

Storage Study Phase II Update

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Regulated Flow Advisory Committee
December 15, 2025



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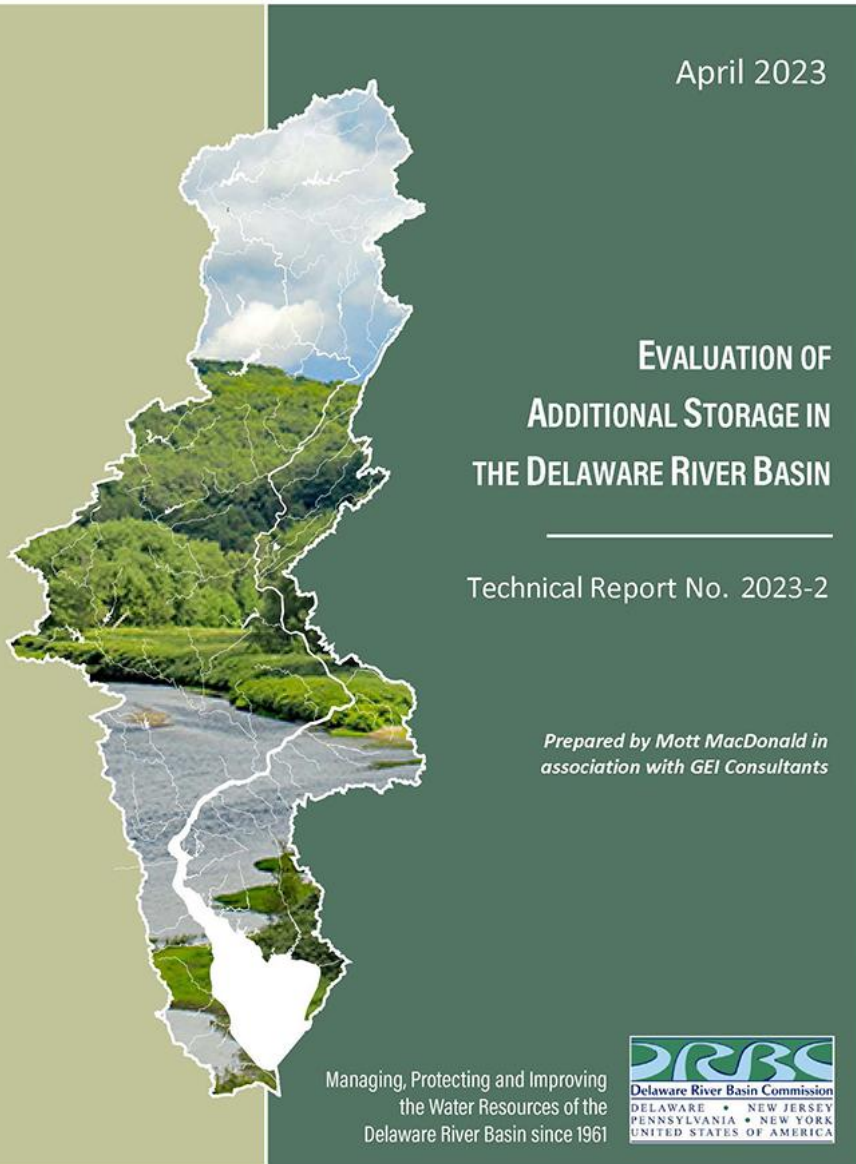
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■ Agenda

- Storage Study Phase I refresher
- DRB Water Management Schematic
- Phase II authorization
- Current status of Phase II projects considered
 - Moores Station Quarry, Mercer County, NJ (closed)
 - Penns Park Quarry, Bucks County, PA (active)
 - Evansville Quarry, Berks County, PA (active)
 - Cannonsville Reservoir, Delaware County, NY



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Evaluation of Additional Storage in the Delaware River Basin - published April 2023

- Technical Report No. 2023-2
- <https://www.state.nj.us/drbc/programs/flow/reservoir-storage-study.html>
- Prepared by Mott MacDonald in association with GEI Consultants
 - Mott MacDonald team: Kirk Barrett, Gary Snyder, Jane Rowan, Ken Najjar
 - GEI team: Katie Laird, Roger Putty
 - Normandeau Associates
 - Advisors: Anthony Bonasera, Tony Fernandes, Frank Falcone
- Suggested Citation:

DRBC (2023). *Evaluation of Additional Storage in the Delaware River Basin: Technical Report No. 2023-2*. Prepared by Mott MacDonald in association with GEI Consultants. West Trenton, New Jersey. Delaware River Basin Commission.

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Table 1.3-1: Number of Potential Projects Involved at Different Stages in the Study

Project Stage	Potential Storage Project Category				Total
	New reservoirs	Existing reservoirs	Quarries	Abandoned mines	
Identifying potential projects	22	1,041	1,421	29	2,513
Passing pre-screening	22	34	66	5	127
Passing initial screening	7	16	33	5	61
Passing supplemental screening (evaluated projects)	7	8	18	5	38
Recommended projects	0	2	12	0	14

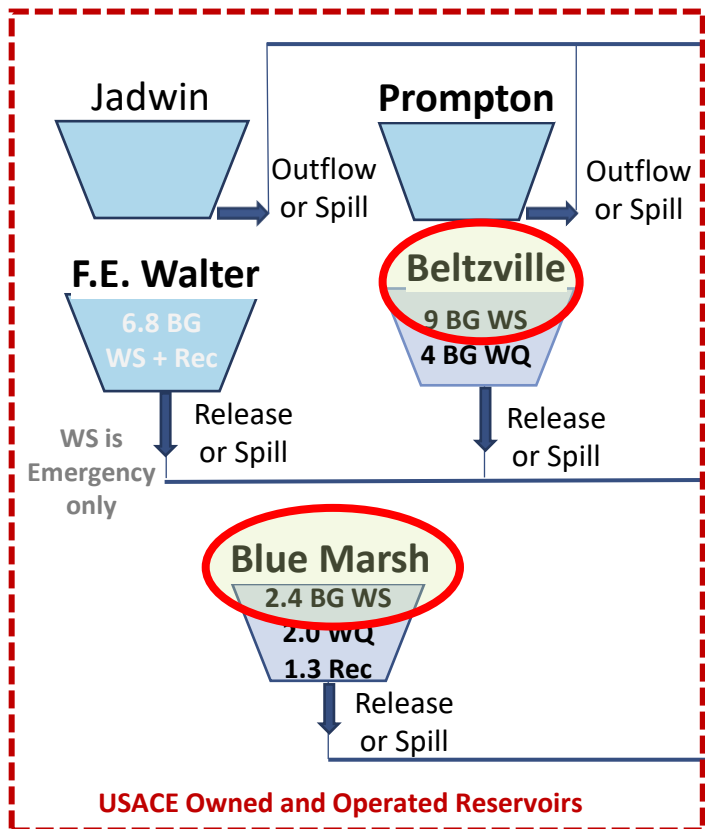
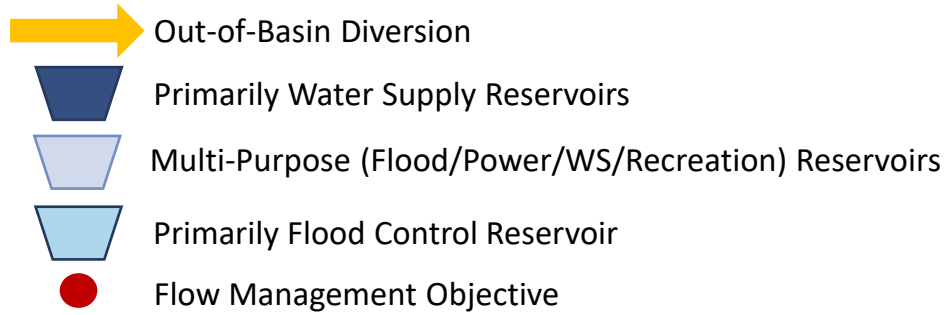
These 38 projects all had Storage Project Summaries (SPS) developed.

