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August 13, 2018

Mr. Michael J. Menghini
PA Department of Environmental Protection
Pottsville District Mining Office
5 West Laurel Boulevard
Pottsville, PA 17901

SUBJECT: **Response to Comment #3 of the Department's July 12 and 23, 2018 Letters**
New Hope Crushed Stone & Lime Company
Noncoal Permit No. 7974SM3
Solebury Township, Bucks County
EarthRes Project No.: 011012.015

Dear Mr. Menghini:

On behalf of New Hope Crushed Stone & Lime Company (NHCS), EarthRes Group, Inc. (EarthRes) is providing additional information in response to the Department's letters dated July 12 and 23, 2018. Specifically, NHCS is responding to the Department's Comment #3 as expounded upon in the July 23rd letter. The Department's comment is provided below (in bold) followed by NHCS' response.

Comment 3: **On June 7, 2018 the Department issued an inspection report approving the blast plan/design submitted May 30, 2018 regarding reclamation of the East Wall using drilling and blasting techniques to achieve final reclamation grades of the slopes identified as Staked Reclamation Areas #18 through #23 on the "Reclamation Update Map." At the time the Department approved the blast plan/design for the reclamation of the East Wall, it was with the understanding that the drilling and blasting would be conducted in such a manner as to prevent any additional adverse hydrologic effects to the Furlong Fault Line and the current prevailing hydrologic balance at or near the Fault. NHCS shall provide supplemental information demonstrating that conducting reclamation drilling and blasting will not impact the Furlong Fault in a manner that prevents NHCS from restoring the hydrologic balance to the permit-approved post mining water elevation."**

The "Reclamation Update Map" does not currently delineate the Furlong Fault Line or otherwise reference the blasting that will be utilized to achieve those slopes. New Hope shall provide a revised "Reclamation Update Map" that delineates the Furlong Fault Line and the associated Cross Sections. In addition, New Hope shall include the following wording as Note no. 3 on the revised "Reclamation Update Map": "Drilling and blasting will not impact the Furlong Fault in a manner that

prevents NHCS from restoring the hydrologic balance to the permit-approved post mining water elevation."

This additional information shall be submitted to the Department by August 13, 2018. Until this information is submitted, and approved in writing, no blasting approved in the June 7, 2018 inspection report shall occur that could potentially affect the Furlong Fault. The Department requires that the drilling and blasting to achieve reclamation of the East Wall shall be initiated by October 2018 and completed no later than March 2019 as stated in the response dated April 10,2018 by EarthRes.

NHCS' Response:

The Reclamation Update Map has been revised to show the Furlong Fault as a dashed line drawn between the surveyed points shown on the previously submitted Reclamation Update Map (dated March 30, 2018). The projection of the fault has been added to the relevant cross-sections as requested (Sheets 1 of 3 and 2 of 3). Copies of the revised Reclamation Update Map and revised Cross-Section Sheets are attached.

As requested, Note No. 3 on the revised Reclamation Update Map states: "*Drilling and blasting will not impact the Furlong Fault in a manner that prevents NHCs from restoring the hydrologic balance to the permit-approved post mining water elevation*."

No adverse hydrologic effects from reclamation drilling and blasting of the Furlong Fault are indicated, as the fault is not a conduit for, or barrier to groundwater flow. The Furlong Fault emplaced the shale of the Brunswick Formation, located east of the fault, against the limestone and dolomite mined at the quarry, which is located to the west of the fault. It is the shale unit that is a barrier to groundwater flow (that the shale inhibits groundwater flow was stated by Dr. Sasowsky's testimony in court records). For this reason, reclamation blasting in the area of the fault will not affect the post-mining reclamation water level of the quarry. The following information expounds upon the hydrogeology in the area of the fault in support of this conclusion.

In January 2009, Environmental Planning Consultants, the Township's hydrogeological consultant at the time, submitted a report that requested a study be conducted to investigate whether groundwater is flowing along the Furlong Fault. On May 15, 2009, the Department formally made this request of NHCS. In 2010, EarthRes[1] conducted the Furlong Fault Groundwater Study based on a mutually-agreed upon work plan. The study showed that the fault was not a conduit for in, or out of basin flow. All parties concurred with the study results. The study was provided to the Department.

