project lasting 6 months or less.

TABLE 4.2
COMPOST STANDARDS

Organic Matter Content	25% – 100% (dry weight basis)
Organic Portion	Fibrous and elongated
pH	5.5 – 8.5
Moisture Content	30% – 60%
Particle Size	30% – 50% pass through 3/8" sieve
Soluble Salt Concentration	5.0 dS/m (mmhos/cm) Maximum



ROCK FILTER NO.	LOCATION	D (FT)	RIPRAP SIZE (R-__)
1-5	D-6 (500' SPACING)	2.5	3

FOR D ≥ 3 FT. – USE R-4
FOR D ≥ 2 FT. TO D < 3 FT. – USE R-3
NOT APPLICABLE FOR D < 2 FT.

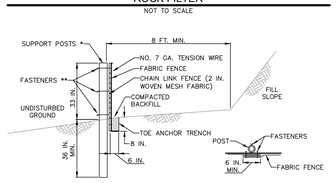
NOTES:

SEDIMENT MUST BE REMOVED WHEN ACCUMULATIONS REACH 1/2 THE HEIGHT OF THE FILTERS.

IMMEDIATELY UPON STABILIZATION OF EACH CHANNEL, REMOVE ACCUMULATED SEDIMENT, REMOVE ROCK FILTER, AND STABILIZE DISTURBED AREAS.

STANDARD CONSTRUCTION DETAIL #4-14
ROCK FILTER

NOT TO SCALE



*POSTS SPACED AT 10 FT. MAX. USE 2-1/2 IN. DIA HEAVY DUTY GALVANIZED OR ALUMINUM POSTS.

**CHAIN LINK TO POST FASTENERS SPACED AT 14 IN. MAX. USE NO. 9 GA. ALUMINUM WIRE OR NO. 9 GALVANIZED STEEL WIRE. FABRIC TO SHAIN FASTENERS SPACED AT 24 IN. MAX. ON CENTER.

NOTES:

FABRIC SHALL HAVE THE MINIMUM PROPERTIES AS SHOWN IN TABLE 4.3 OF THE PA DEP EROSION CONTROL MANUAL.

FABRIC WIDTH SHALL BE 42 IN. MINIMUM.

POSTS SHALL BE INSTALLED USING A POSTHOLE DRILL.

CHAIN LINK SHALL BE GALVANIZED NO. 11.5 GA. STEEL WIRE WITH 2-1/4 IN. OPENING, NO. 11 GA. ALUMINUM COATED STEEL WIRE IN ACCORDANCE WITH ASTM-A-491, OR GALVANIZED NO. 9 GA. STEEL WIRE. TOP AND BOTTOM WITH GALVANIZED NO. 11 GA. STEEL INTERMEDIATE WIRES. NO. 7 GAGE TENSION WIRE TO BE INSTALLED HORIZONTALLY THROUGH HOLES AT TOP AND BOTTOM OF CHAIN-LINK FENCE OR ATTACHED WITH HOG RINGS AT 5 FT MAX. CENTERS.

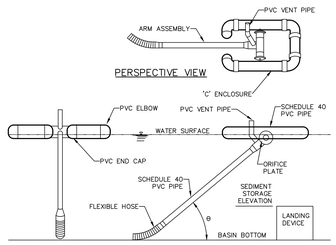
SILT FENCE SHALL BE PLACED AT LEVEL EXISTING GRADE, BOTH ENDS OF THE FENCE SHALL BE EXTENDED AT LEAST 8 FEET UP SLOPE AT 45 DEGREES TO THE MAIN FENCE ALIGNMENT.

SEDIMENT SHALL BE REMOVED WHEN ACCUMULATIONS REACH HALF THE ABOVE GROUND HEIGHT OF THE FENCE.

FENCE SHALL BE REMOVED AND PROPERLY DISPOSED OF WHEN TRIBUTARY AREA IS PERMANENTLY STABILIZED.