Pre-Screening

Initial Screening

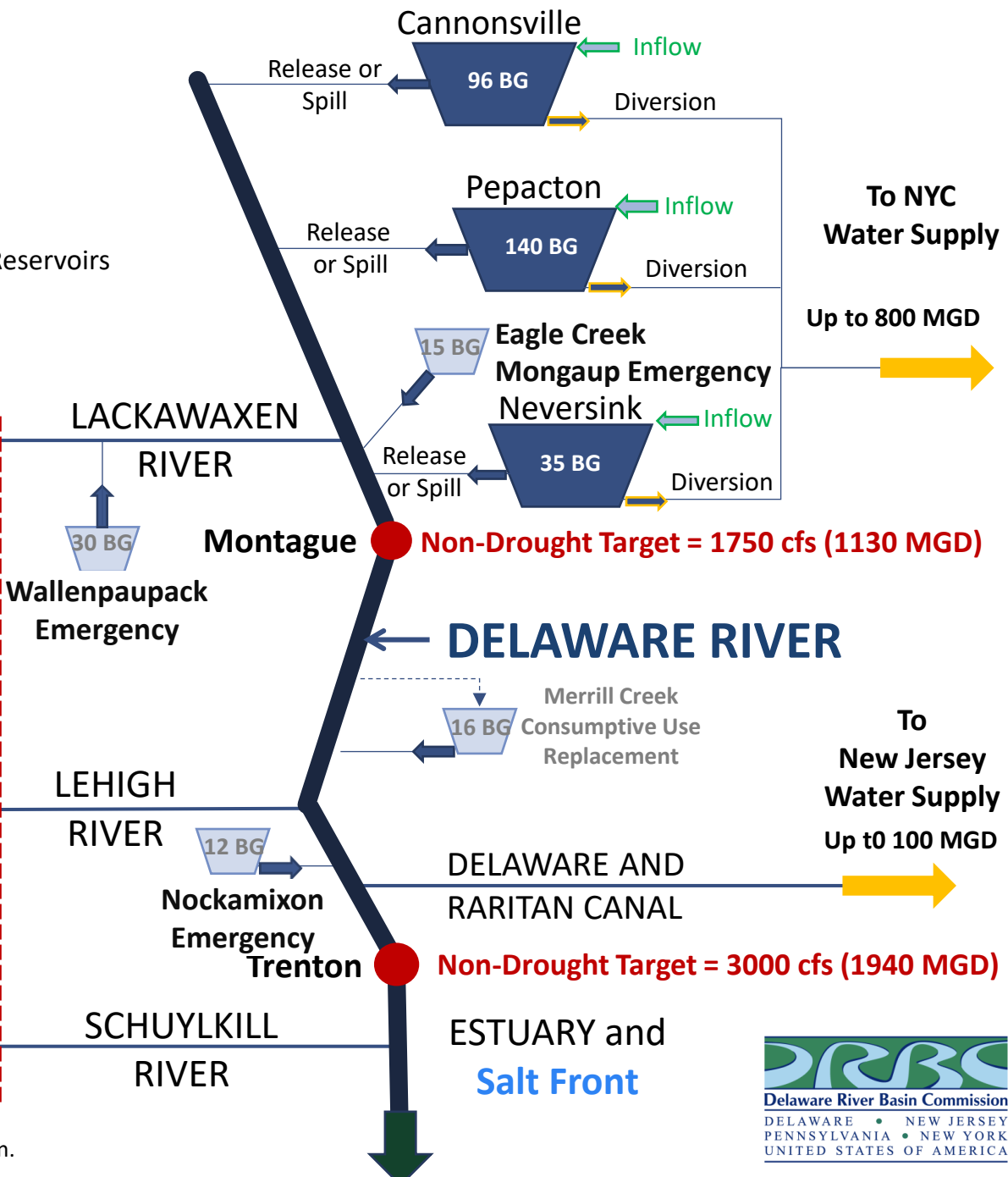
Supplemental Screening

Water Management Schematic for the Delaware River Basin



DRBC Owned Water Supply Storage

11.4 BG



Note: Not all reservoirs, tributaries, and diversions are shown.



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- Resolution for the Minutes approved in September 2024
- Two track study with Mott MacDonald (MM)
 - 3 Quarries (Penns Park, Evansville, Moores Station / Trap Rock) (\$399k)
 - Cannonsville expansion (\$800k)
- Requires 3 different contracts
 - DRBC & MM for 3 Quarries – **finalized 3/20/2025** (18 months; Sept 2026)
 - DRBC & NYCDEP for Cannonsville work – **contract discussions in progress**
 - DRBC & MM for Cannonsville – **pending DRBC/NYCDEP contract**
- 5/19/2025 kickoff meeting with MM for Quarry work

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Quarry Scope

1. Kick-Off Meeting
2. Site Issues
 - a) Property control
 - b) Current operations & closure plan
 - c) Current and future topography
3. Geology / Structural review
4. Infrastructure
 - a) Pumping inlets / outlets
 - b) Transmission pipelines
 - c) Conceptual designs
 - d) Itemized engineering components



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Quarry Scope (con't)

- 5. Environmental & Regulatory
 - a) Site
 - b) In-quarry water quality
 - c) Streams / wetlands
- 6. Social & Economic Issues – future phase
- 7. Engineer’s Opinion of Probable Cost
 - a) Property control
 - b) O & M costs
 - c) Financing costs
- 8. Scheduling
- 9. Ownership & Debt Service – future phase

Class 4-5



<https://www.chemengonline.com/competitive-pricing-process-plants/>

TABLE 1. THE FIVE CLASSES OF COST ESTIMATES			
Estimate class	Name	Purpose	Project definition level
Class 5	Order of magnitude	Screening or feasibility	0 to 2%
Class 4	Intermediate	Concept study or feasibility	1 to 15%
Class 3	Preliminary	Budget authorization or control	10 to 40%
Class 2	Substantive	Control or bid/tender	30 to 70 %
Class 1	Definitive	Check estimate or bid/tender	50 to 100%

