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January 14, 2022
C-12199-0020

Cozza Enterprises, LLC
P.O. Box 453
Carnegie, PA 15106

Attn: Craig Cozza

Subject: Geotechnical Engineering Review
Proposed Building Addition
180 Millers Run Road, South Fayette Township
Allegheny County, Pennsylvania

As authorized, we have completed our review of subsurface conditions at the above-referenced site. This report describes the findings of the review and presents recommendations for the design and construction of foundations to support the proposed building addition.

SITE LOCATION AND CONDITIONS

The subject site consists of Lot 256-L-2 as reported on the Allegheny County Real Estate website, and is situated north of Millers Run Road, north of its intersection with Newbury Drive, in South Fayette Township, Allegheny County, Pennsylvania. It is mostly covered with stone and vegetation around an existing single-story building. The ground surface in the area investigated generally plateaued at about 830 feet, as as estimated from Google Earth. The elevations referenced appear to be based on North American Vertical Datum of 1988 (NAVD88).

GEOLOGIC RECONNAISSANCE

Geologically, the site is located on the east flank of the south-trending Carnegie Syncline (a trough-like fold in the bedrock strata) about 0.4 miles from its axis. Surficial bedrock strata at the site dip, and groundwater in the bedrock migrates, gently south on a grade of about 1.2 percent (1.2 ft in vertical rise in 100 feet horizontal distance).

The Pennsylvania Department of Environmental Resources, Mineral Resource Report 89, Coal Resources of Allegheny County, Pennsylvania, Part 1, dated 1986, indicates that the base of the Pittsburgh Coal seam horizon - a significant marker bed in this locale - lies at about elev 800, or at least 30 feet below the site, and has been deep mined south of Millers Run Road and the subject site. In addition, mining maps available on the Pennsylvania Mine Map Portal (minemaps.psu.edu/) of the U.S. Steel National Mine No. 1 (attached), indicate the subject site is north of the old alignment of Millers Run Road and the mine workings. These resources do not indicate any other coal seams below the site. Therefore, mine subsidence is not a factor for this project.

Bedrock at the site represents the Casselman Formation, Conemaugh Group, Pennsylvanian System, consisting of sandstones and shales, with some limestone and coal seams. This formation is overlain by alluvial soil deposited by Millers Run and Chartiers Creek.

AERIAL AND USGS QUADRANGLE RECONNAISSANCE

Based on the review of historical aerials dated back to 1949 and topographic maps dated back to 1904, the subject site has existed at the current surface elevation since 1904. A structure was first built by the late 1940s, as 1940 and 1944 updates to the 1904 quadrangle illustrate no structure on the north side of Millers Run until that time. "Scott's Ponds", which are the surface ponds indicated on the U.S. Steel mine mapping were backfilled starting in the late 1940s. This is notable, as the ponds are a consistent physical barrier between the mine limits and the subject site. USGS mapping from 1904 and 1953 are attached.

DISCUSSION AND RECOMMENDATIONS

Based on our understanding, the project will consist of the construction of an addition to the existing building on the property which will require foundation and floor slab construction. No cut or filling for slopes will be performed.

FOUNDATION BEARING CAPACITY AND SETTLEMENT CONSIDERATIONS

Based on our review of the site, there may exist thick variable layers of imported fill and alluvial soil. These materials may be of variable density and compressibility, which can negatively impact the performance of the proposed foundations and floor slab. Therefore, prior to foundation and floor slab construction, at least four test pits should be performed within the proposed footprint of the building addition. The test pits should extend to a depth of 10 feet or bedrock, whichever first occurs. The test pits should be observed and logged by a licensed professional geotechnical engineer or their representative. The engineer should compare and contrast the test pit information and the considerations provided below. Should the soil and rock conditions observed not support the considerations provided, then better informed recommendations should be prepared and the report revised consistent with those recommendations.