STANDARD CONSTRUCTION DETAIL #4-10
SUPER SILT FENCE

NOT TO SCALE



BASIN NO.	WATER SURFACE ELEVATION (FT)	ARM LENGTH (FT)	ARM DIA. (IN)	ORIFICE DIA. (IN)	TOP OF LANDING DEVICE ELEVATION (FT)	FLEXIBLE HOSE LENGTH (IN)	FLEXIBLE HOSE ATTACHMENT ELEVATION (FT)
SB-3	477.00	10	5	6	472.00	As Supplied	470.00

NOTES:

A ROPE SHALL BE ATTACHED TO THE SKIMMER ARM TO FACILITATE ACCESS TO THE SKIMMER ONCE INSTALLED.

SKIMMER SHALL BE INSPECTED WEEKLY AND AFTER EACH RUNOFF EVENT. ANY MALFUNCTIONING SKIMMER SHALL BE REPAIRED OR REPLACED WITHIN 24 HOURS OF INSPECTION.

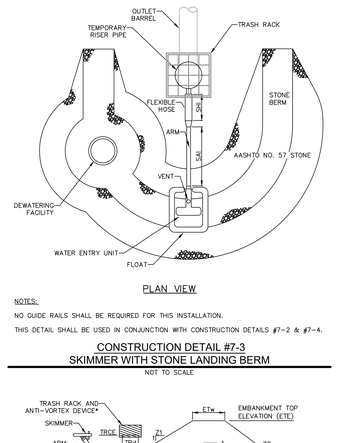
ICE OR SEDIMENT BUILDUP AROUND THE PRINCIPAL SPILLWAY SHALL BE REMOVED SO AS TO ALLOW THE SKIMMER TO RESPOND TO FLUCTUATING WATER ELEVATIONS.

SEDIMENT SHALL BE REMOVED FROM THE BASIN WHEN IT REACHES THE LEVEL MARKED ON THE SEDIMENT CLEAN-OUT STAKE OR THE TOP OF THE LANDING DEVICE.

A SEMI-CIRCULAR LANDING ZONE IS REQUIRED (STANDARD CONSTRUCTION DETAIL # 7-3).

CONSTRUCTION DETAIL #7-1
SKIMMER

NOT TO SCALE



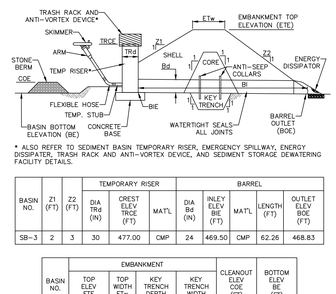
NOTES:

NO GUIDE RAILS SHALL BE REQUIRED FOR THIS INSTALLATION.

THIS DETAIL SHALL BE USED IN CONJUNCTION WITH CONSTRUCTION DETAILS #7-2 & #7-4.

CONSTRUCTION DETAIL #7-3
SKIMMER WITH STONE LANDING BERM

NOT TO SCALE



* ALSO REFER TO SEDIMENT BASIN TEMPORARY RISER, EMERGENCY SPILLWAY, ENERGY DISSIPATER, TRASH RACK AND ANTI-VORTEX DEVICE, AND SEDIMENT STORAGE DEWATERING FACILITY DETAILS.

BASIN NO.	TEMPORARY RISER Z1 (FT)	TEMPORARY RISER Z2 (FT)	TEMPORARY RISER DIA Trd (IN)	BARREL CREST ELEV TRCE (FT)	BARREL MAT'L	BARREL DIA Bd (IN)	BARREL INLET ELEV BIE (FT)	BARREL MAT'L	BARREL LENGTH (FT)	BARREL OUTLET ELEV BOE (FT)
SB-3	2	3	30	477.00	CMP	24	469.50	CMP	62.26	468.83

BASIN NO.	EMBANKMENT TOP ELEV ETE (FT)	EMBANKMENT TOP WIDTH ETw (FT)	EMBANKMENT KEY TRENCH DEPTH (FT)	EMBANKMENT KEY TRENCH WIDTH (FT)	CLEANOUT ELEV COE (FT)	BOTTOM ELEV BE (FT)
SB-3	480.00	10.0	2.0	12.0	472.00	470.00

NOTES:

SEDIMENT BASINS, INCLUDING ALL APPURTENANT WORKS, SHALL BE CONSTRUCTED TO THE DETAIL AND DIMENSIONS SHOWN ON THE E&S PLAN DRAWINGS.