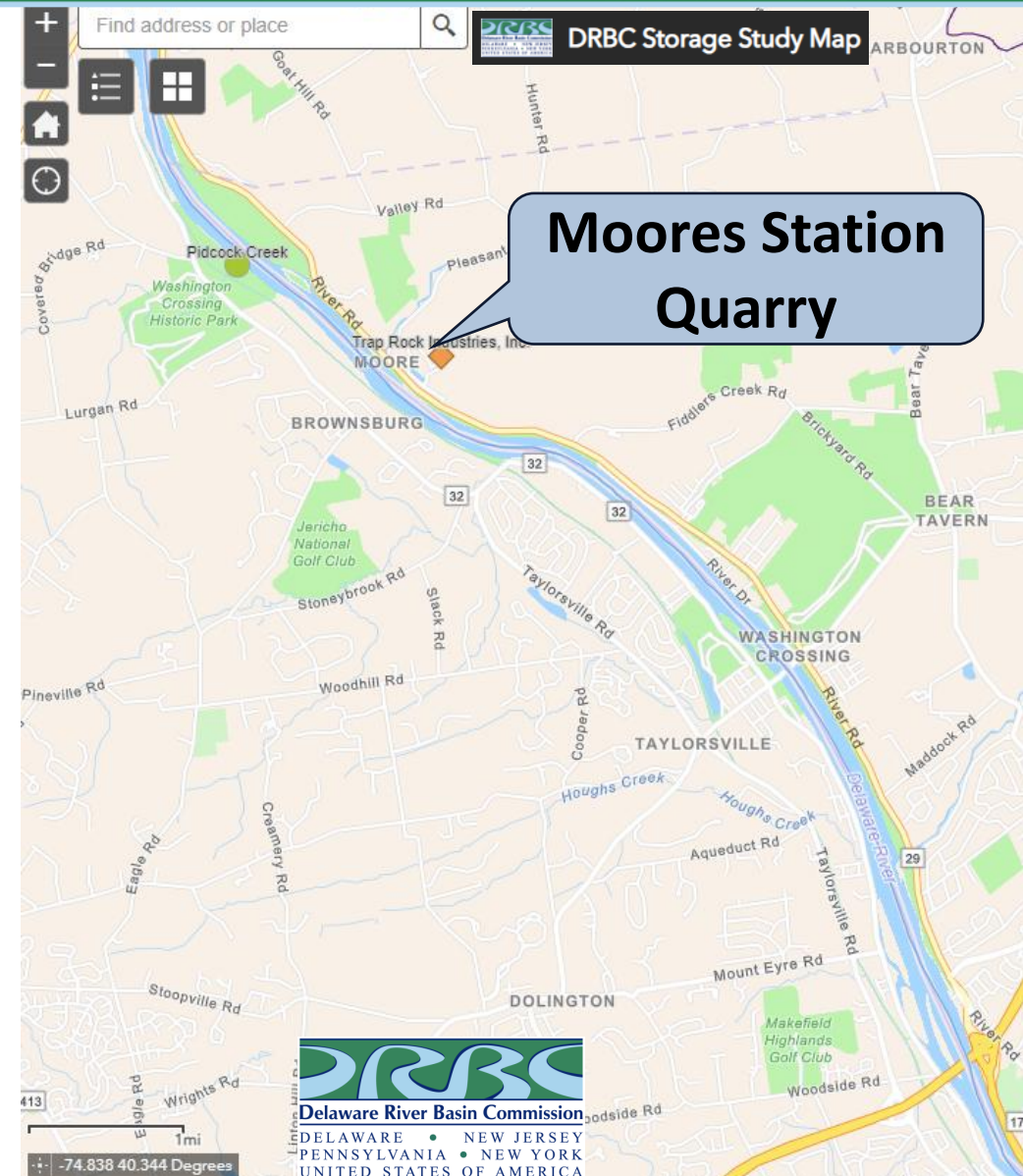
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Moores Station / Trap Rock Quarry (adjacent to Delaware River, Mercer County, NJ)

- Introductory meeting held with MM, DRBC and Mercer County on 5/22/2025
 - Points of contacts confirmed
 - Exchange of water elevation information, etc.
- Site visit for MM held on 6/10/2025
- Two options – existing & addition of saddle wall
- NJDEP Permit Coordination
 - intro meeting with David Pepe on 10/16/2025
 - information submittal on 11/26/2025
 - meeting with Mercer County on 12/8/2025
 - two track meetings early in 2026 – Green Acres, others



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Moores Station / Trap Rock Quarry (adjacent to Delaware River, Mercer County, NJ)

- Concept is to pump water from Delaware River into the quarry.
- Pump water out of quarry at low flows to support flow objectives.
- Pumped storage.



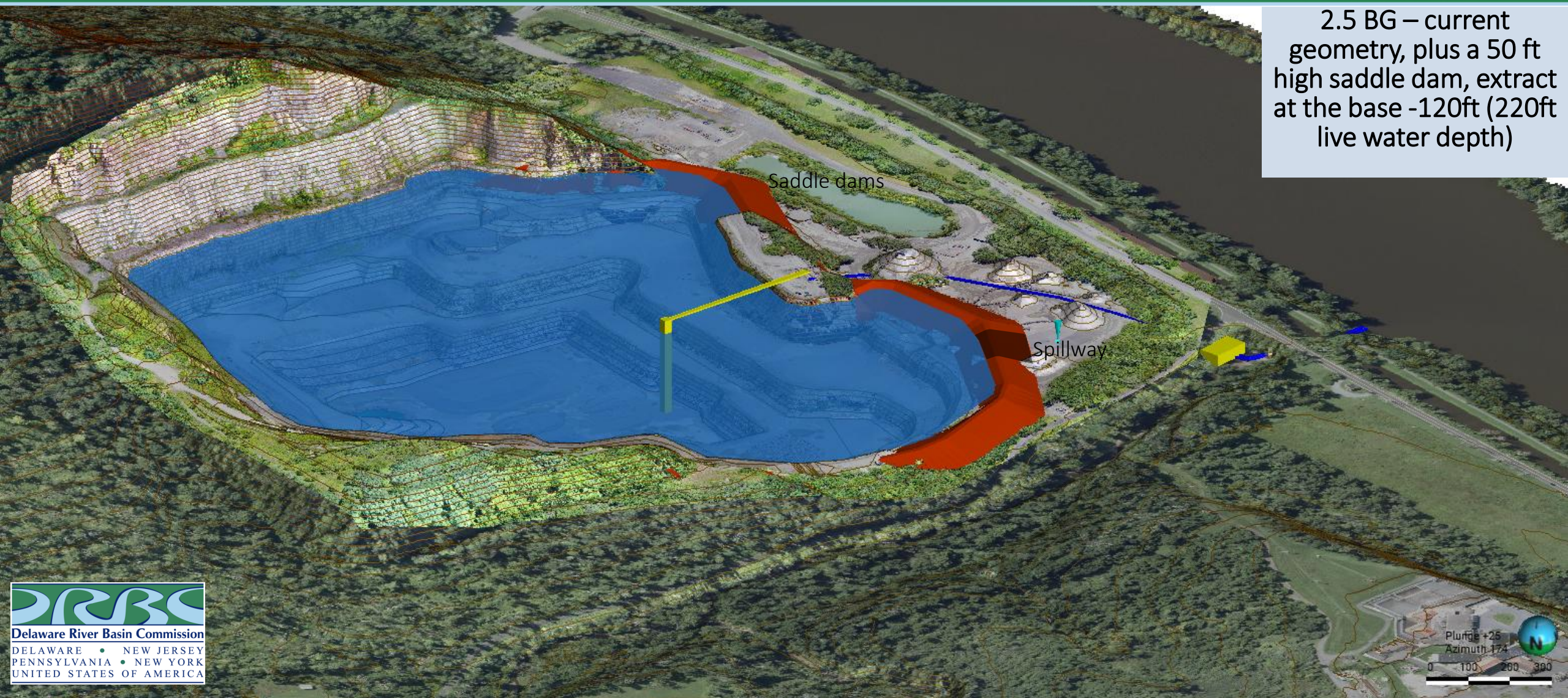
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1.5 BG – current geometry, extraction at base -120ft (170 ft live water depth)



Please note the yellow pump station tower and bridge in the quarry is highly simplified – as shown this is a 170ft tall structure.