The Furlong Fault has been thought of as a barrier to groundwater flow because past faulting had displaced low-permeable shale downward against higher-permeable limestone, creating a barrier to groundwater flow. However, the barrier is not the fault plane itself. The fault is merely the boundary between the differing geological units that now sit side-by-side. The Furlong Fault study[1] demonstrated that the fault plane is not a conduit for groundwater flow. Consequently, removal of the fault is not analogous to the removal of an igneous dike (which impede groundwater flow at the quarry), as the fault plane does not act as a barrier to groundwater flow.

[1] EarthRes Group, Inc., July 9, 2010, *Hydrogeologic Investigation Report (HIR) Addendum, Furlong Fault Groundwater Study:* New Hope Crushed Stone, SMP No. 7974SM3. ERG Project No. 011012.009, Pipersville, PA.

Additionally, the fault was mined through decades ago along the southeast access ramp into the quarry. The elevation of the fault along the ramp, as shown on the attached Reclamation Update Map, is 39.15 feet mean sea level (MSL). The parties involved in the prior litigation viewed this specific area and other fault areas during a pre-trial quarry tour. Water was not observed coming through the fault into the quarry, in agreement with the 2010 Furlong Fault Groundwater Study Report. There have been no water level declines shown in nearby monitoring wells MW-1, MW-2, MW-4, and MW-8 from decades of mining. Water levels in these surrounding wells are approximately 90 to 100 feet MSL, much higher than the elevation at which the fault is breached. This result is due to the shale being a barrier to groundwater flow, the fault is simply the reason the shale is present.

The post mining water level of the quarry will be dictated by the elevation of the water outfall and the rock level in the eastern wall. The current and proposed final benches will be similar in elevation. Therefore, reclamation activities in the area of the Furlong Fault will not prevent NHCS from restoring the hydrologic balance to the permit-approved post mining water elevation.

In addition to the reports, maps and data referenced herein, additional supporting information regarding hydrogeology in the vicinity of the Furlong Fault is contained in my email sent to the Department dated September 18, 2014, titled: *Solebury School's Concerns Regarding the Furlong Fault.*

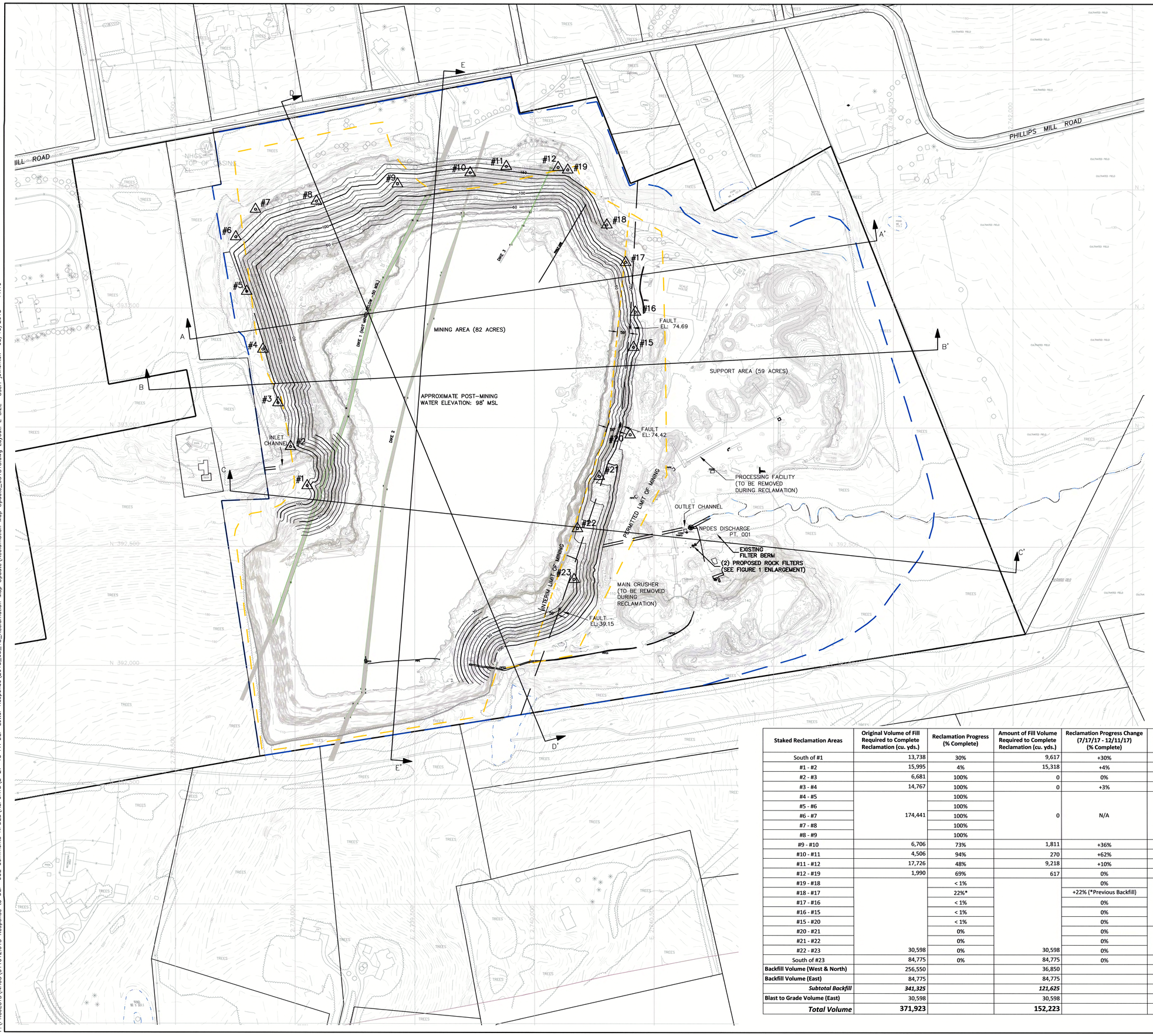
Please contact me should you have any questions regarding the submitted information.