AREA UNDER EMBANKMENT SHALL BE CLEARED, GRUBBED, AND STRIPPED OF TOPSOIL TO A DEPTH OF TWO FEET PRIOR TO ANY EMBANKMENT AND COMPACTION OF EARTHEN FILL. IN ORDER TO FACILITATE MAINTENANCE AND RESTORATION, THE POOL AREA SHALL BE CLEARED OF ALL BRUSH, TREES, AND OBJECTIONABLE MATERIAL. ALL MATERIAL FOR THE EMBANKMENTS SHALL BE FREE OF ROOTS, OR OTHER WOODY VEGETATION, ORGANIC MATERIAL, LARGE STONES, AND OTHER OBJECTIONABLE MATERIALS. THE EMBANKMENT SHALL BE COMPACTED IN LAYERED LIFTS OF NOT MORE THAN 6 TO 9 IN. THE MAXIMUM ROCK SIZE SHALL BE NO GREATER THAN 2/3 THE LIFT THICKNESS.

UPON COMPLETION, THE EMBANKMENT SHALL BE SEEDED, MULCHED, BLANKETED OR OTHERWISE STABILIZED ACCORDING TO THE SPECIFICATIONS OF THE E&S PLAN DRAWINGS. TREES SHALL NOT BE PLANTED ON THE EMBANKMENT.

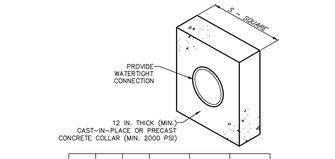
INSPECT ALL SEDIMENT BASINS ON AT LEAST A WEEKLY BASIS AND AFTER EACH RUNOFF EVENT. PROVIDE ACCESS FOR SEDIMENT REMOVAL AND OTHER REQUIRED MAINTENANCE ACTIVITIES. A CLEAN OUT STAKE SHALL BE PLACED NEAR THE CENTER OF EACH BASIN. ACCUMULATED SEDIMENT SHALL BE REMOVED WHEN IT HAS REACHED THE CLEAN OUT ELEVATION ON THE STAKE AND THE BASIN RESTORED TO ITS ORIGINAL DIMENSIONS. DISPOSE OF MATERIALS REMOVED FROM THE BASIN IN THE MANNER DESCRIBED IN THE E&S PLAN.

BASIN EMBANKMENTS, SPILLWAYS, AND OUTLETS SHALL BE INSPECTED FOR EROSION, PIPING AND SETTLEMENT. NECESSARY REPAIRS SHALL BE IMMEDIATELY. DISPLACED RIPRAP WITHIN THE OUTLET ENERGY DISSIPATER SHALL BE REPLACED IMMEDIATELY.

ACCUMULATED SEDIMENT SHALL BE REMOVED AND DISTURBED AREAS SHALL BE STABILIZED INSIDE THE BASIN BEFORE CONVERSION TO A STORMWATER MANAGEMENT FACILITY. THE DEVICE SHOWN IN STANDARD CONSTRUCTION DETAIL #7-18 MAY BE USED TO DEWATER SATURATED SEDIMENT PRIOR TO ITS REMOVAL. ROCK FILTERS SHALL BE ADDED AS NECESSARY.