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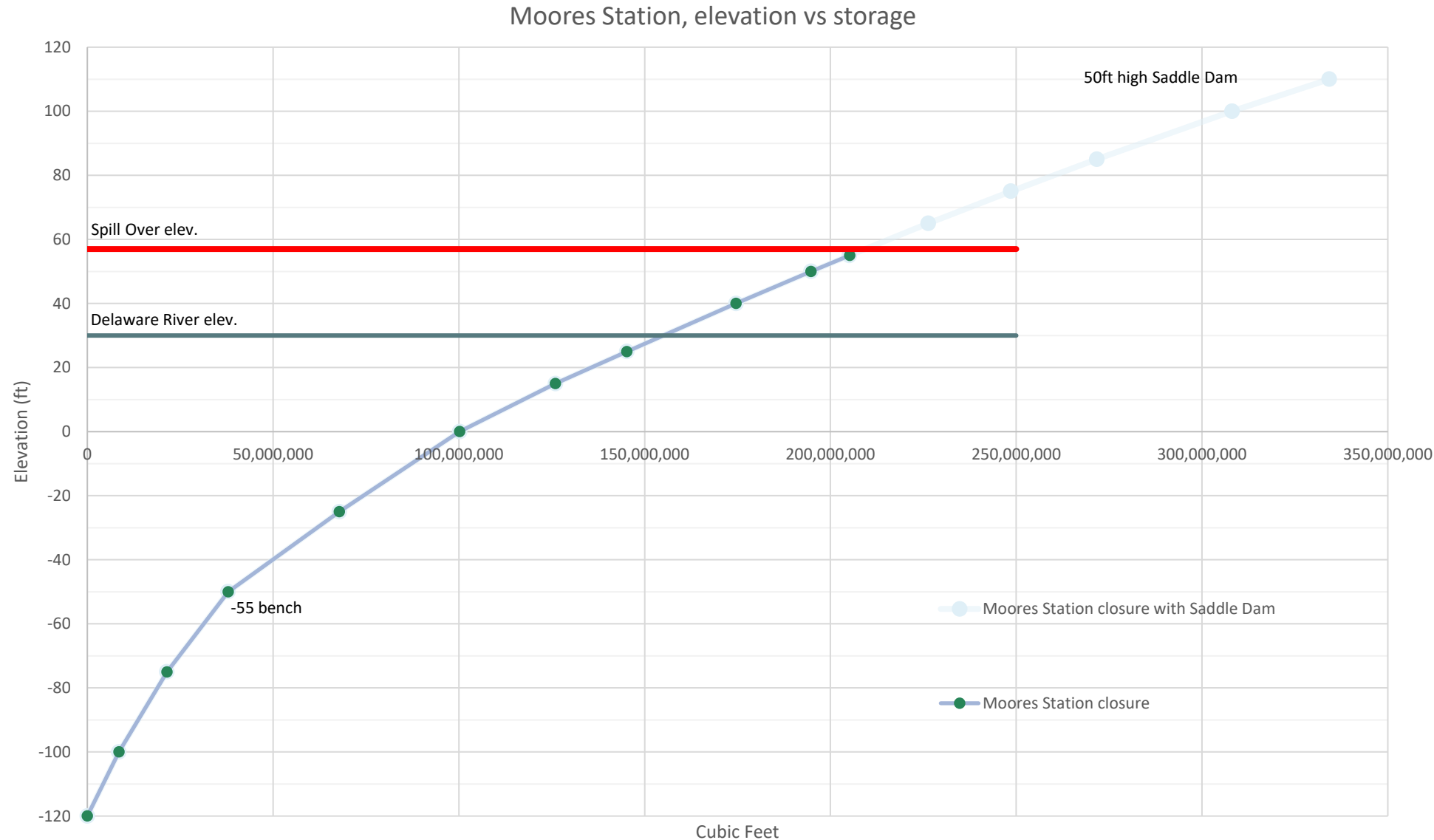


Please note the yellow pump station tower and bridge in the quarry is highly simplified – as shown this is a 220ft tall structure

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Moores Station

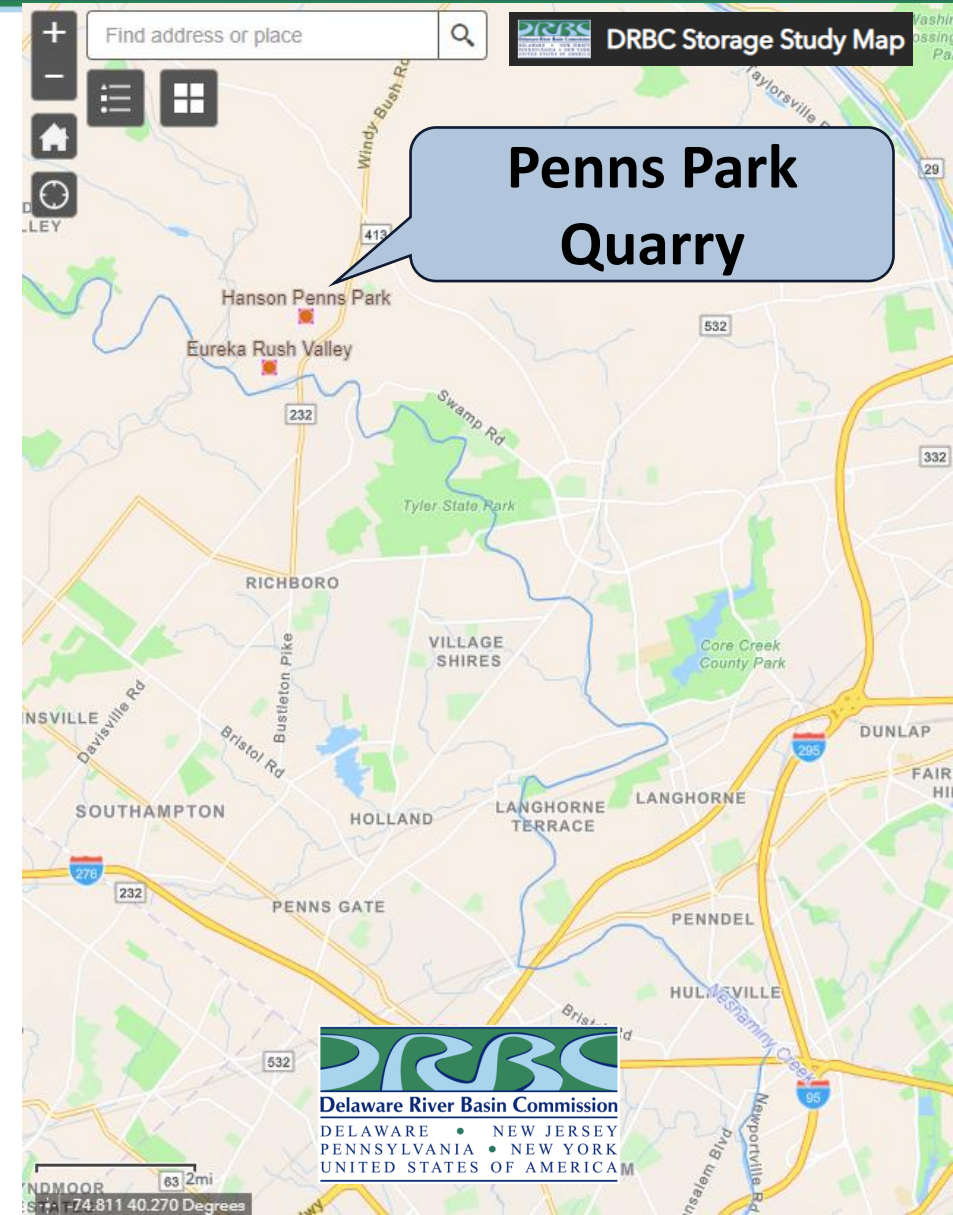
1.5 BG – current geometry, extraction at base (170ft live water depth)