Sincerely,
EarthRes Group, Inc.

Louis F. Vittorio, Jr., P.G.
Vice President

Enclosures: Revised Reclamation Update Map and Cross Section Sheets (1 of 3 and 2 of 3)

cc: Greg Rodrigo, NHCS
David F. Allen, P.E., EarthRes



LEGEND

- PROPERTY BOUNDARY
- PERMIT BOUNDARY (141 ACRES)
- LIMIT OF MINING (82 ACRES)
- INTERIM MINING LIMIT (EAST SIDE OF QUARRY)
- EXISTING GRADE CONTOUR
- EXISTING SURFACE WATER
- PRE-ACT HIGHWALL
- DIKES (SURVEYED)
- ADJACENT PROPERTY BOUNDARIES
- FAULT DELINEATION
- # FAULT EL: 74.69 — SURVEYED FAULT LOCATION (CREWS SURVEYING LLC 9/22/14)
- 150 — PROPOSED RECLAMATION CONTOURS (10-FT INTERVALS)
- #1 — RECLAMATION GRADE/FILL STAKES
- BUILDING
- NPDES DISCHARGE POINT
- A — A' CROSS SECTION LOCATION
- FENCE

GRAPHIC SCALE

150 0 75 150 300 600

(IN FEET)
1 inch = 150 ft.

NOTES:
1. MAPPING COMPLIED BY NOR EAST MAPPING, INC. BY PHOTOGRAMMETRIC METHODS FROM AERIAL PHOTOGRAPHY ON JANUARY 03, 2016. THE ACTIVE QUARRY AREA HAS BEEN UPDATED BY CREWS SURVEYING, LLC FROM AERIAL PHOTOGRAPHY ON DECEMBER 11, 2017.
2. SITE GRID IS BASED ON LOCAL COORDINATE SYSTEM.
3. DRILLING AND BLASTING WILL NOT IMPACT THE FURLONG FAULT IN A MANNER THAT PREVENTS NHCS FROM RESTORING THE HYDROLOGIC BALANCE TO THE PERMIT-APPROVED PST MINING WATER ELEVATION.