In general, to prepare for shallow foundation and floor slab construction, all topsoil, vegetation, soft to medium soils, and other deleterious materials should be removed from the subgrade areas. The areas shall consist of the width of the footing plus 3-ft wide strips inside and outside the footing to facilitated proofrolling by a ride-on vibratory roller compactor.

The exposed subgrades should be proof-rolled with a minimum of ten passes with a vibratory roller compactor, such as a Catapillar CS56, or equal. Soft or loose zones delineated by the proof-rolling should be undercut to competent material or to an additional depth of one foot, whichever first occurs. Should the additionally undercut subgrade remain unsuitable, it should be stabilized with suitable, inert (non-carbonaceous, non-pyritiferous, non-expansive, and non-slag) American Association of State Transportation Officials (AASHTO) No. 1 stone. The vacated volume can then be backfilled to final subgrade level with suitable, inert, on- or off-site borrow that is compacted as described below, in the Fill/Backfill Considerations section.

Fill/Backfill Considerations

It is recommended that borrow soil used as backfill be either placed and compacted as soon as possible to limit its exposure to rainfall events, or protected with plastic tarps if the construction activity requires multiple days.

Cohesive fill should be compacted to a minimum of 95 percent of the maximum modified proctor dry density as determined by ASTM International Test Designation: D1557-12, at water contents within three percent (±3%) of the optimum water content established by that test. Granular fill should be compacted to at least 70 percent relative density as determined by ASTM International Test Designations: D4253- and 4254-16.

QUALITY VERIFICATION/CONSIDERATIONS

It should be noted that this is a cursory review of the project conditions and test borings or pits should be excavated prior to construction. It is essential that all test pits, foundation construction, floor slab subgrade preparation, and fill/backfill operations be monitored on a full-time basis by our personnel to verify that the recommended bearing horizons/materials and fill/backfill compaction requirements are consistently implemented. All recommendations presented herein are contingent upon such field verification.

This report has been prepared using cursory review methods conforming to commonly accepted local geotechnical engineering practices. All recommendations and/or conclusions herein pertain only to this specific project and should not be used or interpreted by others for modifications to this project, unless reviewed and approved by us, or for other projects or sites. Even within the project context, subsurface conditions can only be determined by boring or test pits, and actual conditions between/beyond borings or test pits may vary. Due in part to such variability in subsurface conditions, the implementation of the recommended measures must be informed and validated by the recommended test pits and inspected by our personnel to confirm that the subsurface conditions encountered during construction are consistent with the borings or test pits and our engineering analysis, and to verify that the subgrades, backfills, and all other geomaterials used are behaving as anticipated. Some conditions or material/subgrade behavior and/or performance may require modifications to our recommendations, which can typically only be determined "on-the-spot" during full-time inspections by one of our soil technicians, under the direct supervision of our professional (licensed) geotechnical engineers.

Not only could the interpretation and field inspection of our recommendations by others result in a structure that does not perform as intended, but inspection by individuals not qualified and/or

not under the direct supervision of a professional geotechnical engineer could result in structure failures. We therefore will not be responsible nor professionally liable for the performance and/or suitability of any structures affected by geotechnical elements of the project inspected by others. The selected inspection agency must take full responsibility for proper implementation and performance of the project geotechnical recommendations for this site.

We sincerely appreciate the opportunity to be of service to you on this project. Should you have any questions regarding our findings or recommendations, please do not hesitate to contact us.

Respectfully submitted,

THE GATEWAY ENGINEERS, INC.