1.2 BG – current geometry, extraction at the -55 bench (100ft live water depth)

2.5 BG – current geometry, plus a 50ft high saddle dam, extract at the base (220ft live water depth)

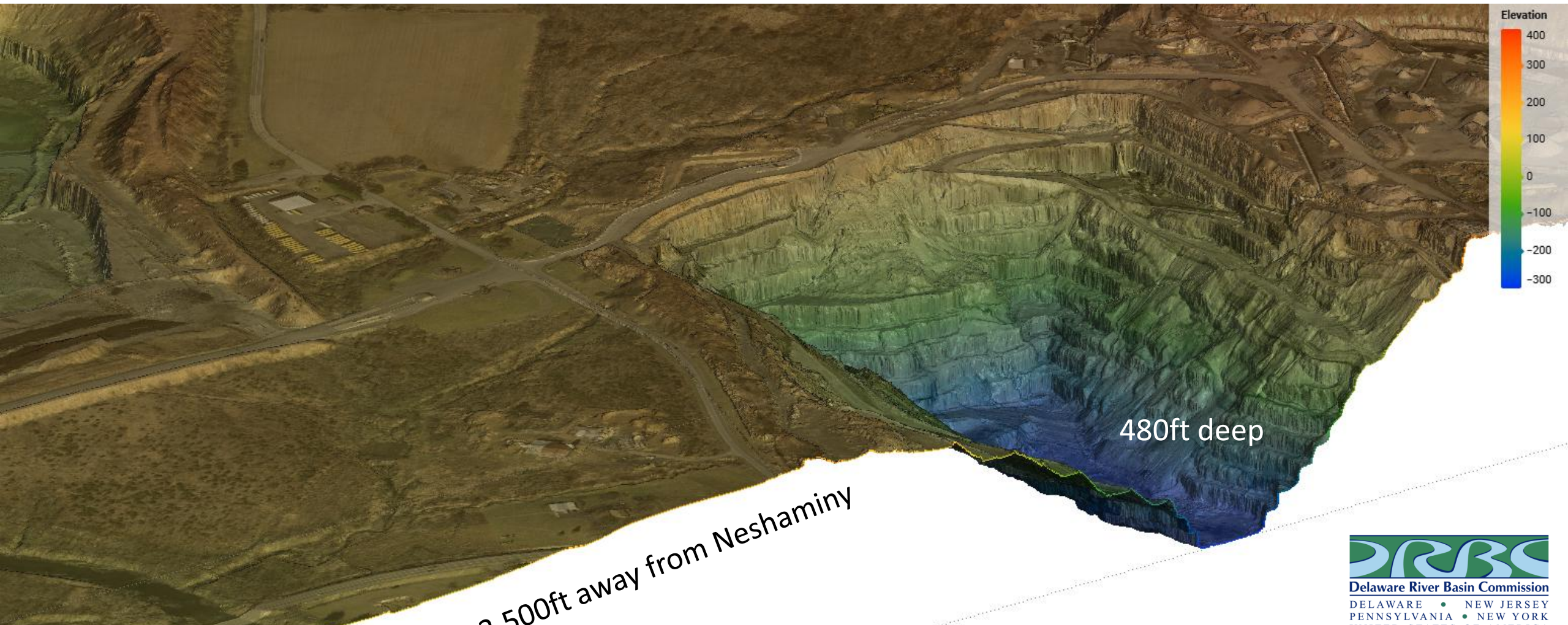
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- Penns Park (adjacent to Neshaminy Creek, Bucks County, PA)
 - Heidelberg Materials
 - Same ownership and point of contact: Andrew Gutshall
 - Time remaining for quarry unclear – shorter if expansion isn't approved
 - PADEP permit coordination meeting with SCRO / SERO on 12/3/2025