Staked Reclamation Areas	Original Volume of Fill Required to Complete Reclamation (cu. yds.)	Reclamation Progress (% Complete)	Amount of Fill Volume Required to Complete Reclamation (cu. yds.)	Reclamation Progress Change (7/17/17 - 12/11/17) (% Complete)	How Remaining Volume Will Be Placed	Angle of Reclamation	Estimated Timeline Reclamation Completed
South of #1	13,738	30%	9,617	+30%	Backfill		8/30/2018
#1 - #2	15,995	4%	15,318	+4%	Backfill		8/30/2018
#2 - #3	6,681	100%	0	0%	N/A - Reclamation Complete	37°	N/A - Reclamation Complete
#3 - #4	14,767	100%	0	+3%	N/A - Reclamation Complete	37°	N/A - Reclamation Complete
#4 - #5		100%				35°	
#5 - #6		100%				34°	
#6 - #7	174,441	100%	0	N/A	N/A - Reclamation Complete	26°	N/A - Reclamation Complete
#7 - #8		100%				23°	
#8 - #9		100%				26°	
#9 - #10	6,706	73%	1,811	+36%	Backfill		8/30/2018
#10 - #11	4,506	94%	270	+62%	Backfill		8/30/2018
#11 - #12	17,726	48%	9,218	+10%	Backfill		8/30/2018
#12 - #19	1,990	69%	617	0%	Backfill		8/30/2018
#19 - #18		< 1%		0%			
#18 - #17		22%*		+22% (*Previous Backfill)			
#17 - #16		< 1%		0%	Blast to Grade		October 2018 - March 2019
#16 - #15		< 1%		0%			
#15 - #20		< 1%		0%			
#20 - #21		0%		0%			
#21 - #22		0%		0%	Blast to Grade (Backfill as Secondary Option)		October 2018 - March 2019
#22 - #23	30,598	0%	30,598	0%			
South of #23	84,775	0%	84,775	0%	Backfill		8/30/2018
Backfill Volume (West & North)	256,550		36,850				
Backfill Volume (East)	84,775		84,775				
Subtotal Backfill	***341,325***		***121,625***				
Blast to Grade Volume (East)	30,598		30,598				
Total Volume	**371,923**		**152,223**				

NO.	DATE	BY	REVISIONS
3	8/13/18	JPS	ADDED FURLONG FULT PROJECTION
2	5/18/18	JLD	REVISED PER 4/26/18 DEP COMMENTS
1	2/15/18	MER	UPDATE RECLAMATION PROGRESS

PROJECT SITE:
NEW HOPE CRUSHED STONE
SMP #79745SM3
SOLEBURY TOWNSHIP, BUCKS COUNTY
PENNSYLVANIA

PREPARED FOR:
NEW HOPE CRUSHED STONE

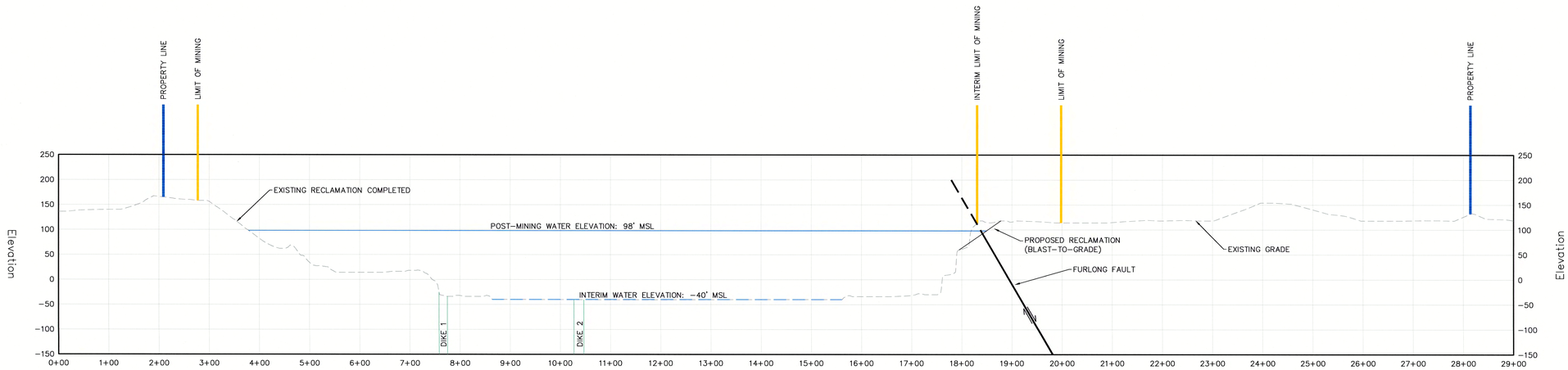
PREPARED BY:
EarthRes ENGINEERING AND SCIENCE
6912 Old Easton Road
Pipersville, PA 18947 USA
8000 Combs Farm Drive
Morgantown, WV 26508
www.earthres.com
PA office 215.766.1211
WV office 304.212.8866
toll free 800.264.4253

RECLAMATION UPDATE

NEW HOPE CRUSHED STONE QUARRY
NEW HOPE CRUSHED STONE AND LIME CO.