BY:_____

Nathaniel S. Hayes, P.E.
Project Manager

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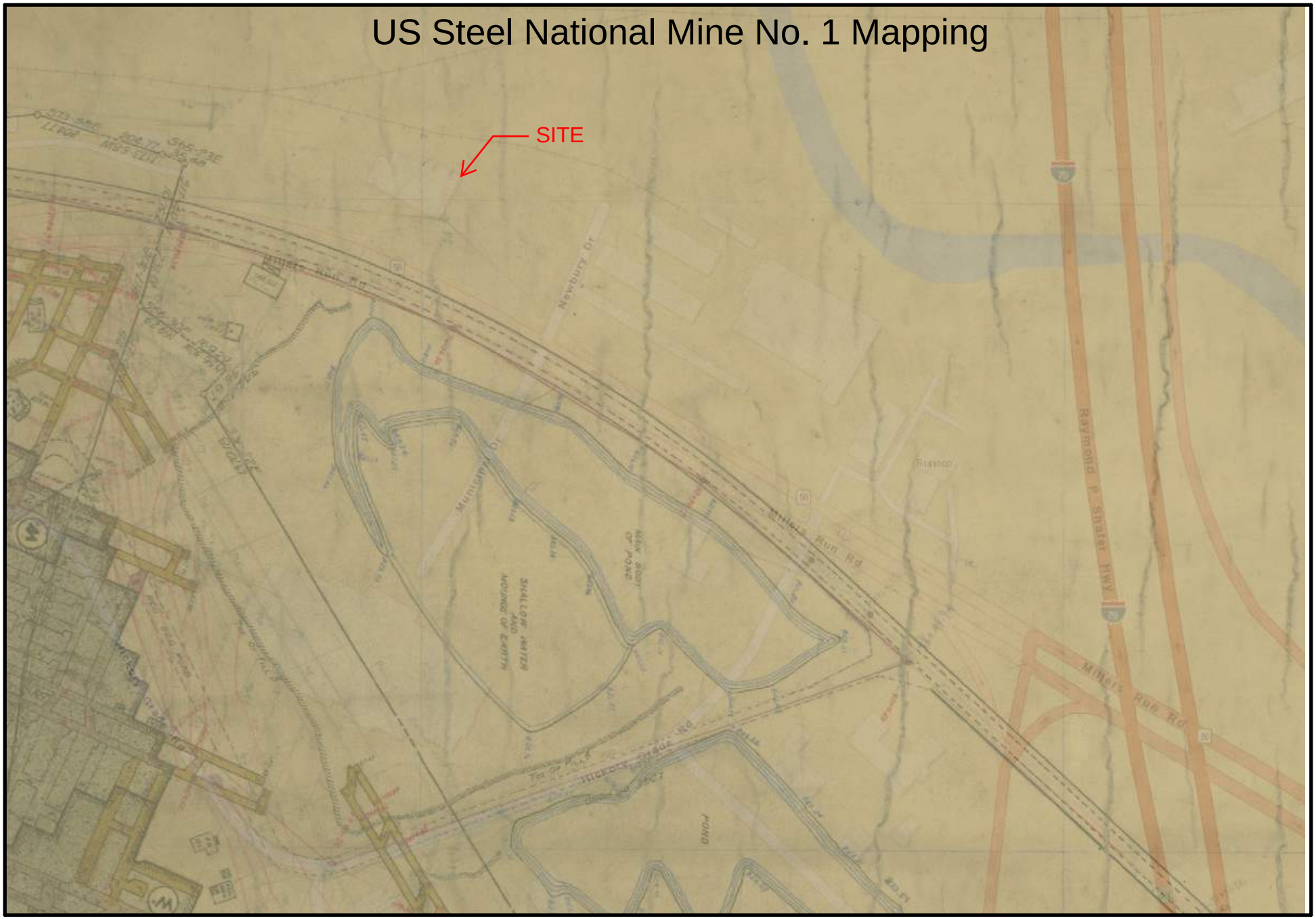
IUPASG_00431 Close Up