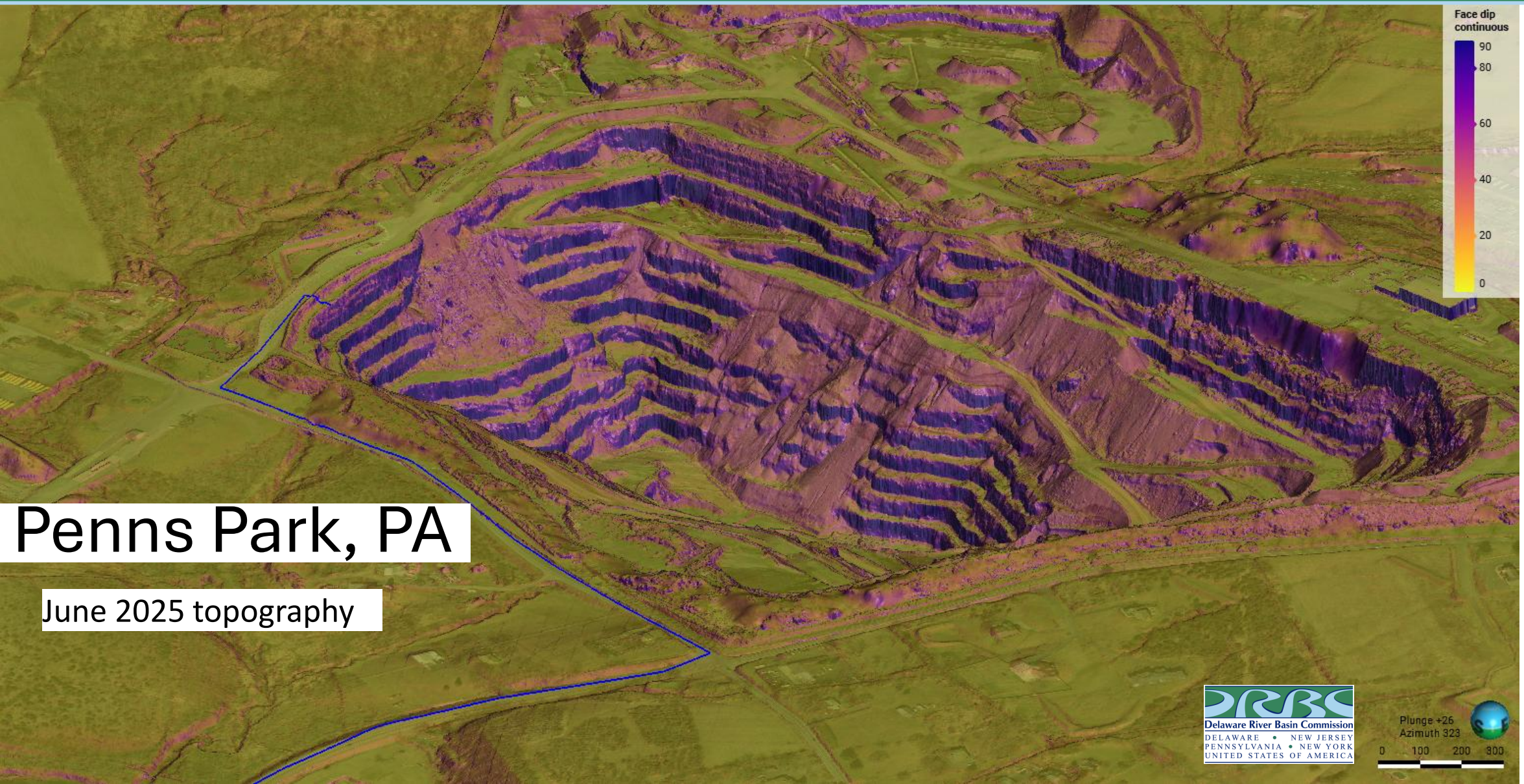


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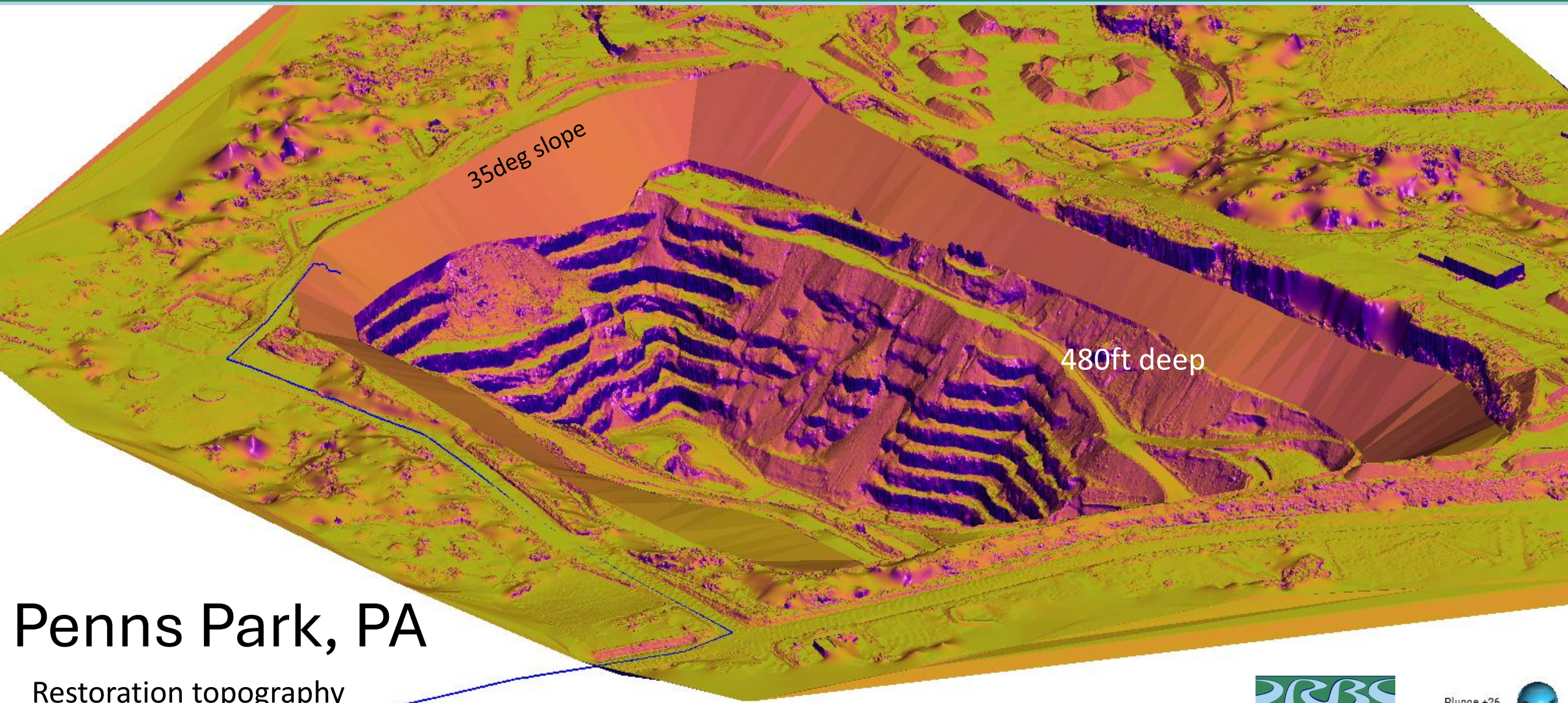
- Penns Park (adjacent to Neshaminy Creek, Bucks County, PA) - Heidelberg Materials
 - Site visit on 7/11/2025



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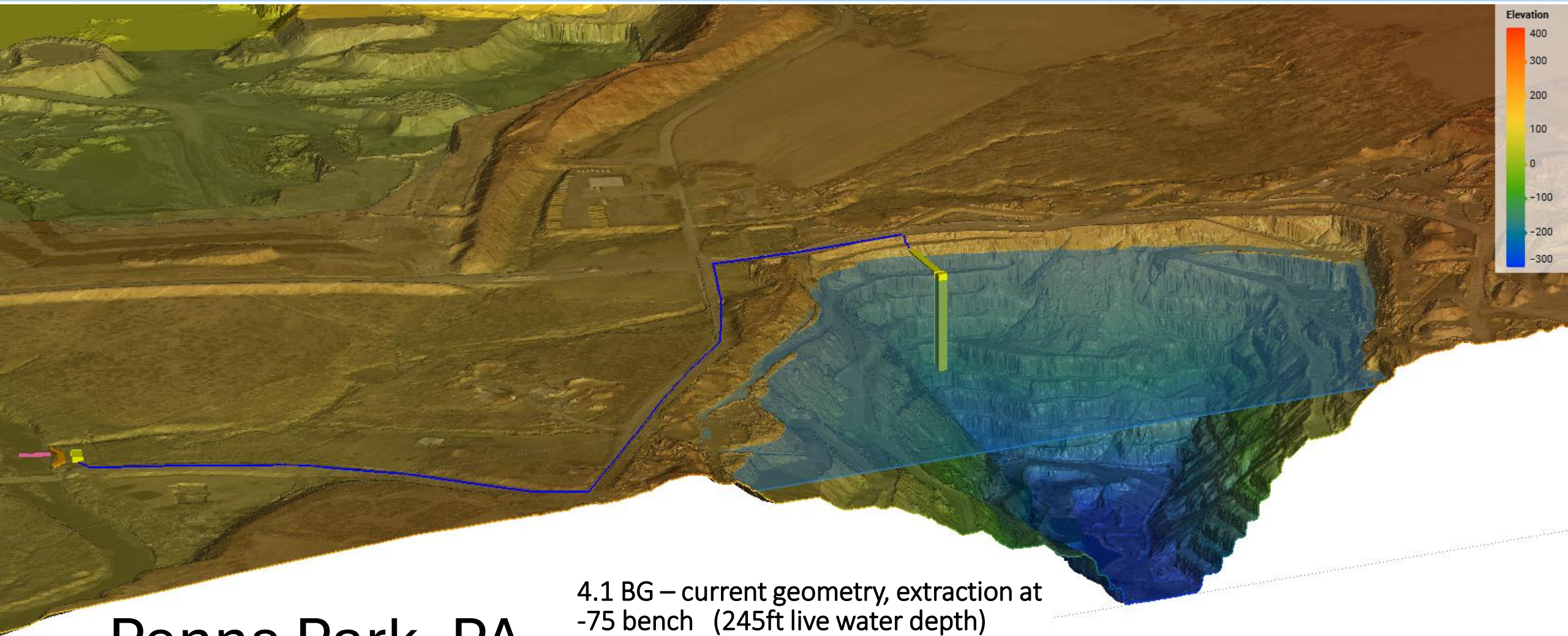
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Penns Park, PA

Restoration topography

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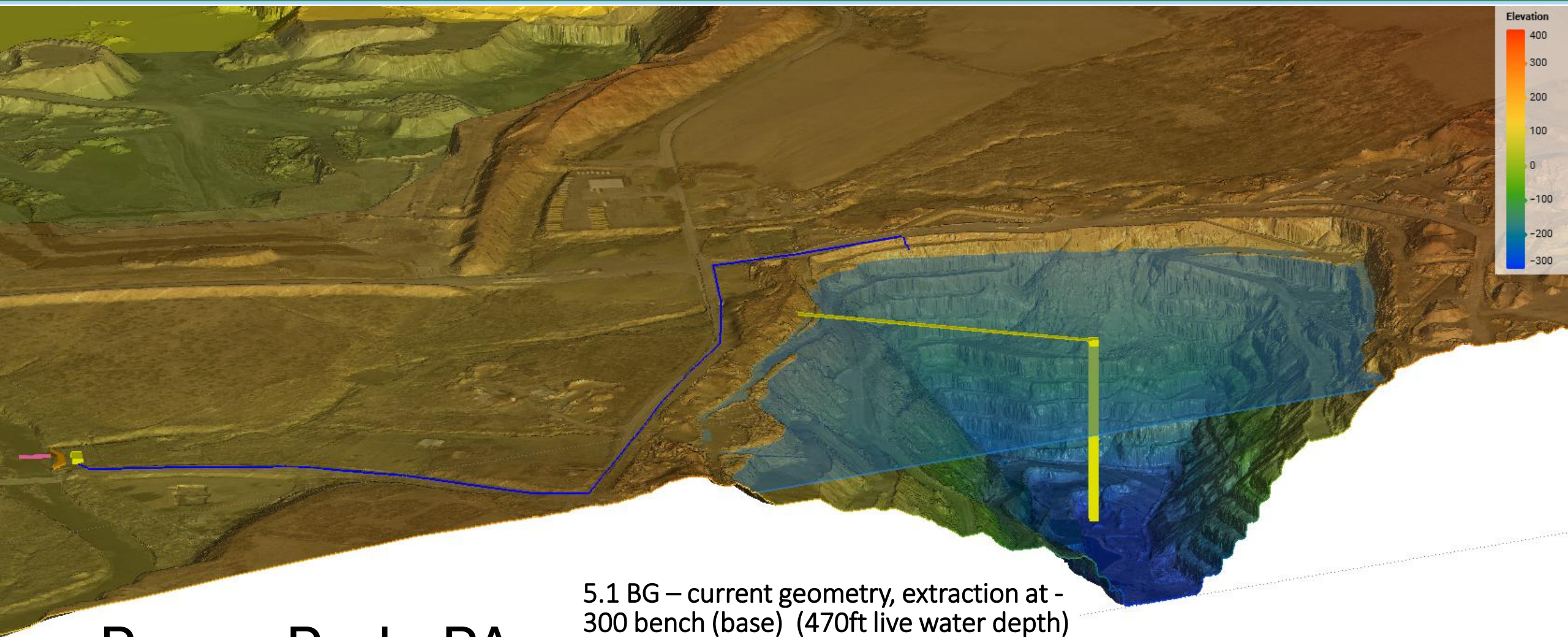