CONSTRUCTION DETAIL #7-4
SEDIMENT BASIN EMBANKMENT & SPILLWAY DETAILS - SKIMMER

NOT TO SCALE



BASIN OR TRAP NO.	PIPE SIZE (IN)	S (IN)	NO. OF COLLARS	RISER TO FIRST COLLAR (FT)	COLLAR SPACING (FT)
SB-3	24	60	2	18.75	10.00

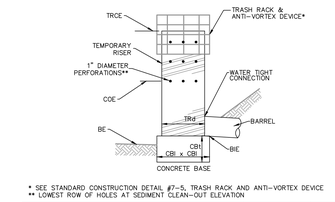
NOTES:

ALL COLLARS SHALL BE INSTALLED SO AS TO BE WATERTIGHT.

COLLAR SIZE AND SPACING SHALL BE AS INDICATED WITHIN TABLE.

STANDARD CONSTRUCTION DETAIL #7-16
CONCRETE ANTI-SEEP COLLAR FOR PERMANENT BASINS

NOT TO SCALE



* SEE STANDARD CONSTRUCTION DETAIL #7-5, TRASH RACK AND ANTI-VORTEX DEVICE
** LOWEST ROW OF HOLES AT SEDIMENT CLEAN-OUT ELEVATION

BASIN NO.	TEMPORARY RISER DIA Trd (IN)	TEMPORARY RISER CREST ELEV TRCE (FT)	PERFORATIONS MAT'L	PERFORATIONS LOWEST ROW OF HOLES ELEV (FT)	PERFORATIONS NO. ROWS**	PERFORATIONS NO. HOLES PER ROW	PERFORATIONS VERT. SPACING OF ROWS (FT)	CONCRETE BASE LENGTH AND WIDTH CBI (IN)	BARREL THICKNESS CBI (IN)	BARREL INLET ELEV BIE (FT)
SB-3	30	477.00	CMP	N/A	N/A	N/A	N/A	60	18	469.50

NOTES:

A MINIMUM OF 2-#8 REBAR SHALL BE PLACED AT RIGHT ANGLES AND PROJECTING THROUGH SIDES OF RISER TO ANCHOR IT TO CONCRETE BASE. REBAR SHALL PROJECT A MINIMUM OF 1/4 RISER DIAMETER BEYOND OUTSIDE OF RISER.

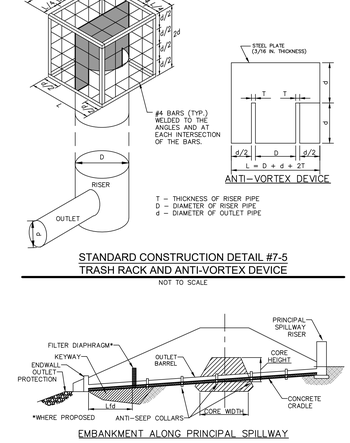
CONCRETE BASE SHALL BE POURED IN SUCH A MANNER SO AS TO INSURE THAT CONCRETE FILLS BOTTOM OF RISER TO INVERT OF THE OUTLET PIPE TO PREVENT RISER FROM BREAKING AWAY FROM THE BASE. MINIMUM BASE WIDTH EQUALS 2 TIMES RISER DIAMETER.

EMBEDDED SECTION OF ALUMINUM OR ALUMINIZED PIPE SHALL BE PAINTED WITH ZINC CHROMATE OR EQUIVALENT.

CLOGGED OR DAMAGED SPILLWAYS SHALL BE REPAIRED IMMEDIATELY. TRASH AND OTHER DEBRIS SHALL BE REMOVED FROM THE BASIN AND RISER.

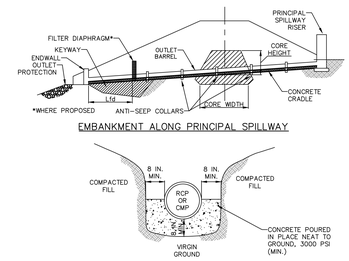
STANDARD CONSTRUCTION DETAIL #7-7
SEDIMENT BASIN TEMPORARY RISER

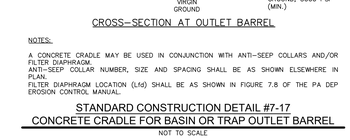
NOT TO SCALE



STANDARD CONSTRUCTION DETAIL #7-5
TRASH RACK AND ANTI-VORTEX DEVICE

NOT TO SCALE



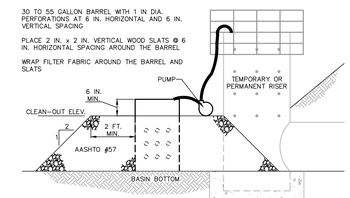


NOTES:

A CONCRETE CRADLE MAY BE USED IN CONJUNCTION WITH ANTI-SEEP COLLARS AND/OR FILTER DIAPHRAGM.
ANTI-SEEP COLLAR NUMBER, SIZE AND SPACING SHALL BE AS SHOWN ELSEWHERE IN PLAN.
FILTER DIAPHRAGM LOCATION (Lfd) SHALL BE AS SHOWN IN FIGURE 7.8 OF THE PA DEP EROSION CONTROL MANUAL.

STANDARD CONSTRUCTION DETAIL #7-17
CONCRETE CRADLE FOR BASIN OR TRAP OUTLET BARREL

NOT TO SCALE



NOTES:

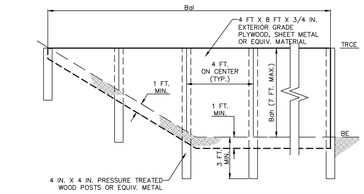
DEWATERING FACILITY SHALL BE INSTALLED IMMEDIATELY UPON COMPLETION OF BASIN/TRAP.

PRIOR TO INITIATING OPERATION OF DEWATERING FACILITY, ALL ACCUMULATED SEDIMENT SHALL BE CLEANED FROM THE INSIDE OF THE BARREL.

DEWATERING FACILITY SHALL BE CONTINUOUSLY MONITORED DURING OPERATION. IF FOR ANY REASON THE DEWATERING FACILITY CEASES TO FUNCTION PROPERLY, IT SHALL BE IMMEDIATELY SHUT DOWN AND NOT RESTARTED UNTIL THE PROBLEM HAS BEEN CORRECTED.

STANDARD CONSTRUCTION DETAIL #7-18
SEDIMENT BASIN OR SEDIMENT TRAP
SEDIMENT STORAGE DEWATERING FACILITY

NOT TO SCALE



BASIN OR TRAP NO.	BAFFLE LENGTH Bol (FT)	BAFFLE HEIGHT Bdh (FT)	TEMPORARY RISER CREST ELEV. TRCE (FT)	BOTTOM BOTTOM ELEV BE (FT)
SB-3	156	7	477.00	470.00

NOTES:

SEE APPROPRIATE BASIN DETAIL FOR PROPER LOCATION AND ORIENTATION.

AN ACCEPTABLE ALTERNATIVE IS TO INSTALL A SUPER SILT FENCE AT THE BAFFLE LOCATION

IN POOLS WITH DEPTHS EXCEEDING 7', THE TOP OF THE PLYWOOD BAFFLE DOES NOT NEED TO EXTEND TO THE TEMPORARY RISER CREST. SUPER SILT FENCE BAFFLES NEED NOT EXTEND TO TRCE ELEVATION.

BAFFLES SHALL BE TIED INTO ONE SIDE OF THE BASIN UNLESS OTHERWISE SHOWN ON THE PLAN DRAWINGS.

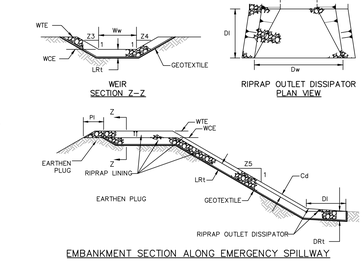
SUBSTITUTION OF MATERIALS NOT SPECIFIED IN THIS DETAIL SHALL BE APPROVED BY THE DEPARTMENT OR THE LOCAL CONSERVATION DISTRICT BEFORE INSTALLATION.