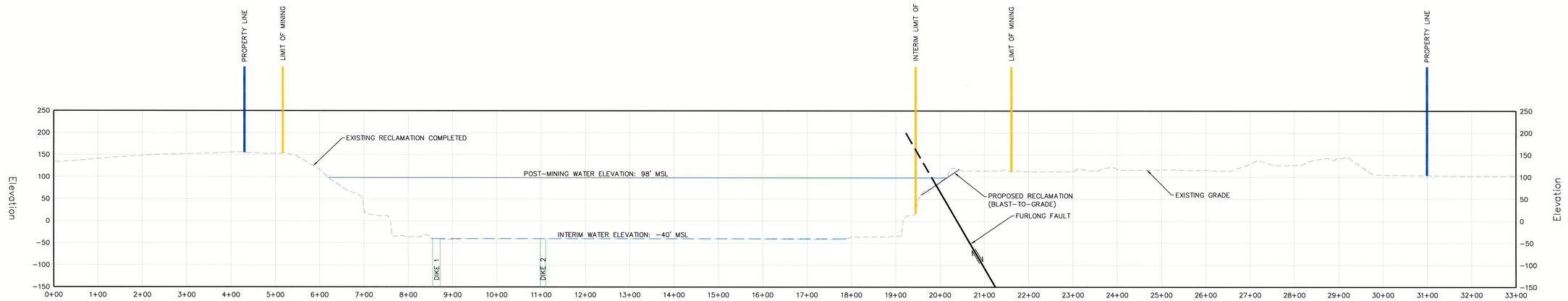
DRAWN BY: MEP
CHECKED BY: LFV
DATE: 8/4/16
PROJECT NO: 011012.015
DRAWING NUMBER: E-001
SHEET 1 OF 1

F:\PROJECTS\NHCS\011012.015 Response to DEP-COE Comments NPDES\REPORTS\2-27-18 PA DEP Letter Response\2018_05_18_Reclamation Map Update\Reclamation Map Update_051818.dwg Layout: E SIZE User: jswiontek 08/13/2018 11:10



CROSS SECTION A – A'

SCALE:
HORIZONTAL: 1"= 100'
VERTICAL: 1"= 100'



CROSS SECTION B – B'

SCALE:
HORIZONTAL: 1"= 100'
VERTICAL: 1"= 100'

GRAPHIC SCALE

100 0 50 100 200 400
(IN FEET)
1 inch = 100 ft.

NO.	DATE	BY	REVISIONS
1	8/13/18	JPS	ADDED SURVEYED LOCATION OF FURLONG FAULT

COMMONWEALTH OF PENNSYLVANIA — LOUIS F. VITTORIO JR., P.G. — LICENSE NO. PG001394

COMMONWEALTH OF PENNSYLVANIA — DAVID F. ALLEN, P.G. — LICENSE NO. 075102

PROJECT SITE:
NEW HOPE CRUSHED STONE
SMP NO. 7974SM3
SOLEBURY TOWNSHIP, BUCKS COUNTY
PENNSYLVANIA

PREPARED BY:
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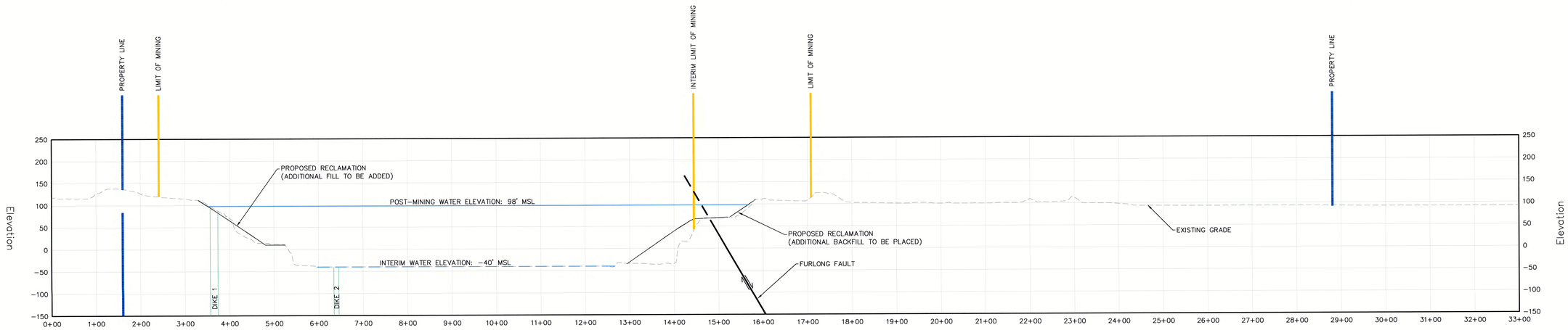
CROSS SECTIONS
SHEET 1 OF 3