Penns Park, PA

4.1 BG – current geometry, extraction at
-75 bench (245ft live water depth)

Please note the yellow pump station tower and bridge in the quarry is highly simplified – as shown this is a 250ft tall structure

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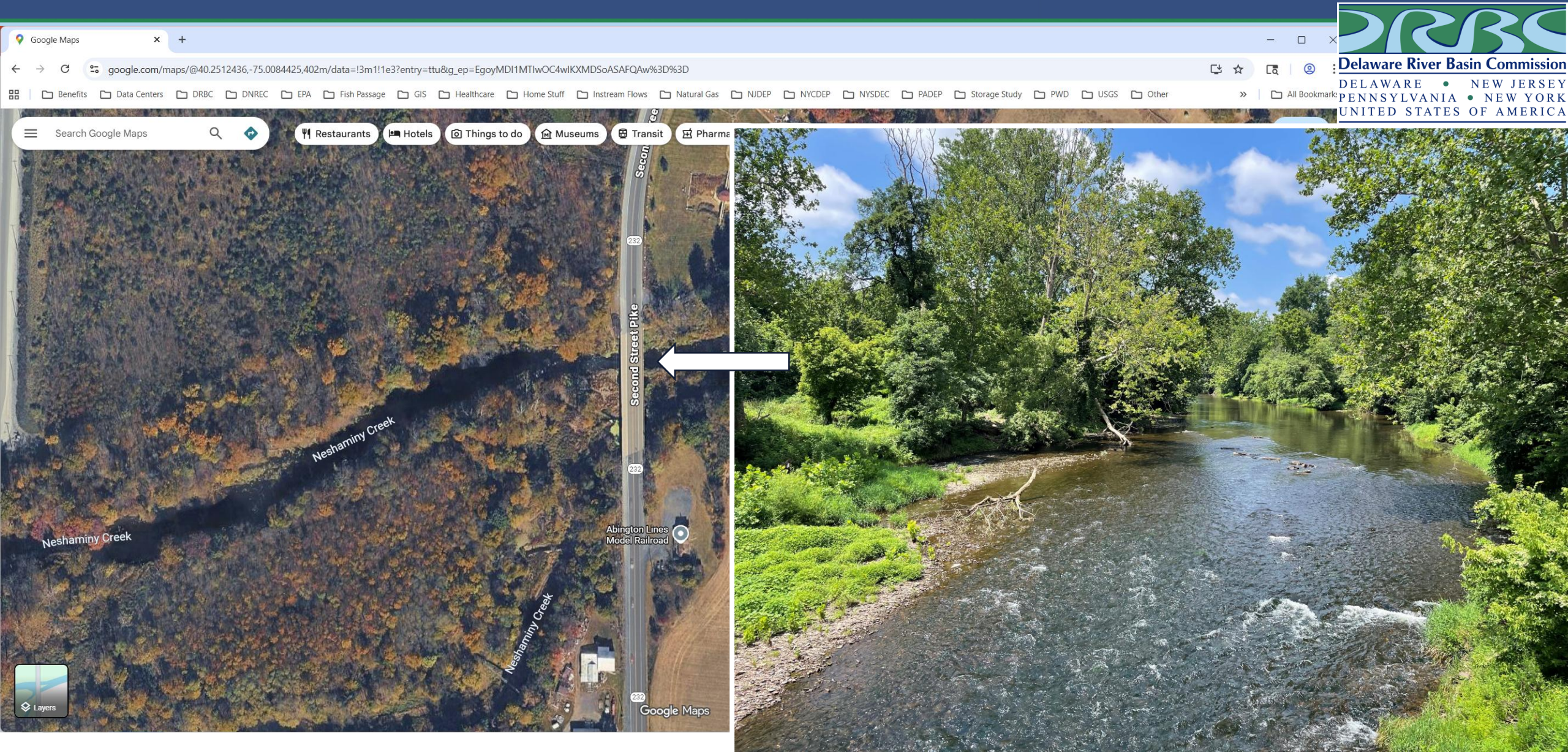


Penns Park, PA

5.1 BG – current geometry, extraction at -300 bench (base) (470ft live water depth)

Please note the yellow pump station tower and bridge in the quarry is highly simplified – as shown this is a 475ft tall structure

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Neshaminy Creek

Pump station

Diversion channel with
intake screens

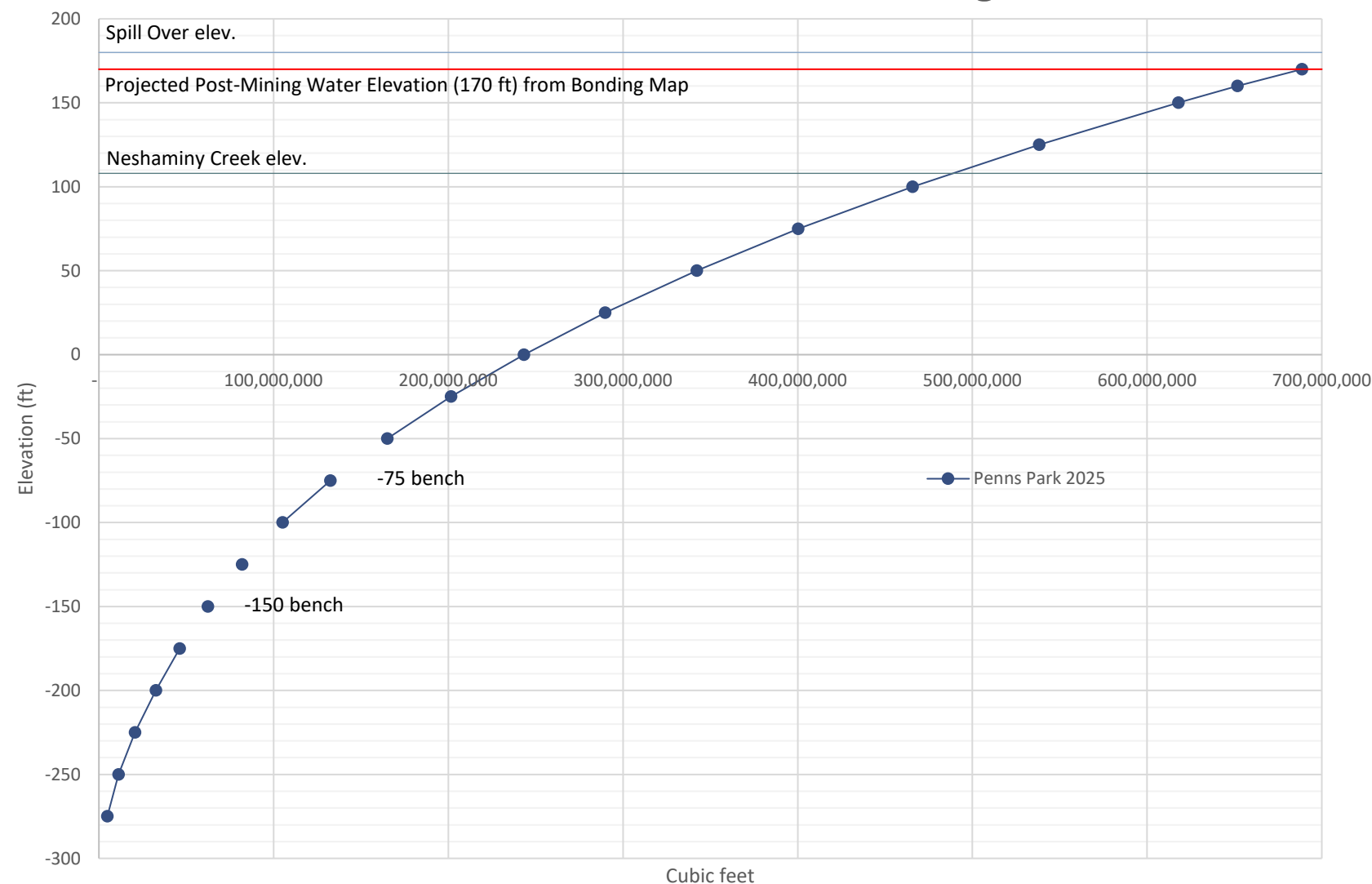
Outfall below screens

Wier

PA 232

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Penns Park, elevation vs. storage