DAMAGED OR WARPED BAFFLES SHALL BE REPLACED WITHIN 7 DAYS OF INSPECTION.

BAFFLES REQUIRING SUPPORT POSTS SHALL NOT BE INSTALLED IN BASINS REQUIRING IMPERVIOUS LINERS.

STANDARD CONSTRUCTION DETAIL #7-14
BAFFLE

NOT TO SCALE



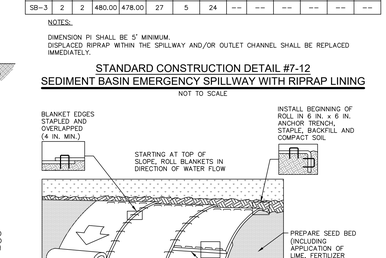
BASIN NO.	WEIR Z3 (FT)	WEIR Z4 (FT)	WEIR CREST ELEV WCE (FT)	WEIR WIDTH Ww (FT)	LINING RIPRAP SIZE (R-__)	LINING RIPRAP THICK. LRT (IN)	CHANNEL Z5 (FT)	CHANNEL DEPTH Cd (FT)	DISSIPATOR LENGTH DI (FT)	DISSIPATOR WIDTH Dw (FT)	DISSIPATOR RIPRAP SIZE (R-__)	DISSIPATOR RIPRAP THICK. DRT (IN)
SB-3	2	2	480.00	478.00	27	5	24	---	---	---	---	---

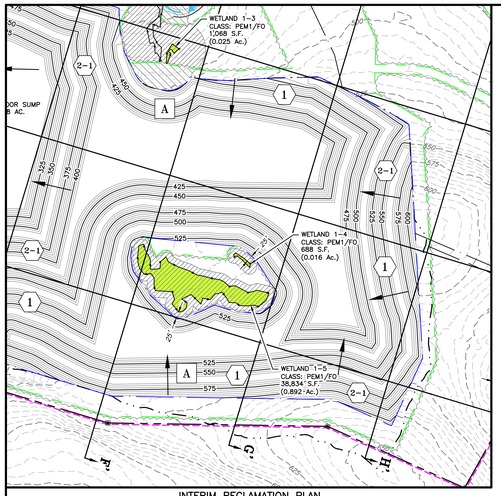
NOTES:

DIMENSION Pl SHALL BE 5' MINIMUM.
DISPLACED RIPRAP WITHIN THE SPILLWAY AND/OR OUTLET CHANNEL SHALL BE REPLACED IMMEDIATELY.

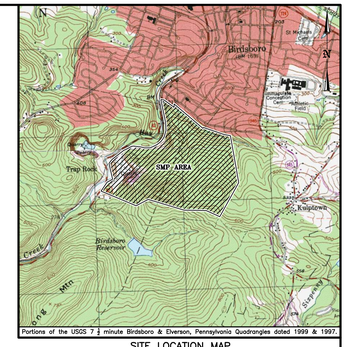
STANDARD CONSTRUCTION DETAIL #7-12
SEDIMENT BASIN EMERGENCY SPILLWAY WITH RIPRAP LINING

NOT TO SCALE


BLANKET EDGES STAPLED AND OVERLAPPED (4



INTERIM RECLAMATION PLAN
Scale: 1" = 200'



SITE LOCATION MAP
Scale: 1" = 2,000'

BOROUGH OF BIRDSBORO
ROBESON TOWNSHIP

BOROUGH OF BIRDSBORO
UNION TOWNSHIP

ROBESON TOWNSHIP
UNION TOWNSHIP

1000' PERIMETER

COCALICO ROAD

(PA S.R. 2086)

BIRDSBORO MUNICIPAL PARK

CHANNEL

ABANDONED ROAD

WETLAND A

WETLAND B

WETLAND E

WETLANDS 5

PUBHx
J.T. DYER QUARRY RESERVOIR
16.2 Ac.±

PFO1A

PEM5A

PUBHh
INDIAN RUN DAM
(BIRDSBORO RESERVOIR)

WETLAND 1-1
CLASS: PEM1/FO
4,211 S.F.
(0.097 Ac.)