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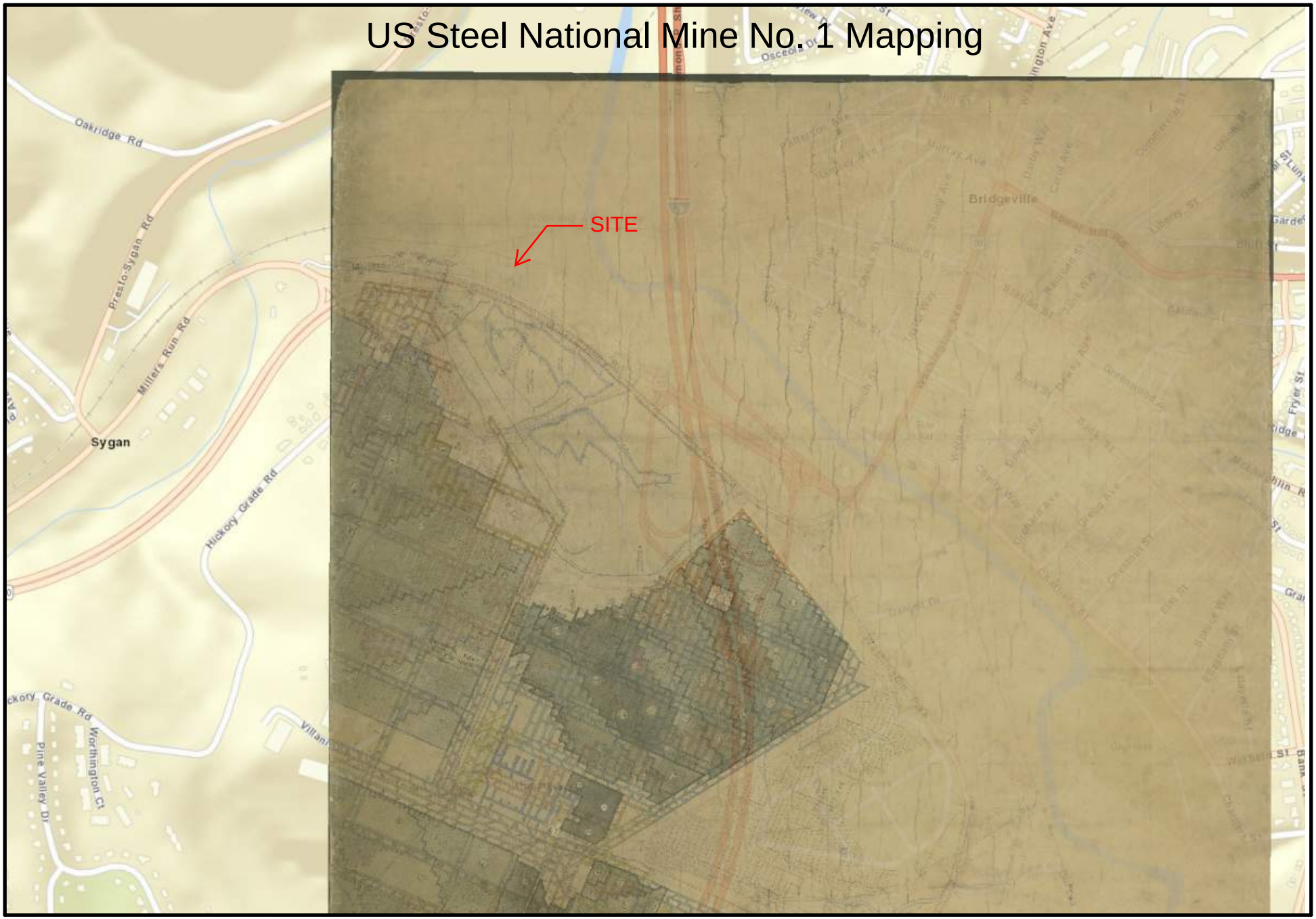