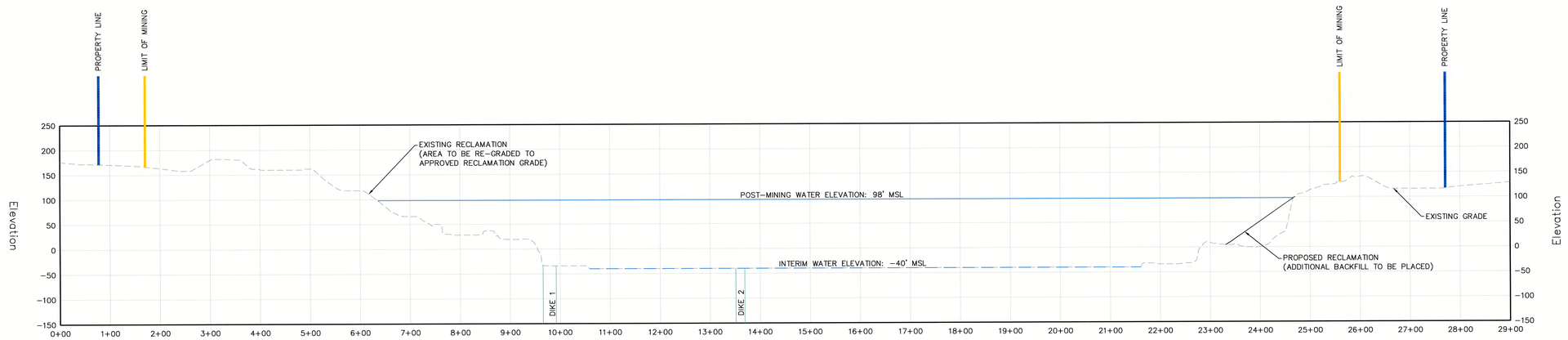
NEW HOPE CRUSHED STONE QUARRY
NEW HOPE CRUSHED STONE AND LIME CO.

DRAWN BY: MER
CHECKED BY: DFA/LFV
DATE: 3/30/2018
PROJECT NO: 011012.015
DRAWING NUMBER: E-002
SHEET 2 OF 4



CROSS SECTION C – C'

SCALE:
HORIZONTAL: 1"= 100'
VERTICAL: 1"= 100'



CROSS SECTION D – D'

SCALE:
HORIZONTAL: 1"= 100'
VERTICAL: 1"= 100'

GRAPHIC SCALE

100 0 50 100 200 400
(IN FEET)
1 inch = 100 ft.

NO.	DATE	BY	REVISIONS
1	8/13/18	JPS	ADDED SURVEYED LOCATION OF FURLONG FAULT

COMMONWEALTH OF PENNSYLVANIA
LOUIS F. WYNOSKY, JR., P.G.
LICENSE NO. PG001944

COMMONWEALTH OF PENNSYLVANIA
DAVID F. ALLEN
PROFESSIONAL ENGINEER
DAVID F. ALLEN, P.E.
LICENSE NO. 075102

PROJECT SITE:

NEW HOPE CRUSHED STONE
SMP NO. 7974SM3
SOLEBURY TOWNSHIP, BUCKS COUNTY
PENNSYLVANIA

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CROSS SECTIONS
SHEET 2 OF 3

NEW HOPE CRUSHED STONE QUARRY
NEW HOPE CRUSHED STONE AND LIME CO.

DRAWN BY:	MEP
CHECKED BY:	DFA/LFV
DATE:	3/30/2018
PROJECT NO:	011012.015
DRAWING NUMBER:	E-003
SHEET	3 OF 4

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