WETLAND 1-2
CLASS: PEM1/FO
2,225 S.F.
(0.051 Ac.)

WETLAND 1-3
CLASS: PEM1/FO
1,068 S.F.
(0.025 Ac.)

POST-MINING FLOOR SUMP
BE = 260.00
SCE = 277.00
ETE = 280.00
33 AC.-FT. STORAGE
(100 YR. STORM)

D.A. FLOOR SUMP
±88 AC.

WETLAND MITIGATION AREA

WETLAND MITIGATION EXPANSION AREA

LEGEND

- Property Line
- Adjacent Lot Lines
- Right-of-Way Line
- Municipal Boundary Line
- (5) Property Ownership Key
- Perimeter Radius (1000')
- Surface Mining Permit Boundary
- Existing Limit of Mining
- Existing Limit of Affected Area
- Proposed Limit of Phase 1 Mining
- Proposed Limit of Phase 1 Affected Area
- Future Limit of Phase 2 Mining
- Future Limit of Phase 2 Affected Area
- PADEP Setbacks
- PADEP Setback Variance
- Existing Electric Line
- Existing Electric and Telephone Line
- Existing Water Main/Line
- Existing Utility Pole
- Existing Fence
- Existing Guide Rail
- Existing Major Contour Line
- Existing Minor Contour Line
- Existing Tree/Wood Line
- Occupied Structure/Outbuilding (Garage, Barn, Shed, Etc.)
- Surface Water
- Spring
- Existing Unpaved Road/Trail
- Existing Paved Road
- Existing Rail Road
- A A' Cross Section Line and Designation
- Proposed Diversion Ditch
- 360 Proposed Major Contour Line
- Proposed Minor Contour Line
- Post-Mining Drainage Pattern
- Drainage Area Boundary
- Proposed Floor Sump

LAND USE LEGEND

A — Existing: Forestland; Post-Mining: Recreation and/or Unmanaged Natural Habitat

B — Existing: Industrial/Commercial Land (Surface Mining); Post-Mining: Recreation and/or Unmanaged Natural Habitat

VEGETATION LEGEND

1 — Grasses and Legumes (Seed Mixture 1 or 2, See Module 19)

2-1 2-2 — Woody Plants (See Module 19)

WETLANDS LEGEND

- Wetlands & Waters of the U.S. Delineated By Others*
- Wetlands Delineated By EES Consultants, Inc.** (Inclusive of the Waters of the U.S. Where Stream Channel Exists)
- Waters Of The U.S. Delineated By EES Consultants, Inc.** (Approximate Bank to Bank Width)
- Wetlands Delineated By DeVal Soil & Environmental Consultants, Inc.***
- Waters Delineated By DeVal Soil & Environmental Consultants, Inc.***
- Permanent Wetland Mitigation Area
- National Wetlands Inventory Classified Wetlands

NATIONAL WETLANDS INVENTORY CLASSIFIED WETLANDS

PFO1A	Palustrine, Forested, Broad-Leaved Deciduous, Temporary Flooded
PEM5A	Palustrine, Emergent, Phragmites australis, Temporary Flooded
PUBHx	Palustrine, Unconsolidated Bottom, Permanently Flooded, Excavated
PUBHh	Palustrine, Unconsolidated Bottom, Permanently Flooded, Diked/Impounded

* Work by others in reference to plans by A.D. Marble & Company, Inc., Larson Design Group, and Hunt Engineering Company, revision date 11/8/96, entitled "WETLANDS", sheet 1 through 6 of 6, and U.S. Army Corps of Engineers field confirmation, reference subject CENAP-OP-R-199501195-11(JD).

** Field confirmation acknowledged by U.S. Army Corps of Engineers May 5, 1998, reference subject: CENAP-OP-R-199701801-23 (JD). Field confirmation on Haines & Kibblehouse, Inc. lands acknowledged by U.S. Army Corps of Engineers May 5, 1998, reference subject: CENAP-OP-R-199701800-23 (JD).