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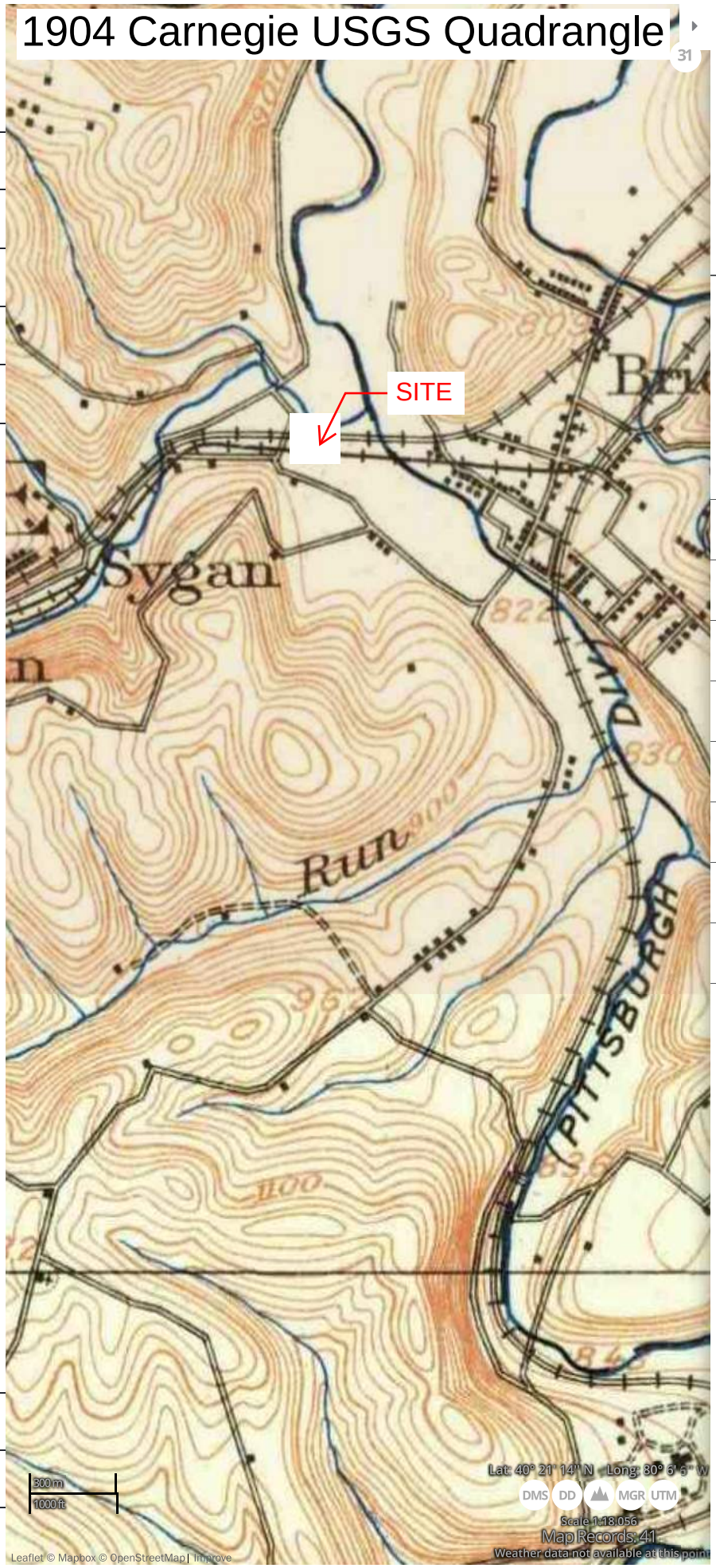

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Location | Map Name

Search by location

1880 — 2021

All 250K 100K 63K 48K 24K HTMC UST All

31 maps here | Scale: All, Date: 1880-2021, Series: All
Elevation @ 40.359, -80.123 is 831 ft. (253 m)