Penns Park

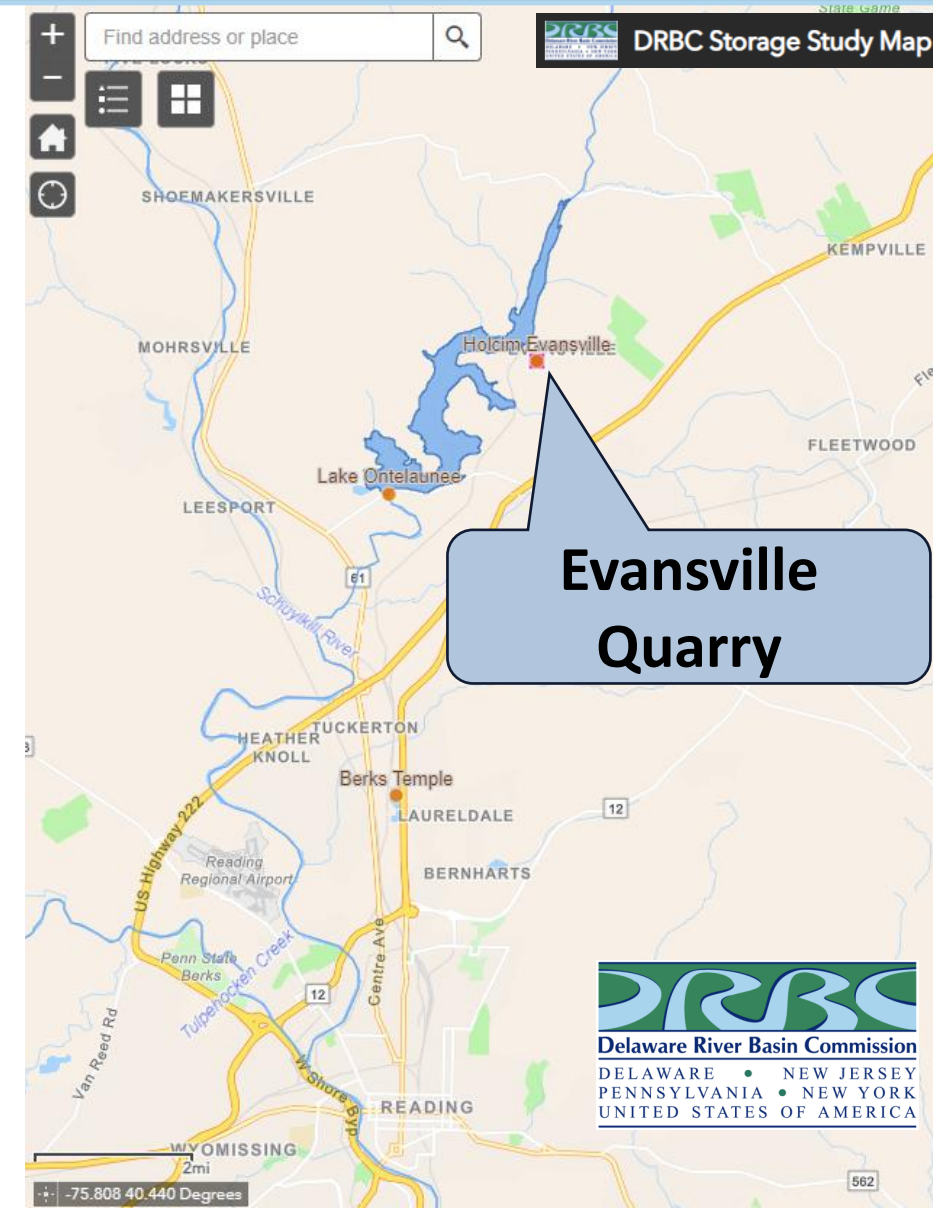
5.1 BG – current geometry, extraction at -300 bench (base) (470ft live water depth)

4.6 BG – current geometry, extraction at -150 bench (320ft live water depth)

4.1 BG – current geometry, extraction at -75 bench (245ft live water depth)

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- Evansville (adjacent to Lake Ontelaunee, Berks County, PA) – Heidelberg Materials
 - Same ownership and point of contact: Andrew Gutshall
 - Site visit on 9/26/2025; exchange of information
 - Briefing with Reading Area Water Authority (RAWA) on 11/20/2025
 - RAWA sharing of flow / release information from Lake Ontelaunee on 11/21/2025
 - PADEP permit coordination meeting with SCRO / SERO on 12/3/2025



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- Evansville (adjacent to Lake Ontelaunee, Berks County, PA) – Heidelberg Materials
 - Concept is to fill quarry from Lake Ontelaunee when “excess” water is available
 - Decades left of active quarrying
 - Would need to provide incentive/benefit to RAWA for cooperative use of their release works, etc.



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■ Cannonsville Reservoir Modification

- Complete DRBC & NYCDEP contract
- Complete DRBC & MM contract
- Kickoff meeting - TBD
- Site visit - TBD

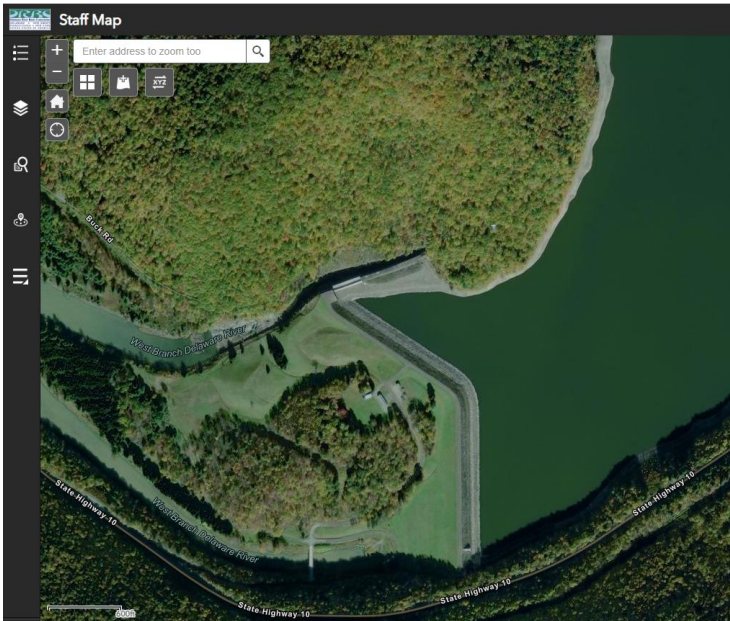


Figure 3.1: Overview of dam and spillway modifications



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■ Next Steps

○ Quarries

- Complete NJDEP permit coordination meetings in early 2026
- Complete technical evaluations
 - volume estimates
 - hydrologic analyses on fill / discharge / refill
 - intake / pump / dewatering designs & optimization

○ Cannonsville

- Complete contract between DRBC & NYCDEP
- Complete DRBC & MM contract
- Kickoff meeting
- Site visit