*** Field confirmation acknowledged by U.S. Army Corps of Engineers August 12, 2015, reference subject: CENAP-OP-R-2007-1120-46 (JD).

SOURCE NOTES:

1. Mine permit information (i.e. permit boundary, phasing, limit of mining, etc.) derived from plan entitled "Exhibit B: Operations Map," prepared by Ross Consulting Engineers, dated 7/11/1997, last revised 8/26/1998.
2. Topography within active mining area derived from H&K field survey dated 5/31/2016.
3. Topography beyond active mining area derived from LiDAR Arc/Info coverage files published 2006 through 2008, downloaded from *Pennsylvania Spatial Data Access (PASDA)*, (http://www.pasda.psu.edu).
4. Photogrammetric digital mapping within Phase 1 Area compiled by L. Robert Kimball & Associates, Inc., Ebensburg, PA, using aerial photography obtained 3/13/2008 . Vertical control is based on NAVD 88 datum provided by Haines & Kibblehouse, Inc.
5. Photogrammetric digital mapping beyond Phase 1 Area compiled by L. Robert Kimball & Associates, Inc., Ebensburg, PA, using aerial photography obtained April 5, 1995.
6. Property boundary derived from plan entitled "Haines & Kibblehouse, Inc., Minor Subdivision Plan," prepared by the H&K Group Engineering & Environmental Services Division, dated 11/12/2002, last revised 7/07/2004 and recorded in Berks County Plan Book 274, Page 90.
7. Adjacent property lines derived from Berks County Tax Map(s).
8. Refer to "Wetlands Legend" for wetlands sources.

VARIANCE NOTES:

1. Refer to SMP #06970302, Part B, Special Condition #7 for approval to affect areas within 100 feet of Hay Creek and unnamed tributaries of Hay Creek.
2. Refer to SMP #06970302, Part B, Special Condition #9 for approval to affect areas within 100 feet of the outside right-of-way of the former S.R. 0082 (Hay Creek Road) as well as the southern terminus of Clover Alley.
3. Refer to SMP #06970302, Part B, Special Condition #10 for approval to affect areas within 300 feet of the buildings located on properties 7-9, 20-23, and 34-39 (formerly properties 9-16 and 20-24) and the Birdsboro Municipal Park.

RECLAMATION PLAN NOTE:

1. The Permittee shall follow the Interim Reclamation Plan until such time that construction of the Wetland Mitigation Expansion Area is complete. Following construction of the Wetland Mitigation Construction Area, the Permittee may proceed to remove Wetlands 1-4 and 1-5 and mine the through the bonded area to completion.

COMMONWEALTH OF PENNSYLVANIA — REGISTERED PROFESSIONAL — ENGINEER — EVAN DANIEL SOWERS — NO. PE082363

EVAN DANIEL SOWERS
PENNSYLVANIA LICENSE No. PE-082363

Scale: 1" = 200'
200 0 200 400

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DATE	REVISIONS	BY	CHK.	REV.
2/19/21	REVISED PER PADEP COMMENTS DATED 2/03/21	E.D.S.	E.D.S.	2
1/08/21	REVISED PER PADEP & PFBC COMMENTS	E.D.S.	E.D.S.	1

BIRDSBORO MATERIALS
A Division of H&K Group, Inc.

EXHIBIT 18
LAND USE & RECLAMATION MAP

ROBESON & UNION TOWNSHIP — BERKS COUNTY

DRAWN	E.D.S.	THE H&K GROUP ENGINEERING & ENVIRONMENTAL Services Division	SCALE: 1" = 200'
DESIGN	E.D.S.		DRAWING NO. © B011E-REC-1C
CHECKED	E.D.S.		SHEET 16 of 16
DATE	4/09/2020	2052 Lucon Road • P.O. Box 196 • Skippack, PA 19474 • (610) 584-8500	