Filter records

Name Date Scale State

Carnegie, PA
1904 (HTMC, 1954 ed.) Scale 1:62500
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HIDE INFO ZOOM PAN PIN FIX
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Carnegie, PA
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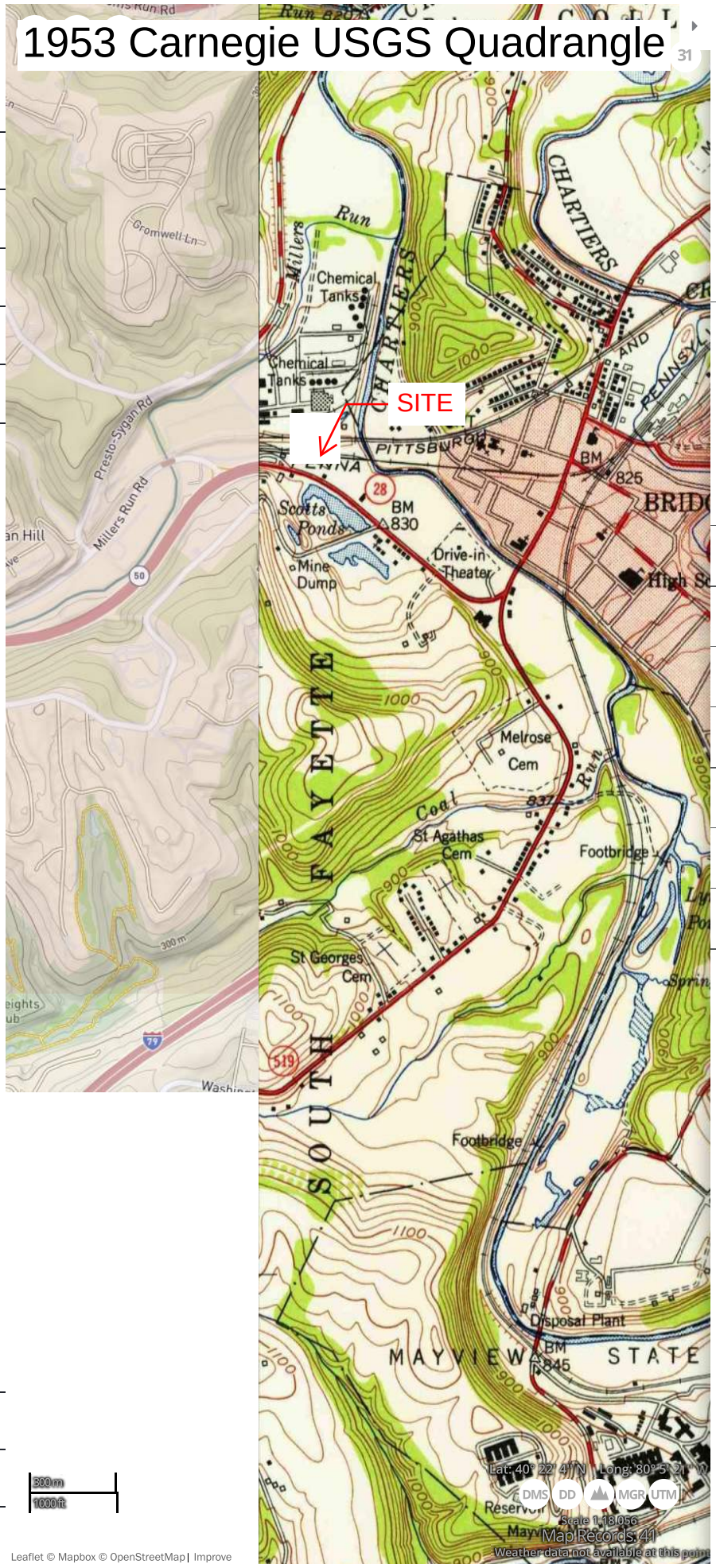
1906 (HTMC, 1940 ed.) Scale 1:62500

Carnegie, PA
1906 (HTMC, 1944 ed.) Scale 1:62500

Carnegie, PA
1908 (HTMC, 1910 ed.) Scale 1:62500

Canton, OH

1953 Carnegie USGS Quadrangle



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All 250K 100K 63K 48K 24K HTMC UST All

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Elevation @ 40.359, -80.123 is 831 ft. (253 m)

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Name Date Scale State

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KMZ (4 MB) GeoPDF (14 MB)
HIDE INFO ZOOM PAN PIN FIX
MAP TRANSPARENCY

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Canton, OH
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Canton, OH
1957 (HTMC, 1978 ed.) Scale 1:250000

Bridgeville, PA
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Bridgeville, PA
1960 (HTMC, 1966 ed.) Scale 1:24000

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Bridgeville, PA
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